Autonomy-Supportive Pedagogical Approach to Sports Coaching: Research, Challenges and Opportunities

Joseph L. Occhino¹, Clifford J. Mallett¹, Steven B. Rynne¹ and Kristy N. Carlisle²

¹School of Human Movement Studies, The University of Queensland, Brisbane, Australia
cmallett@hms.uq.edu.au
²Institute of Health and Biomedical Innovation, School of Public Health, Queensland University of Technology, Australia

ABSTRACT
There has been an increasing body of research on autonomy- or need-support specific to a coaching context that warrants some review of what we know and don’t know, and what might be generative for future research. The previous studies reviewed within this article have shown consistent support for Self-determination theory with autonomy-supportive environments linked with adaptive outcomes, such as superior performance, enhanced self-worth, increased effort, and self-determined motivation; while controlling environments have been linked with increased attrition and extrinsic motivation or amotivation. In this way, much of the research in autonomy-supportive coaching has focused on the impact of coaching behaviours on athlete outcomes. While this is an important focus of inquiry, there has been a dearth of research examining those causal factors that impact coaches’ pedagogical behaviours in the first case. This review underscores the need for future research to examine the antecedents to coaching behaviours, which is central to understanding the complexity and challenges in promoting an autonomy-supportive approach to sport coaching.

Key words: Autonomy Support, Coach Behaviours, Motivation, Self-Determination Theory

INTRODUCTION
In the context of sport, numerous research studies have shown that coach behaviours have important motivational implications for their athletes [1, 2]. The creation of a motivational climate that fosters psychological need satisfaction (Self-determination theory [3]) is
proposed to facilitate positive psychological well-being. The importance of motivation has been emphasised in a number of vocations such as sport coaching because it influences how people think, feel, and behave [4]. Within sporting contexts, coaches’ motivation impacts their behaviours and subsequently, the motivational climate they create. Athlete perceptions of coaching behaviours influence the perceived quality of the motivational climate and subsequent athlete outcomes. Several studies in sports coaching have shown that coaches’ behaviours are significant predictors of athlete motivation [1, 5]. Mageau and Vallerand’s [2] motivational model of the coach-athlete relationship has been a popular theoretical framework through which to understand the importance of adaptive motivation on desirable athlete outcomes. Their model has drawn upon the extant literature within Self-determination Theory (SDT) and the Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM); [6]. Mageau and Vallerand’s [2] model has been a catalyst for the promotion of research and practice using an autonomy-supportive approach in sport coaching. In sum, it is proposed that coaches who embrace a coaching style that is autonomy-supportive can contribute to psychological need satisfaction and subsequently adaptive forms of motivation that lead to positive athlete outcomes (e.g., increased persistence, improved performance).

Autonomy-supportive environments are characterised by a person in authority (e.g., coach) who acknowledges the feelings and perspectives of others (e.g., athletes), and who is not overly controlled by external pressures and demands [7]. Studies conducted in formal educational contexts [8, 9] as well as within sports settings [1, 5, 10] support a positive relationship between autonomy-support (facilitated by the teacher or coach) and the satisfaction of the three psychological needs. This research highlights the consistent, positive evidence for using an autonomy-supportive pedagogical approach in learning contexts.

According to Mageau and Vallerand [2], seven pedagogical behaviours are key to assisting a coach in creating an autonomy-supportive environment: a) provide choice within boundaries; for example, allowing athletes to choose between two or three activities; b) provide a rationale for tasks; for example, explaining the advantages or disadvantages of a particular skill or training session so that the athletes understand how and why decisions are made; c) acknowledge feelings and perspectives; for example, asking an athlete or squad for input into a training session; d) provide athletes with opportunities to take initiative; for example, allowing athletes to work independently to solve problems; e) provide non-controlling competence feedback; for example, the coach provides feedback that allows her and the athlete/s to solve problems together; f) avoid controlling behaviours; for example, avoiding statements that can be perceived as bullying or coercion; and g) reduce the perception of ego-involvement in athletes; for example, focus on self-referenced evaluative criteria. Collectively, these coaching behaviours should foster satisfaction of the three psychological needs, especially autonomy and, in turn, promote autonomous motivation, and subsequent adaptive outcomes in athletes’ cognitions, feelings, and behaviours [2, 6].

