Developing autonomy supportive coaching behaviors: An action research approach to coach development.

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Abstract

Motivation is an important factor influencing human behavior, especially to those (e.g., coaches) whose roles involve mobilizing others to act (Ryan & Deci, 2000). Coach behaviors can impact the motivation of the player according to self-determination theory (Deci & Ryan, 1985). This case study documented the changes to a coach's practices using an Action Research (AR) process. The participant coach was responsible for a group of rugby players who were part of a high performance youth development squad. Data collected from three sources (i.e., coach, player and critical friend) were triangulated to examine the impact of the AR process on (a) improving coaching practices and the subsequent changes in the satisfaction and motivation of players; and (b) coach development. The results of the current study supported the use of a 'technical' AR process in increasing awareness of a coach's personal coaching behaviors, developing evidence-based review processes that can improve coach development, and facilitating players' autonomy. However, further research examining the long-term benefits of action research in facilitating coach development is proposed.

Keywords:

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The ability of coaches to develop athletes' self-motivation is viewed as a key component of their role (Mallett, 2005). Coaches' actions and behaviours can create environments that promote athletes' empowerment and self-motivation, which is important because motivation is important to those (e.g., coaches) who influence others, because their roles involve, in some part, mobilizing others to act (Ryan & Deci, 2000). Much of the current research into social-cognitive theories of motivation discusses the central role that social factors (e.g., coach behaviours, coach-athlete relationships) play in promoting adaptive forms of motivation. Deci and Ryan's (1985) Self-determination theory (SDT) and Vallerand's (1997) Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM) both highlight the influence that social factors can have on various forms of athlete motivation. Deci and Ryan (1985) conceptualized motivation as multi-dimensional, and the importance of understanding the various forms of motivation was underscored by Vallerand (1997) who highlighted that people are moved to act by different types of motivation with varying consequences. Self-determined motivation is central to personal growth and development (Ryan & Deci, 2000). A key question is how coaches promote players' self-determined motivation. Therefore, this study examined a coach's attempts to promote players' adaptive (self-determined) motivation.

Multi-dimensionality of Motivation

In conceptualizing intrinsic motivation, several researchers have focused on the innate needs of self-determination or autonomy (deCharms, 1968; Deci, 1975), which is associated with one's perception of personal choice in undertaking action. For example, a player may choose to participate in a particular game (i.e., perceived internal locus of causality), or be coerced by his or her parents or coach to participate (i.e., perceived external locus of causality). The perception that choice has originated from within one's self underpins the concept of an internal locus of causality (Deci & Ryan, 1985). SDT proposes that a person needs to perceive the causes of motivated behaviors to reflect an internal locus of causality to be self-determining. This is consistent with deCharms' (1968) notion that 'man' strives for personal control of his or her behavior (i.e., "personal causation").

Based on the concept of perceived locus of causality (PLOC), Ryan and Deci (2000) classified motivation into two major forms: (1) self-determined, and (2) non-self-determined, which can be viewed along a continuum (see Figure 1). Self-determined motivation (internal PLOC), which includes intrinsic motivation and self-determined extrinsic motivation (SDEM;

Vallerand, 1997), produces positive consequences and outcomes (e.g., positive affect) (Amiot, Gaudreau, & Blanchard, 2004; Pelletier, Fortier, Vallerand, & Brière, 2001). Non-self-determined motivation (external PLOC), which includes amotivation and non-self-determined extrinsic motivation (Non-SDEM; Vallerand, 1997), is often associated with negative consequences (e.g., attrition from sport) (Amiot et al., 2004; Pelletier et al., 2001).
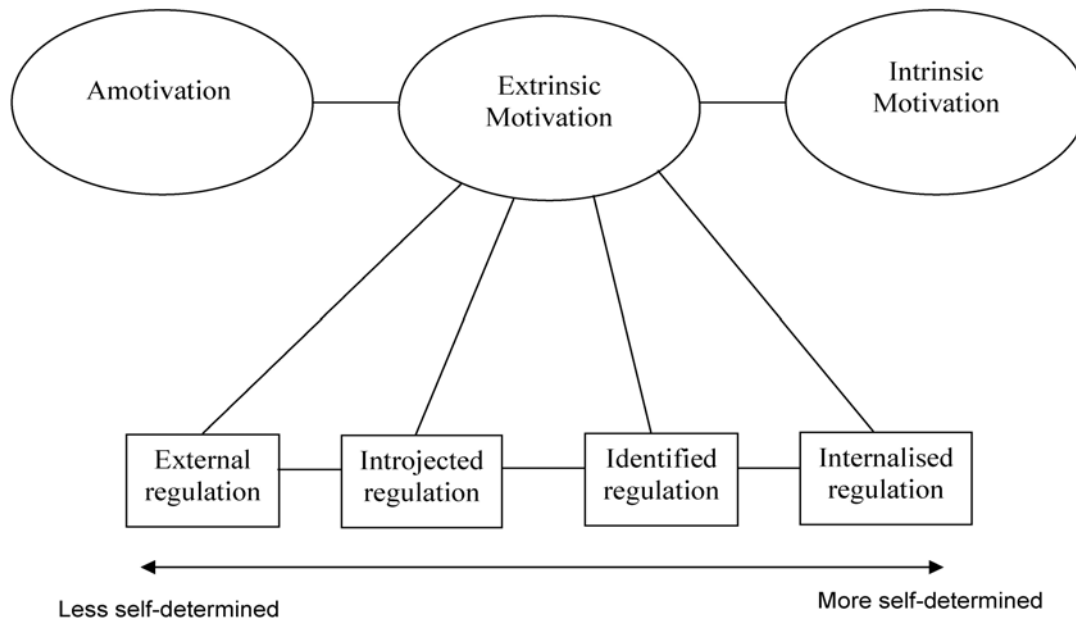
Figure 1. The self-determination continuum.