Deci and Ryan [11] propose that autonomy-supportive learning environments are associated with psychological need satisfaction, namely, the need for autonomy, competence and relatedness. Mageau and Vallerand [2] also suggest that equally important in the promotion of such environments is: a) the notion of structure provided by the coach; and b) the coach’s care for athletes as people (involvement). Coaches who provide structure ensure that athletes have the necessary understanding and information to perform their roles within the team [12]. This structured learning environment is hypothesised to foster athletes’ perceived competence. In addition to providing structure, coaches foster relatedness by showing emotional support and interest in the psychological development of the athlete within the sporting context [12]. These two dimensions are proposed to complement the
seven pedagogical behaviours to facilitate an autonomy-supportive learning environment. Surprisingly, not all coaches behave in a manner that is perceived by athletes as being autonomy-supportive.

Recent research has focussed on operationalising the effects of controlling coach behaviours on athletes’ need satisfaction and subsequent motivation. In contrast to autonomy-supportive behaviours, a coach that acts with the use of pressure, coercive demands, and offers rewards to direct a person’s behaviour is said to be controlling [13]. Bartholomew et al. [13] present a preliminary taxonomy of six controlling strategies: use of tangible rewards, use of controlling feedback, excessive personal control, intimidation behaviours, promoting ego-involvement, and conditional regard. In line with SDT, they propose that controlling behaviours will undermine the intrinsic motivation of athletes by reducing or thwarting need satisfaction.

Bartholomew et al.’s [14] work around understanding the social-environmental conditions that thwart psychological needs has begun to gain empirical support. Specifically, the negative impact of controlling coach behaviours (e.g., lack of perception of choice in training) on athletes is illustrated in a number of studies [15-18]. Pelletier et al. [17] tested the perception of coaches’ controlling behaviours and autonomy-supportive interpersonal behaviours with a sample of competitive swimmers. As predicted, autonomy-supportive behaviours were related to greater levels of self-determination whereas the perception of coach control was consistent with non-self-determined motivation. Similarly, Blanchard et al. [18] reported the impact of team cohesiveness and coach controlling interpersonal style on athletes’ need satisfaction. Results indicated that perceptions of team cohesiveness positively predicted satisfaction of autonomy, competence, and relatedness whereas coaches’ controlling behaviours negatively impacted on feelings of autonomy. Thus, research examining coaches’ controlling behaviours suggests that this style may impair athletes’ perceptions of autonomy. Therefore, the actions of coaches with a controlling orientation can result in reduced athlete autonomous motivation, and likely thwart their effort and persistence [14].

These contrasting interpersonal styles of coaches have been found to be differentially associated with athletes’ adaptive psychological outcomes [2]. As such, the extant research on coaching behaviours within an SDT framework supports the notion that coaches who value positive psychological outcomes for athlete should be autonomy-supportive rather than controlling. The language and description of these two interpersonal styles within the literature has the potential for scholars to assume that coaches are likely to be either controlling or autonomy-supportive. However, recent studies [e.g., 19, 20] that have examined both autonomy-supportive and controlling coaching behaviours have found a weak to moderate relationship between these two styles. Thus, it is possible that coaches may exhibit both controlling and autonomy-supportive behaviours to varying degrees. Pelletier et al.’s [17] study tested a model incorporating youth swimmers’ perceptions of their coaches’ interpersonal behaviours (controlling and autonomy-supportive) and five forms of behavioural regulation. The findings indicate that coaches that were perceived at autonomy-supportive were associated with greater levels of self-determined motivation and controlling coaches fostered non-self-determined forms of regulation. Additionally, Pelletier et al. [17] found that the association between the athletes’ perceptions of coaches autonomy-support and control is significant but moderately negative, suggesting that these interpersonal styles are not bipolar but possibly orthogonal.

There has been an increased interest in the application of the principles of SDT to the field of sport coaching due to the research support for adaptive athletic outcomes [2, 13]. In light
of the growing interest in the research and application of autonomy-supportive coaching environments, the following section will outline a summary of the research conducted to date in three sections. First, an overview of SDT is discussed. Second, the research on autonomy-supportive coaching using a SDT framework is reviewed. Third, we highlight some potential challenges in implementing an autonomy-supportive interpersonal style. Finally, we provide some thoughts for guiding some future research using Mageau and Vallerand’s [2] motivational model of the coach-athlete relationship.

OVERVIEW OF SELF-DETERMINATION THEORY

Self-determination theory [3, 4] is an approach to human motivation and personality that attempts to address the ‘how’ and ‘why’ of human behaviour [21]. This theoretical approach to understanding human behaviour has found practical use in a variety of domains (e.g., parenting, health, nursing, and education), and has gained recent attention in the field of sport coaching [e.g., 1, 13, 22, 23]. Basic Needs Theory (BNT) [24], which is a mini-theory of SDT, highlights the centrality of satisfying the three psychological needs (autonomy, competence, and relatedness) in fostering optimal human functioning and autonomous motivation. Satisfaction of the need for autonomy involves the act of choice and the perception that one initiates one’s own action [25]. The perceived need for competence is satisfied when a person feels that their actions are able to bring about desired effects from directed effort [26]. Finally, satisfaction of the need for relatedness centres on the perception of connectedness expressed by others [27]. Deci and Ryan [4] contend that, “human needs specify the necessary conditions for psychological health or well-being and their satisfaction is thus hypothesized to be associated with the most effective functioning” (p. 229). Thus, the motivational orientation of a person is impacted by the extent to which these three needs are satisfied.

Deci and Ryan [3] contend that the motivational orientation of an individual is key to understanding how and why people engage with various activities. The reasons why a person chooses to exert effort and persist in an activity can be classified along a continuum of self-determination. The most self-determined motivation is intrinsic motivation, which refers to doing something because it is inherently interesting or enjoyable [2]. On the opposite end of the continuum is amotivation, where there is a lack of motivation and intention. Extrinsic motivation is situated between intrinsic motivation and amotivation and is demonstrated if one is participating in a task for a reward or to avoid feelings of guilt and thus have a non-self-determined motivational orientation [1]. There are four forms of extrinsic motivation that range from higher to lower levels of self-determination, which include integrated regulation, identified regulation, introjected regulation and external regulation. Research in sport and exercise settings has consistently shown more positive outcomes for individuals who engage in activities for self-determined as opposed to non-self-determined reasons [e.g., 1, 2, 28]. One potent contributor to the development of motivational climate is the coach.

OVERVIEW OF AUTONOMY-SUPPORTIVE COACHING RESEARCH

The underpinning ideology and actions of coaches have the potential to shape an athlete’s view of their sport participation - psychologically, emotionally, and physically. In reviewing the literature, several themes emerge from the research conducted on autonomy-supportive coaching. Coaches who use autonomy-supportive behaviours are able to support their athletes in four key ways: a) satisfy psychological needs; b) sustain intrinsic motivation; c) promote continued engagement in sport; and d) enhance athletic performance (e.g., invest
more effort; persist longer at tasks; and perform at a higher level). Furthermore, researchers have also demonstrated the negative influence of controlling behaviours on psychological need satisfaction and subsequent negative athlete outcomes (e.g., increased anxiety; fear of failure; decreased well-being; and drop out). These studies, which are discussed next, support the motivational sequence of the impact of coaching behaviours on athlete outcomes.

Studies conducted in sport settings have provided positive support for the satisfaction of the three psychological needs within the coach-athlete relationship [e.g., 22, 28-30]. Consistent with the tenets of SDT, it is proposed that when an athlete’s need for autonomy, competence and relatedness are satisfied, this will positively influence athlete vitality when engaged in sport [31-33]. Reinboth, Duda and Ntoumanis [28] used structural equation modelling to examine the relationship of coaching behaviour with intrinsic need satisfaction among adolescent male footballers and cricketers. Their findings suggest that players who perceived their coach as autonomy-supportive were generally more positive in their perceptions of autonomy, competence, and relatedness. Similarly, Coatsworth and Conroy [22] found that swimming coaches’ use of autonomy-supportive behaviours, particularly through process-focused praise, predicted the satisfaction of the three psychological needs for their athletes. These studies have focused on a pedagogical approach to psychological need satisfaction and it is noteworthy that although the term used is autonomy-supportive it might be more appropriate to term this approach as need-supportive. The seven pedagogical behaviours as espoused by Mageau and Vallerand [2] were proposed to support all three psychological needs – autonomy, competence, and relatedness – not only autonomy.