An important aspect of the multi-dimensionality of extrinsic motivation is that over time less enjoyable activities can move from non-SDEM to SDEM (Deci, Eghrari, Patrick & Leone, 1994) through a process called 'internalization' (Deci & Ryan, 1985). The internalization process has important meaning for coaches working to develop adaptive forms of motivation in their players. Coaches may be able to refine and alter their own practices to facilitate an player's movement from an external locus of causality to an internal locus of causality, which has been associated with better performances (Amiot, et al., 2004), persistence (Pelletier et al., 2001), and the use of positive coping strategies in stressful situations by players (Amiot et al., 2004).

Coaches' Behaviors and Players' Self-determined Motivation

Psychological needs of players. Vallerand and Losier (1999) proposed a motivational sequence (see Figure 2), which proposes that social factors (e.g., coaches) influence people's motivation indirectly through the satisfaction of three psychological needs of humans-competence,

autonomy and relatedness (Deci & Ryan, 1985). That is, the three psychological needs of people mediate there lationship between social factors (e.g., coach behaviors) and motivation (e.g., intrinsic). Vallerand and Losier explained that social factors (e.g., coach-player relationship) that are perceived by the player as supportive of their autonomy, competence and relatedness will positively impact self-determined (adaptive) motivation whereas social factors that are perceived as inhibiting satisfaction of the three psychological needs can undermine self-determined motivation.
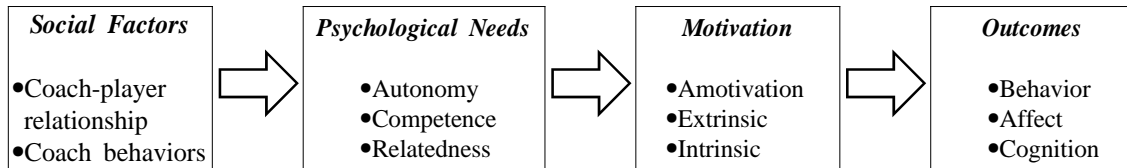
Social Factors		*Psychological Needs*		*Motivation*		*Outcomes*
•Coach-player relationship •Coach behaviors	⟹	•Autonomy •Competence •Relatedness	⟹	•Amotivation •Extrinsic •Intrinsic	⟹	•Behavior •Affect •Cognition

Figure 2. Vallerand and Losier's (1999) motivational sequence.

Coach-player relationship. The coach-player relationship has been shown to be important to (a) the satisfaction of players (Salminen & Liukkonen, 1996), (b) enhancing the motivation of athletes (de Swardt, 2004), and (c) to enhancing athletic performance (Butler, 1997; Vealey, Armstrong, Comar & Greenleaf, 1998). Mageau and Vallerand (2003) suggested that a productive means of developing an optimal coach-player relationship and ensuring that players perceive social factors such as coach behaviors as supportive of their autonomy is for coaches to behave in particular ways that promote the satisfaction of the three psychological needs. Mageau and Vallerand discussed seven broad coaching behaviors, based on an extensive review of the literature on self-determination theory (SDT; Deci & Ryan, 1985), which can facilitate perceptions of autonomy, competence, and relatedness: (1) providing players with choices; (2) providing players with rationales for tasks; (3) acknowledging the feelings and perspectives of players; (4) giving players opportunities for initiative taking and independent work; (5) providing players with information and feedback regarding their competence on a task or skill; (6) avoiding controlling behaviors; (7) creating a task-focused rather than ego-focused. By incorporating some of these behaviors into their coaching style, coaches can create a positive environment that fosters self-determined motivation in their players and adaptive coach-athlete relationships.