Coach behaviours have been consistently linked with motivational outcomes in athletes [1, 5, 34]. Hollembeak and Amorose [29] investigated the relationship between perceived coaching behaviours and the impact on intrinsic motivation for college athletes from various team and individual sports. Their findings illustrated that coaches who displayed democratic coaching behaviours (e.g., allowing for athlete input and choice) positively affected athletes’ perceptions of autonomy and intrinsic motivation, whereas coaches who displayed autocratic behaviours (e.g., coach exerting sole authority over decisions) had a negative effect. Likewise, Amorose and Horn [34] found that coaches who provided a high frequency of positive, encouraging, and informational feedback, created an environment that facilitated the development of intrinsic motivation in their college athletes. As predicted in SDT, the authors argued that the increase in intrinsic motivation was due to the ability of such coaching behaviours to enhance both athletes’ perceptions of competence and their sense of self-determination. Consistent with the findings of Amorose and Horn [34], Carpentier and Mageau [35] reported the positive effect of autonomy-supportive change-orientated feedback. More specifically, with a sample of 340 athletes aged between 11 and 35 years from 13 different sports and 58 coaches aged between 18 and 72, the authors investigated the impact of change-orientated feedback on the athletic experience. A key finding was that athletes who received this type of feedback were more motivated, had higher levels of well-being, and reported greater psychological need satisfaction.

Autonomy-supportive coaching is also associated with athletes’ motives for sport participation [10, 17]. Gagné et al. [10] investigated the effects of perceived parent and coach autonomy-support on the motivation and well-being of gymnasts. Through data collected from training diaries, Gagné et al. found that athletes’ perceptions of parental autonomy-support and involvement were linked with increased autonomous motivation. Similarly a study by Almagro et al. [36] examined the motivational climate created by the coach and the subsequent impact on athlete intrinsic motivation and adherence to sport. The sample consisted of 608 male and female athletes aged 12 to 17 years in a number of team and
individual sports. Similar to the findings of Gagné et al. [10], it was noted that athletes who felt their input was valued and received praise for autonomous behaviour from the coach experienced satisfaction of their need for autonomy, increased intrinsic motivation, and increased intention to be physical active. Together, these findings highlight the importance of an autonomy-supportive interpersonal style in the facilitation of increased autonomous motivation and promotion of adherence and persistence.

In a theory-to-practice paper, Mallett [23] suggested that one of the many benefits of an autonomy-supportive pedagogical approach to sports coaching related to facilitating performance outcomes. As an elite coach and sport psychologist, Mallett considered the coaching behaviours outlined by Mageau and Vallerand with his coaching of the Australian men’s Olympic track relay teams. Central to his thesis about the benefits of an autonomy-supportive approach to coaching was that performance in elite sport is not compromised. Athlete performance times improved, with a further improvement in the cauldron of Olympic competition. While the significance of the occasion may have contributed to improvement, Mallett [23] stated that, “there were observable positive behavioural and affective outcomes that were considered attributable at least in part to the autonomy-supportive approach” (p. 427). This assertion was given further credence as, compared to previous championship campaigns, athletes reported increased levels of autonomy, competence and relatedness, suggesting that autonomy-supportive coaching behaviours have potential benefits in real-world settings. Additionally, a study by Gillet et al. [37] with 101 judokas tested the link between coach autonomy-support and performance using the framework of SDT. They found athletes’ performance of judo increased among those who perceived their coaches as autonomy-supportive exhibited behaviour that was more self-determined. Given one of the fundamental roles of coaches is to improve the performance of their athletes, it is perhaps a logical progression to consider that coaches who create environments where need-satisfaction is facilitated may, in turn, foster an increase the performance outcomes for their athletes.

CREATING AN AUTONOMY-SUPPORTIVE ENVIRONMENT

There is consensus in the sport coaching literature that coaches exert a major influence on the sporting experience of athletes. The way the coach-athlete relationship is developed and fostered influences athlete outcomes. Mageau and Vallerand [2] developed a motivational model of the coach-athlete relationship illustrating that the environment in which coaches’ autonomy-supportive behaviours occur positively influences athletes’ motivation. In this model, Mageau and Vallerand propose three variables that may directly influence autonomy-supportive coaching behaviours: the coach’s personal orientation, the coaching context, and the perceptions of athletes’ behaviour and motivation. Mageau and Vallerand’s model infers that these three causal factors independently influence a coach’s behaviours. While the authors’ intention might not have been to infer such independence, an understanding of the relationships between these key factors is central to understanding the complexity of why coaches behave the way they do. Similarly, Côté et al.’s [38] coaching model proposes the interrelationships between the coach, athlete, and context in framing how coaches behave in developing athletes. Therefore, it is proposed that research might examine these individual antecedents independently as well as their potential interdependencies and their relationships with coachingbehaviours.

A coach’s personal orientation reflects the behaviours they are likely to emit. For example, a coach who “must win at all costs” is likely to adopt a coach-centred approach; whereas a coach whose focus is about athlete development may have more of an athlete-
centred approach. The coaching context also influences a coach’s use of autonomy-supportive behaviours; for example, if a coach is feeling pressured to perform under high levels of stress (e.g., fear of losing their position), they could produce more controlling rather than autonomy-supportive pedagogical behaviours. Finally, the coach’s perceptions of the behaviours and motivation of the athletes can influence the level to which a coach is autonomy-supportive. Amorose [39] suggested that given the importance attributed to coach behaviours on athlete outcomes, research needs to investigate these antecedents of coaching behaviour.

Initial evidence from Stebbings et al. [15] supports the notion that coaches whose context support their psychological needs and well-being are likely to display autonomy-supportive coaching behaviours. Researching the antecedents of coaching behaviours is considered important to guide adaptive behaviour change and also inform coach development. The role the coaching context plays in thwarting or supporting coaches in displaying autonomy-supportive behaviours is an area for future work. Despite these proposed links, to date there have been few research articles examining how these factors impact on coach behaviours and attempts to become more autonomy-supportive. Furthermore, there has been little published empirical examination that has elaborated on these three factors considered to influence coaching behaviours.

CHALLENGES FOR AUTONOMY-SUPPORTIVE COACHING RESEARCH

Research conducted on autonomy-supportive approaches within sport coaching supports the conceptual model proposed by Mageau and Vallerand [2] underscoring links between coaches’ behaviours and athlete outcomes. Nevertheless, there has been a lack of research that has examined the antecedents of coaches’ pedagogical behaviours as proposed by Mageau and Vallerand [2]. Specifically, this relates to the coach’s personal orientation, the coaching context, and the perception of athletes’ behaviour and motivation. Moreover, there has been a paucity of literature that has reported the real-world implementation of an autonomy-supportive pedagogical approach to coaching.

LIMITED EVIDENCE OF THE CHALLENGES IN TRANSLATING THEORY TO PRACTICE

For some coaches, a behavioural shift to becoming autonomy-supportive might present a significant challenge with regard to their understanding and their practice [40]. The research conducted thus far in relation to the challenges of moving from a controlling coaching style to being more autonomy-supportive is limited. For sports coaching researchers looking to position their work within the findings of previous research, there is an obvious lack of intervention studies where sport coaching is the pedagogical setting; however, research conducted in the educational context may be generative in informing future research in coaching settings. Using a SDT framework, intervention studies in educational research have explored whether or not a teacher can learn to teach using an autonomy-supportive teaching style. A meta-analysis of intervention studies and their effectiveness in developing autonomy-support was conducted by Su and Reeve [41]. The purpose of their article was to collate 30 years of intervention research in SDT and assess whether intervention studies are effective in developing autonomy-support. Their overarching finding supports the contention that people (teachers, carers, parents, instructors) in helping professions can learn to become more autonomy-supportive towards others. These are encouraging findings for coach education researchers. Currently the body of research in coaching within a SDT framework
has examined the effects of coaching behaviours on athlete outcomes, especially intrinsic motivation. However, the empirical support within the education literature regarding the malleability of teacher’s interpersonal style should direct coaching researchers to the utility of such intervention studies in coaching. Amorose [39] hints at a shift in research focus when he calls for future research to “develop and test coaching effectiveness interventions” (p. 223).

Unlike Mallett [21], the work of Ahlberg et al. [39] and unpublished work by Byrne [42] suggests the need to problematise attempts in shifting to a more autonomy-supportive interpersonal style. As a basketball coach of youth aged athlete high school athletes, Byrne used an action research methodology to assess his coaching and attempt to incorporate a more autonomy-supportive approach. Using a variety of data sources (e.g., observation by a critical friend, video and voice recording, reflective journal and questionnaire), Byrne sought to move towards being more autonomy-supportive in his coaching. Firstly, he claimed his personal orientation was autonomy-supportive. He subsequently attempted to adopt the behaviours listed by Mageau and Vallerand [2] to facilitate change within his coaching; however, he found translating theory to practice highly problematic. Not only did attempting to become more autonomy-supportive present some challenges to Byrne [41], it also led him to ponder other related questions such as: ‘Are some behaviours more important than others’? and ‘Is a coach required to display all the behaviours all of the time to be considered autonomy-supportive?’