Coaching styles that develop autonomy. Lyle (2002) describes two major coaching styles that reflect coaches' value systems-the authoritarian/autocratic style and the democratic/person-centered style. The autocratic (coach-centered) style is characterized by the coach as the central decision-maker, using a directive, dominating approach to learning where the transmission of knowledge is mostly unidirectional from coach to player (Lyle, 2002). Conversely, the democratic (athlete-centered) coach encourages player participation in some decision-making, and utilizes an open communication process such that the transmission of knowledge is interactive between coach

and player. The athlete-centered coach tends to be more flexible in the choice of coaching methods, shows empathy towards players and understands the player's personal situations (e.g., life outside of sport) (Lyle, 2002). Current research shows that generally a democratic coaching style is preferred by players (Carron & Bennett, 1977; Chelladurai, 1990), however, coaches generally use more autocratic styles (Castle, 2002; Chelladurai, Haggarty, & Baxter, 1989; Chelladurai, 1990).

Mosston (1966) developed a spectrum of teaching styles as a tool for teachers to reflect on their teaching methods (Mosston, 1972). Coaches in reflecting upon their coaching practices can use the same spectrum. Although Mosston (1966) designed 11 teaching methods, Kirk, Naughright, Hanrahan, Macdonald, and Jobling (1996) synthesized the 11 methods into five integrated teaching practices (direct, task, reciprocal, guided discovery, and problem solving). Cassidy, Jones and Potrac (2004) report that there is a strong relationship between the guided discovery and problem-solving methods and learner-centered coaching practices (democratic style of coaching). However, Jones, Potrac, and Ramalli (1999) found that the eight male physical education teachers from west London used more learner-centered pedagogical practices in their teaching compared with their coaching. Perhaps the teacher-coaches sought greater control over the athletes in comparison with physical education students.

Consistent with Mageau and Vallerand's (2003) description of autonomy-supportive coaching behaviors, Mallett (2005) developed an autonomy-supportive environment while working with the Australian men's track relay teams competing at the 2004 Athens Olympics. Mallett explained that offering players an active role in decision-making regarding some aspects of preparation and competition helped to develop player autonomy and subsequently facilitated adaptive forms of motivation. The relationships forged by practices of coaches can have a positive impact on player satisfaction and motivation (Mallett, 2005). The development of a healthy coach-player relationship is paramount to promoting satisfaction of the three psychological needs and, in turn, adaptive forms of motivation that subsequently produce positive consequences (e.g., positive cognitions, affect and behaviors) (Ryan & Deci, 2000). This may mean that coaches should actively review their practices in order to improve "how" they coach and to improve the relationship that is created with their players.

For players to develop as 'intelligent performers', Mallett (2004) proposed that coaches should be mindful of their own pedagogical practices and described reflection as an important tool for empowering and motivating an individual to improve their practice. Reflection is a conscious, thoughtful, and intentional analysis of one's practice (Tinning, Macdonald, Wright, & Hickey, 2001). Although research on reflection is more prevalent in the teaching context (e.g., Tinning et al., 2001), this principle of reflective practice can also be applied to coaching (e.g., Gilbert & Trudel, 2001). Schön (1987) argued the benefits of reflection in the construction of

knowledge. His discussion of *reflection-on-action* as being concerned with analyzing and evaluating information after the completion of the activity can be particularly useful for coaches in terms of improving their practices. Action Research (AR) is a process through which coaches can develop their engagement in reflective practice and is discussed next.

Action Research (AR)

Action research (AR) has been described as "a form of collective self-reflective enquiry" (Kemmis and McTaggart, 1988, p. 5), which is "undertaken with rigor and understanding so as to constantly refine practice; the emerging evidence based outcomes will then contribute to the researching practitioner's continuing professional development" (Koshy, 2005, p. 2). Both definitions emphasize the importance of the process involved, which is more important than whether four or five steps were used, or whether one or two cycles were used as has been the basis of definitions of AR in previous literature (Fairs, 1987; Twine & Martinek, 1992). Two major goals of the AR process are to increase one's understanding of their own professional practice in a systematic manner and to use this understanding to improve the quality of that practice (Kemmis & McTaggart, 1988). Technical action research embraces reflection that would lead to control over or direction of practice and uses reflection as the source of knowledge which will inform practice (Grimmett & Erickson, 1988). Accordingly the primary aim of this research was to improve the participant's awareness and subsequent practice using a self-reflective enquiry approach, which is the essence of the technical AR methodology (Kemmis & McTaggart, 1988; Koshy, 2005).