Similarly, Ahlberg et al., [40] used an action research methodology to assist a rugby coach in creating an environment that sought to promote players’ self-determined motivation through providing rationales for specific tasks and allowing athletes some choice in training. The coach proactively sought assistance in developing his coaching practice as he thought there was value in an autonomy-supportive approach. The coach described his current coaching style as direct with high intensity and discipline within sessions so that athletes could develop within pre-set limits and boundaries. The findings of the study suggest that the coach’s self-awareness increased during the study, but he noticed that it required constant time and effort. For the coach, changing his coaching through two key behaviours was challenging as it was in contrast to his own (socially constructed) personal orientation and beliefs about quality coaching. These two qualitative studies suggest examination of the coach’s personal orientation and an autonomy-supportive interpersonal coaching style; for example, the implicit theories of coaches about what is good coaching practice; the cultural influences on how coaches have learned to coach and the strength of that learning; and perhaps the integration of coaches’ personalities and their motives and strivings to coach.

INFLUENCE OF COACHING CONTEXT

In addition to the personal characteristics of the coach, the context in which coaching occurs likely exerts a strong influence over coach behaviour. It is proposed that the context in which coaches and athletes operate, especially high-performance contexts, is complex with competing demands and expectations of many stakeholders subsequently making the implementation of an autonomy-supportive approach to coaching potentially problematic. As previously stated, Mallett [23] infers a somewhat unproblematic portrayal of using an autonomy-supportive interpersonal coaching style. Nevertheless, a few studies [e.g., 39, 41] have identified some contextual challenges in becoming autonomy-supportive. The pressure to perform at the high-performance level in sport can produce significant stress, which can lead to controlling behaviours [2]. Moreover, some coaches believe they need to control as many variables as possible to produce successful and predictable performances [43] and
therefore may be sceptical of too much (if any) athlete involvement (autonomy) in the coaching process.

The influence of context on motivational climate has been investigated in educational settings. Reeve’s [44] research on teachers’ interpersonal style has highlighted the role of external pressures (e.g., academic results) in producing a controlling motivational climate in classrooms. McLean and Mallett [45] suggested that for some coaches, the notion of ‘athlete involvement’ in decision-making might just be rhetoric (i.e., while espousing their commitment to establishing autonomy-supportive environments for their athletes, their behaviours are typically controlling in orientation). For example, although coaches might offer choice, the manner (tone) in which they communicate that choice might be perceived as controlling. Further, McLean and Mallett [45] argued that a reluctance to involve athletes in the coaching process might, in part, stem from a lack of understanding about what being autonomy-supportive entails and the potential benefits of such an approach [46].

LIMITED UNDERSTANDING OF INDIVIDUAL AND INTERACTION EFFECTS

The individual and interaction effects of personal orientation and coaching context are yet to be examined in any depth. Indeed, research is necessary to determine the saliency of both variables at the situational and contextual level and if their interdependence determines the feasibility of shifting towards an autonomy-supportive approach to coaching practice. Hence for coaches it raises a key question: Are there times when it is appropriate for a coach to be more autonomy-supportive and times when they should be less so? Qualitative research appears to give some credence to this supposition. d’Arripe-Longueville et al. [47] analysed the temporal and contextual organisation of coach-athlete interactions in elite male archery competitions and found that respect for the athlete’s autonomy in competitive settings depended on how the coach perceived the characteristics of the situation. Specifically, in situations that the coach deemed favourable for the archers’ performance, the coach respected the athletes’ approach and avoided intervening and discussing the shooting process. In contrast, in situations perceived as unfavourable for the archers’ performance, the coach placed greater importance on being at the archers’ disposal and encouraging the archers to initiate the interaction and to interpret their own results. Furthermore, when total agreement between parties was not reached, sensing a need for fast and efficient decisions, the coach was more likely to provide the athlete with generic advice rather than take risks of giving irrelevant instructions, or leaving them in doubt by not saying anything [47]. Potentially researchers need to change how they conceptualise the measurement of autonomy-supportive behaviours in the sporting domain. Current methods frequently overlook the inherent fluctuations in the environment, whereby coaches may move along a continuum of relative autonomy-support depending on the situation. Moreover, the accuracy of these behavioural judgements made by coaches is yet to be examined.

INVOLVEMENT OF OTHERS

In addition, within the coaching context it is important to acknowledge the involvement of others and the impact they can have on coaching behaviour. For example, at the youth development level parents are influential actors, whose interactions with coach and son/daughter can impact coaches’ behaviour. Byrne [42] acknowledged this influence when speaking of the openly critical feedback received from parents when observing his attempts to adopt an autonomy-supportive coaching style. Some parents perceived his coaching as laissez-faire; that is, they thought he was doing very little directive coaching, which was considered appropriate by the parents in producing successful performances. Mageau and
Vallerand [2] hint at this potential confusion and subsequently make the distinction that, “an autonomy-supportive style cannot be confused with a permissive or laissez-faire interpersonal style” (p. 893). Again, this may suggest that coaching programs may need to include how to educate parents on different pedagogical approaches to coaching and provide the evidence supporting their efficacy and limitations.