Basic process of AR. Tinning (1992) explained that in general when AR is discussed people refer to a cyclic process involving planning, acting, monitoring and reflecting (see Figure 3). Kemmis and McTaggart (1988) identified a number of key points that underpin the purpose of action research. First, AR is not a method used to collect data to test hypotheses; rather it has as its main aim the improvement of the practice of the participant investigator. Second, because an aim of AR is to improve practice it is participatory in nature, which means that the investigator is a participant, and is involved in all facets (e.g., review of personal practices, planning for behavior change, and implementation of strategies aimed at behavior change) of the process. Third, AR is a self-reflective process that is cyclical in that the participant moves through stages including planning, acting, observing and reflecting (i.e., cycle 1), then re-planning, further acting, observing and reflecting (i.e., subsequent cycles) in order to improve her practice. Finally, AR is collaborative in nature such that it involves input from several sources to best identify and plan behavior modification. These multiple sources (e.g., players and critical friend) are used to increase the breadth and depth of information (Patton, 2002) upon which the participant researcher bases his/her decisions regarding behavior change.
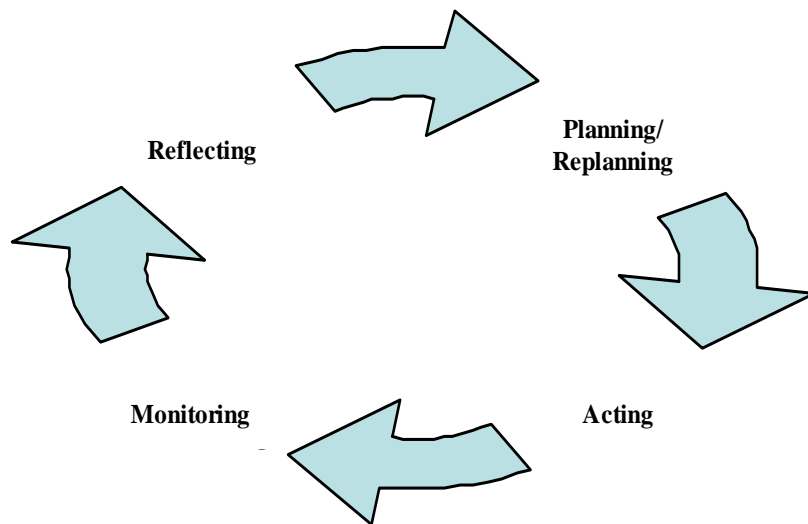
Figure 3. The cyclical nature of Action Research involving four key
phases: planning, acting, monitoring, and reflecting.

Using AR in coach development. Problems with differential understandings of the AR process outlined earlier may have limited the knowledge and understanding of the benefits and shortcomings of AR. Furthermore, a lack of research on the coaching process from a socio-cultural perspective might have limited the use of AR in coaching. However, some examples of AR examining coaching practice have been reported. For example, Barker-Ruchti (2002) reported on her experiences using AR as the coach of 12 gymnasts aged between 8 and 15 years. Barker-Ruchti described the benefits of using AR as being an increased understanding and development of the coach-player relationship with a particular focus on maximizing the positive outcomes of the relationship (e.g., enhanced independence, self-responsibility, and intrinsic motivation). Kidman and Carlson (1998) facilitated the use of AR in the modification of coaching behaviors in five coaches from different sports participating in a Level 2 General Coaching Principles Course. Kidman and Carlson reported that all five coaches felt the AR process was beneficial, specifically in increasing their self-awareness regarding coaching practices, increasing their willingness to identify and improve certain aspects of their practice, and in facilitating behavior change. A limitation of the Kidman and Carlson study is that it followed coaches over just one cycle of AR and this short amount of time may not be sufficient to see lasting behavior change. Another limitation, in terms of understanding the benefits of AR for behavior change in coaches, was that there was no measure of the impact of the coach's behavior change on the players. Kidman and Carlson reported that several of the coaches stated that they would like to be able to measure if and/or how their behavior changes were affecting their players. The findings of the Kidman and Carlson study are important in terms of behavior change in coaches but their results also

highlight a number of areas for future work including: (1) the impact of coach behavior change on the players; (2) the creation of pervasive and lasting coach behavior changes; (3) the use of AR as a coach development process; and (4) the benefits and limitations of an AR process with high-performance coaches.

Summary

Ryan and Deci (2000) underscore the importance of facilitating self-determined motivation and social factors such as coaching behaviors and the coach-player relationship can impact the self-determined motivation of the player (Deci & Ryan, 1985). Therefore, coaches need to be aware of "how" they coach and the impact of their coaching behaviors on player motivation and subsequent satisfaction. Action Research is a reflective process in which coaches can examine their coaching practices and the subsequent influence on their players' thoughts, feelings and behaviors. Furthermore, coaches can use AR to develop their own practices.

The current study primarily sought to examine the use of AR processes to facilitate high performance coach development. AR has been found to be a useful approach to enhance professional practice through self-reflection, self-awareness, and ongoing improvement but how improved professional practice in coaches will impact their players is yet to be assessed. This study used an AR approach to coach development as well as investigating the extent to which coaching practices can create learning environments that promote players' self-determined motivation and satisfaction.

Method

This case study (Patton, 2002) investigated the changes to the coaching practices of an elite rugby coach. Data was gathered through non-participant observer feedback (i.e., field notes and video analysis), coach reflection (i.e., video analysis and post session discussions with a critical friend) and players' input (i.e., semi-structured interviews before and after the six-week intervention). Data were triangulated to examine the impact that changes to coaching practices had on the satisfaction and motivation of players. An Action Research (AR) approach, consistent with Carr and Kemmis' (1986) 'technical' form of AR, was used to examine coaching methods and their impact on player satisfaction and motivation over a six-week period. As part of the AR methodology the coach selected a critical friend whose role was to observe and provide feedback to the coach based on the practices selected for modification. The critical friend was an experienced youth rugby coach and former international player.

Participants

Coach. The coach (Joe) who participated in this study was the Director of a Premier Division Rugby Academy Squad. He was a graduate in sports coaching and undertaking graduate studies in sports coaching. Joe has been the Director of the Rugby Academy for two years and has 10 years of rugby coaching experience at several different levels from novice/social to elite youth (National level). The coach proactively sought assistance in developing his coaching practice; specifically, he wanted to promote a more autonomy-supportive coaching environment for his players.

Players. Five elite level youth rugby players aged between 18 and 24 years ($M = 19.6$ yrs), who were selected to be part of a high performance rugby academy, were participants in this study. The players spend approximately 11 months per year training in the squad whilst continuing to play for their club teams in the Queensland Rugby Union Club competition. The Academy facilitates player development through a carefully planned and implemented training program including, physical, technical, tactical and psychological elements. Moreover, players gained valuable competition and match-related experience from competing for their club teams on a weekly basis.

Interviews and Reviews

The first author interviewed the coach regarding his experience as a coach and also with the AR approach, including the perceived benefits of using AR for coach development, (i) before the AR process, and (ii) after the six-week AR process. Open-ended questions were used to guide the coach in his understanding of the action research approach. These questions assessed the coach's experience with the AR approach, his perceptions of its utility, and of its impact on his coaching practice. Furthermore, the first author took field notes at training sites, which were used as a source of information during the review and re-planning stages of the AR process. During the review and final stages of the AR the first author took on a facilitation role. More specifically, the first author used an open-ended questioning method to ensure that the coach reviewed and understood all relevant information regarding his coaching practices. This facilitation role also included ensuring that the strategies developed during re-planning stages were consistent with the coach's goal of using coaching practices that would maximize player motivation and satisfaction. Players who had been coached by Joe previously were interviewed prior to the AR process regarding his coaching style and after the AR process regarding any perceived changes in Joe's coaching style and the impact of those changes on player motivation and satisfaction at training.

Procedure

This study involved an Action Research (AR) methodology to create a greater awareness of practices in the participant coach (Joe), who was keen to develop his coaching. Joe had indicated to the second author several times that he wanted feedback on his coaching to improve his practice. Furthermore, he attended workshops conducted by the second author aimed at developing coaching practices, which fuelled his interest in positive behavior change. Subsequently, the authors met with Joe on a number of occasions to discuss his involvement in an action research project on his coaching. During these meetings Joe was provided with reading material and information regarding the Action Research approach to behaviour change and a great deal of discussion ensued regarding how the process worked, as well as how it could fit into the coach's schedule. The first author explained to Joe the stages involved in the AR methodology and the data collection required. The participant coach showed great interest in being involved with the project in terms of improving his own practices and getting feedback from other parties on the same.

The AR methodology used in this study was based on Fairs' (1987) and Kemmis and McTaggart's (1988) action research designs, which involved the coach participating in reflective coaching processes across five stages. The data collection and review, planning, action, assessment and evaluation, and review stages were employed to manage the coach's reflection process. A data collection and review phase similar to Fairs' (1987) AR methodology provides valuable information for both the researcher and the coach alike (e.g., the player's preferred coaching styles and a systematic review of the coach's style). Kemmis and McTaggart (1988) included observation and reflection as separate components, which serve to stress the importance of the reflective process as opposed to quantifying coach behaviors by observing the frequency of their occurrence. The authors followed the AR design of Kemmis and McTaggart that encouraged Joe to reflect on his practice through analysis of video footage, his own field notes, and the field notes of both the critical friend (Ned) and the first author. Based on the increase in his own understanding of his practices and their impact on his players the participant coach sought to make some changes to his coaching behaviors. This action research was carried out over a six-week cycle.