COACH PERCEPTIONS OF ATHLETE BEHAVIOURS AND MOTIVATIONS
Coaches’ behaviours are further influenced by how they perceive the behaviours and motivations of the athlete [2]. Reeve [44] contends that teachers display controlling behaviours when it is perceived that students are disengaged, off task or lacking motivation. The passivity of the students during learning activities tends to promote episodic acts of controlling behaviours, even from teachers considered autonomy-supportive. While not within the field of sports coaching, a study by Pelletier and Vallerand [48] investigated whether a supervisor’s belief about a subordinates’ motivation influenced the interpersonal behaviour as either autonomy-supportive or controlling. The findings suggest that when individuals interact with each other they often bring with them preconceived beliefs that influence the interpersonal styles they predominately adopt. For example, when supervisors perceived their subordinate to be extrinsically motivated, they adopted a more controlling and less autonomy-supportive approach and vice versa. Similarly, Mageau and Vallerand [2] suggest that coaches who perceive a lack of motivation within their athletes are likely to resort to controlling behaviours to artificially produce athlete motivation. Within sports coaching research, the relationship between coach perception of athlete motivation and the enacted coaching behaviours is unknown. Further research should attempt to address this gap in order to build the knowledge base.

ATHLETE PERCEPTIONS OF QUALITY COACHING
Underpinning athletes’ behaviours might be their conceptions of what is quality coaching. This acknowledgement confirms that coaches’ behaviours are not the sole determinant of whether or not athletes feel self-determined in their sporting engagement. Indeed, Deci and Ryan [3] note that in many situations, individuals do not want to be in control and pass that control over to others. Those individuals may continue to experience positive sport participation outcomes psychologically, emotionally and physically, as long as they perceive that they have choice about who has control. Thus, for the promotion of autonomy-supportive coaching, this approach should also consider the athletes they coach. It is likely that in team sports, for example, that a coach has differing perceptions of individual player’s motives and behaviours and how they respond to those differences, if at all. The potential challenges inherent in judging athlete perceptions give some indication of the practical issues involved in the implementation of autonomy-supportive coaching; therefore, it is proposed that the translation of theory to practice is likely problematic.

In attempting to account for this, Pelletier et al. [17] developed an intervention program to promote autonomy-supportive behaviours among swimming coaches that importantly, also aimed to teach athletes how to deal with increased autonomy and to become more proactive in their sport environment. Results indicated that a year and a half into the program athletes perceived their coach as significantly less controlling, and more autonomy-supportive. Athletes’ perceived competence and intrinsic motivation toward swimming showed significant increases as well. This finding suggests that it may not be enough to focus solely on educating the coach; rather, helping athletes deal with their newly acquired autonomy may be an important aspect of successful application of an autonomy-supportive
coaching environment. Moreover this study was conducted over 22 months, perhaps highlighting the issue of time required in changing perceptions and subsequent behaviours.

Indeed, athlete perceptions appear to have significant consequences for how coaching is received. Research by Solomon et al. [49] found that, among Division I American collegiate coaches and athletes, a significant relationship existed between coaches’ years of experience and athletes’ perceptions of coach feedback, expectations, and encouragement. Moreover, this relationship was influenced by the expectations coaches had for individual athletes’ success. Specifically, high-expectancy athletes perceived less experienced coaches more favourably than did low expectancy athletes, while low expectancy athletes perceived more experienced coaches with greater favour than their high expectancy counterparts. Accordingly the coach needs to allow for variations in athlete needs, motivation, and perceptions. From a research perspective, data should be collected from both the coach and the athlete (and perhaps other stakeholders) in order to assess any (in)congruencies and attempt to capture important contextual information.

CONCLUSION
Research within the sports coaching domain has shown much support for the positive consequences of autonomy-supportive approaches; however, an understanding of the antecedents and implementation of such pedagogical behaviours has been largely ignored. It is proposed that future research consider the many complexities of the coaching environment so that autonomy-support can be understood and implemented in real-world settings to the benefit of both coaches and the athlete(s) with whom they work. Specifically, the interdependencies between the coaches’ personal orientation, coaching context, and the coach’s perceptions of their athletes’ behaviours, are worthy of investigation as well as other pertinent factors (e.g., involvement and structure).