Data collection and initial review. The first stage involved the coach reflecting on specific coaching practices using data initially collected. Analysis of videotaped sessions by both coach and critical friend, and review of the field notes (observations of Joe's coaching behaviors) collected by the coach, critical friend, and first author, as well as a review of player interviews provided information upon which the coach reflected and analyzed his coaching behaviors. Data from the three sources of information (coach, player, and critical friend) were triangulated and

provided the coach with information on his dominant coaching styles and behaviors.

Planning. Joe had read a number of articles and spoken with other coaches as part of his own professional development and was interested to see if changes in his own coaching behaviours could facilitate the development of self-determined motivation in his athletes. This second stage involved the coach, critical friend and the first author collaborating on decisions regarding the coaching behaviors to be modified and the subsequent design of strategies aimed at producing change. Based on information discussed during this stage Joe identified a number of his own coaching behaviors that he felt, if modified, could facilitate the development of self-determined motivation in his athletes. The two coaching behaviours that Joe decided on changing were: (a) to provide sound rationales for training tasks, and (b) to increase players' choices in some training tasks. Joe subsequently developed specific strategies to develop those coaching behaviors.

Action. The third stage involved the coach actively implementing planned strategies, aimed at improving the two coaching practices, in his coaching practice over a six-week period. The critical friend and first author attended a number of sessions during this phase making field notes to ensure that the action plans were implemented.

Midway through the six-week action phase the coach, critical friend and first author met for a short review and assessment of Joe's coaching behaviors. These reviews were designed to stimulate Joe's reflection on his coaching. The purpose of these reviews was not to develop new strategies during the action phase but to use the data collected (e.g., field notes, video) to facilitate a reflective process for the coach during the six-week action phase.

Mid-cycle review and assessment. The assessment and evaluation stage, mid-way throughout the action cycle, involved the coach reflecting on and assessing his coaching practices using the triangulated data, which was used to inform the review process prior to the final stages of the action cycle. This stage involved the coach and investigator discussing the perceived utility of the implemented coaching strategies. The AR cycle then continued with the review stage, which involved the coach, critical friend and first author collaborating on possible refinements to facilitate change in the targeted practices. The action, assessment, and evaluation stages were completed as per the previously discussed cycle and a final review stage was completed at which time the data from the coach, critical friend and the players were analyzed again.

Final Assessment and Evaluation. The final assessment and evaluation stage was completed at the end of the six-week action cycle. Joe, Ned and the first author individually, reflected on the video of the final training session and made notes relating to their observations of changes in Joe's coaching practices. These observations and reflections were discussed in a number of interviews and meetings. The first author individually interviewed both Joe and Ned and used a semi-structured interview format to gather data on perceived coaching behaviour changes. The

semi-structured interviews as discussed above were also discussed in this final meeting. The interview included such questions as: (a) What short term changes have you seen in your coaching behaviours as a result of the action research approach?; (b)What medium to long term changes might you make as a result of using the action research approach?; (c) What do you see as limitations of using this process for coach development? These interviews were tape-recorded, transcribed and later analysed for common themes. A final meeting involving Joe, Ned, and the first author was held in order for Joe to receive direct feedback from Ned and the first author. During this meeting the first author also presented de-identified feedback from athletes in the team. This data was gathered during semi-structured interviews held by the first author with athletes. This interview included such questions as: (a) Have you noticed any changes to how Joe has been coaching?; and (b) How have these changes affected you?

Results and Discussion

The Effects of AR on Joe's Coaching Practices

An initial interview with Joe indicated that his goals in coaching were to create 'intelligent players' who could set and work towards achieving their own performance goals. Joe stated that "how" he coached players - to take some responsibility for their learning - was very important to him because at the elite amateur level coaches have limited time to work with players and they need to make the best use of the available time. However, Joe described himself as a fairly direct coach who tried to create a high level of intensity and discipline in sessions so that the boundaries and limits were set from the beginning and the players can learn to develop within those boundaries. Joe discussed the importance of questioning the footballers as he believes that by making them come up with answers helps to create "thinking players".

Field notes collected through observation by Joe's critical friend (Ned) and the first author showed that he was a confident coach who tried to create a training environment of high positive intensity where boundaries and limitations were set from the beginning of each session (e.g., running between drills, emphasis on quality performance). Other features of Joe's coaching practice that were noted included: (1) use of questions (e.g., "What are we trying to achieve in this situation?"); (2) demonstrations of technique; and (3) use of some positive reinforcement. Features of Joe's coaching practices that were identified by Joe and the observers as areas for possible improvement included: (1) specifically using players' names when providing feedback; (2) use of follow up questions to create more opportunity for players to create their own understandings; and (3) to increase the amount of choice players have in their training.

The evaluating and planning phase included Joe reflecting on his own practices, receiving the feedback from both his critical friend and the observer, and discussing a number of coach behaviors reported to create an autonomy-supportive environment (Mageau & Vallerand, 2003). During the evaluation and planning phase Joe reviewed his own coaching performances and identified a number of strengths including creating good intensity, providing accurate technical feedback, and using some questioning when analyzing performance with players. Joe identified developing stronger non-sport relationships with players, asking better quality questions, and creating some choices for players, as areas in which he could improve. Ned felt that he could improve on his explanations, including the underpinning rationales for set tasks, to promote clear communication of what to do and why. Joe consequently decided on two key practices that he would like to improve: (1) creating more choice for the players, and (2) providing clearer explanations and rationales about set tasks for players.

Field notes, video review, and feedback from Ned and players indicated that Joe successfully increased the amount of choice for players. He achieved this by implementing a Position Specific Skills (PSS) training program before team training sessions. Joe designed the PSS for the purpose of giving the players the opportunity to develop skills required to enhance specific positional play. The program was designed such that players selected from a number of alternative tasks/activities. Joe did set some limitations and boundaries for the PSS program, namely: (a) a maximum of five minutes spent on each activity, (b) players work in pairs and were to provide feedback to each other, and (c) drills targeting certain performance aspects must be included. Ned explained that he had observed an increase in choice offered to players by the introduction of the PSS training and that players had responded positively to it. For example, Ned reported that: *"Now the players are coming up to him and saying, '…I want to do tackling or I want to do this and that'"*. Interview data from the players also showed that they perceived an increase in personal choice at training, which they reported had a positive impact on them specifically in terms of being able to work on aspects of their training that they felt needed improvement. For example Jack (player) stated that, *"… the good thing about having more choice is that you can focus on whatever you want to focus on for that session"*. Furthermore, David (player) said that, *"parts of my game like tackling that I've got so much work to do on, I can really work on it in that time"*, and *"I have more control, which I like; its not a dictatorship down here"*. The provision of some choices by Joe, in the implementation of the PSS, was found to be effective in satisfying players' needs for autonomy and consistent with the SDT and HMIEM literature (e.g., Deci & Ryan, 1985; Mageau & Vallerand, 2003; Vallerand, 1997) and player preference for democratic coaching styles (Carron & Bennett, 1977; Chelladurai, 1990).

Data from the field notes, video review, and feedback from Ned and the players indicated

little change to Joe's explanations and rationales for activities at the end of this AR cycle. Ned reported that he noticed a great deal of effort by Joe in planning and putting into action clearer rationales for tasks but admitted that he didn't think they showed much improvement nor were they at the standard that Joe expected of himself.

> ⋯ I think its something that's so ingrained into him that trying to get it out of him is going to take a bit longer than this period of time but there's definitely been that effort in making them [rationales for activities] clearer to the players. (Ned)

Whilst Joe himself reported that he felt there was little if any change in this particular aspect of his coaching (*"I would suggest that I haven't gotten any great improvement yet, I don't think"*), he did report that his awareness of his coaching practices had increased during the AR process and that he was planning to continue working on improvements in his practice: *"I've certainly been more aware ⋯ It has to be ongoing* [AR process] *otherwise I am not going to get the transfer that I want"* (Joe).

Interestingly, data collected during the AR process indicated that Joe began to double-check that players understood the rationales behind activities and encouraged people to voice their uncertainties. Also, players appeared more confident to approach Joe with questions and queries of their own as shown in this quote from one of Joe's players: *"⋯ if he's questioned, he'll take the time to go into depth and really explain it* [rationale for an activity] *to you"* (David, player). Joe appeared more open to discuss aspects of strategy and technique with players and take on board player suggestions. For example:

> We were doing some pattern stuff and [player] came up to me at the end and said, 'Look, for next time can we just change it a little bit to challenge the guys a little bit more?', and that's good ⋯ we can integrate that feedback. (Joe)

Overall, there appeared to be some progression towards the development of an autonomy-supportive coaching environment (Mageau & Vallerand, 2003) by the coach. Whilst Joe sought change in two key behaviors, he found communicating rationales for activities more challenging to improve than providing some choices in tasks. The players seemed to appreciate the opportunity to choose some activities that promoted a sense of autonomy (deCharms, 1968; Deci & Ryan, 1985), which facilitated increased communication between players and the coach. Moreover, the increased communication probably promoted a sense of belonging or relatedness (Deci & Ryan, 1985) and satisfaction of players (Salminen & Liukkonen, 1996) thus strengthening the coach-athlete relationship. Although Joe indicated that providing rationales for tasks was more challenging for him, some players and his critical friend did observe some

changes in that aspect of his coaching. Although there may have been some satisfaction of the three psychological needs of the players during the project, the development of a fully functioning autonomy-supportive environment requires the consistent demonstration of a range of pedagogical behaviors (Mageau & Vallerand, 2003), and therefore will take some time to create.