The aforementioned literature was reviewed to create a summary of the research conducted on autonomy-supportive coaching behaviours within the SDT framework. The literature has been useful in testing, and in many cases, supporting the theoretical underpinnings of SDT within the sporting context. Mageau and Vallerand’s [2] motivational model significantly contributed to research through emphasising the central role of the coach in the coach-athlete relationship. However, this volume of work has focused primarily on athlete perceptions of coach behaviour and associated athlete outcomes while there has been a paucity of research examining those factors that influence coaching practice as proposed in the Mageau and Vallerand model. Neglected thus far in this relationship is the voice of the coach, with athlete perceptions of coaching behaviour the dominant form of data collection. As such, future research should be directed towards a deeper understanding of the relationships between a coach’s personal orientation, the context in which he/she operates, and the coach’s perceptions of an athlete’s behaviour and motivation.

Currently, the literature within a SDT framework has been primarily informed by athlete perceptions of coaching behaviour, which has involved large-scale survey design across sports, gender and age. While this research has supported the theoretical underpinning of SDT, we might consider integrating a variety of methodological approaches and ‘voices’ to construct a more complete understanding of the coaching process. To date there have been a number of articles published using a qualitative research methodology investigating coaching effectiveness [50] and quality coaching attributes [51, 52]. While these papers are within the field of sports coaching, they are outside the framework of SDT. It is plausible to consider that qualitative research methods specific to SDT and sports coaching may assist in enhancing our understanding of the barriers and enablers to adopting an autonomy-
supportive interpersonal style.

It may also be prudent to move beyond the traditional divide between psychological and sociological perspectives of sport and sport coaching to better understand the independencies between the individual and the social. For example, how might we better understand the contextual pressures to coach in particular ways that are not consistent with autonomy-supportive coaching? Providing a holistic view of the coaching landscape may involve combining critical and cultural psychology with more sociological understandings to consider the environmental/structural and individual/agency aspects of coaching practice. In practicality, this shift in orientation supports the social and psychological context of coaches’ work. Through the application of Vallerand’s [6] HMIEM, research might examine the temporal nature of autonomy-supportive approaches and the various coaching contexts (participant, development and elite) in which different behavioural approaches may be more or less effective. This consideration might involve more applied, intervention and in situ studies conducted with coaches and athletes and in various sport settings. Research conducted in educational settings has provided some insights into the utility of intervention studies in changing behaviours that might guide some aspects of future research in sport coaching.

It seems prudent to investigate the degree to which coaches are more or less autonomy-supportive or controlling and if that is consistent in different contexts (participation sport, performance coaching contexts) and cultures (specific sports, countries). Furthermore, research has described individuals as autonomy-supportive or controlling; however, evidence from quantitative research [e.g., 14, 34] suggests that it could be conceptualised as orthogonal. Moreover, coaches are likely to display autonomy-supportive and non autonomy-supportive behaviours to differing degrees and at varying times (e.g., during training, competitions, and championships). Sport coaching researchers might consider testing both autonomy-supportive and controlling behaviours simultaneously to observe the effects on athlete outcomes in varying sporting contexts. This focus might elucidate where to place importance in coach intervention studies; for example, the promotion of autonomy-supportive behaviours or the suppression of controlling behaviours? Furthermore, how might future studies consider the introduction of specific coaching behaviours at particular stages of an intervention? Understanding the factors that influence the decisions regarding what coaches do will lead to further developments in coach education with to assist coaches in adapting their behaviours. Nevertheless, to determine optimal coaching behaviours, research might consider the moderating effects of coaches’ personal orientation and their athlete’s learning preferences.

Finally, there is developing knowledge that autonomy-supportive behaviours are linked to need satisfaction [32] and controlling behaviours are linked to need-thwarting [14]. Investigations of the conceptual and empirical links between autonomy-supportive and controlling behaviours might consider the relationships between the antecedents of coaches’ behaviours. Furthermore, future research might consider whether structure and involvement play a mediating or moderating effect on the variables of coach, athletes, and context.

There is theoretical and empirical support for coaches to be autonomy-supportive; however, adopting this approach to coaching can be challenging for all actors and thus poses inherent hurdles to broad acceptance of its implementation. Future research to investigate the problematic nature of translating theory to practice is central to informing coach development at all levels of participation to foster positive psychological growth and well-being.
ACKNOWLEDGEMENT
The authors wish to acknowledge and thank the collegial support and constructive feedback of the reviewers in refining this manuscript.

REFERENCES