Perceived Benefits and Limitations of the AR process

A major goal of this research was to investigate the utility of an action research process in coach development. The primary benefits of the AR process reported by the participant coach were: (a) increased awareness of his coaching practices; (b) development of a systematic coach development review process; and (c) players appeared to take more ownership of the training sessions and responsibility for own and other players' development (increased autonomy).

First, the coach reported an increase in awareness of his own coaching practices, and of the player's subsequent responses to them. This finding supports previous research (e.g., Kidman & Carlson, 1998) that also found coaches reported an increased awareness of their coaching practices, which is the first step in behavior change.

Second, Joe reported that the development of a systematic review process that furthers coach development was a major benefit of the project. Joe discussed the idea of current coach accreditation programs being limited in terms of their coverage of "how to coach", which is consistent with other literature (e.g., Jones, et al., 2004). Whilst he spoke highly of the quality of the tactical and technical information provided in current coach accreditation programs he also felt that how this information is "delivered" is critical and there is a gap in this area in the current coach accreditation programs. Joe explained that he felt AR could be a process used to fill this gap in coach accreditation and development as it provides a process of analysis and review from internal and external perspectives upon which improvements in coach practices can be made.

> It's where coach education has to look to go I think. Level 1 is good, and I think level 2 is good.
> Level 3 serves a purpose, but I reckon there needs to be some other level ⋯ a facilitation process
> where coaches can go to develop themselves. (Joe)

Third, observations suggested that the players have taken more ownership of training sessions and provided peer feedback. Ned reported:

> Players are really taking on board the ownership of them being involved ⋯ and we're starting to see
> now a lot more players giving feedback to individuals and helping them in terms of coaching ⋯
> they're starting to demand more from each other as a group.

The literature has not discussed the impact of AR (and subsequent coach behavior change) on players' behaviors, thoughts and feelings. Whilst causation is not implied here, Ned (who has been involved with this group of players for some time) reported that players' ownership of their own training and increased technical feedback between players was observed. These observations support Mageau and Vallerand's (2003) assertion that creating an autonomy-supportive environment can facilitate an increased internal locus of causality and a shift towards more self-determined motivation in players. The two strategies of (a) providing more choice, and (b) rationales for tasks seemed to promote an internal locus of causality in the players, albeit in a small way. This trend towards promoting an internal PLOC is encouraging considering the short duration of the AR process (six weeks).

Two major limitations of the AR process were identified throughout this study. First, whilst an increase in awareness is important in order to create change it can also hinder the coaching process if the coach becomes too focused on every word that they say and every gesture that they make. Second, because of its behavior changing purpose the AR process takes time, meaning that any changes may not be evident for a long period or that short-term changes may disappear once the active review process ends. Kidman and Carlson (1998) discussed the notion that behavior change may occur whilst the specific change is targeted but once "conscious concentration" has been refocused elsewhere, maintenance or continued change may not occur. Joe, who reported the entire process as very beneficial, did not endorse these limitations. Whilst Joe identified that too much awareness could be a short-term problem (e.g., over-analysis), especially in a short AR process (e.g., six weeks), he also stated that it was necessary as it facilitates the process of *"getting the right balance between player focus and coach focus"*.

Overall, the data suggests that AR is beneficial in (1) increasing coach awareness of both practices and how players respond to their practices; and (2) the AR process as an informed way of analyzing, planning and implementing positive changes in "how" coaches coach. The findings that a reflective process, as part of the broader AR approach, was beneficial in terms of coach development in an elite youth coaching context are valuable and contribute positively to the research into technical reflective processes (Carr & Kemmis, 1986; Kidman & Carlson, 1998).

The results from this case study cannot be generalized to the broader population; it is not the purpose of case study design and action research. The AR process is designed to be context-specific (Koshy, 2005) and the specific outcomes are meaningful only to Joe and his future coaching practices. However, the general finding of support for a reflective process benefiting coach development is consistent with previous research (Barker-Ruchti, 2002; Kidman & Carlson, 1998; Koshy, 2005) and warrants further investigation as discussed later.

Due to the travel demands and coaching commitments of the participant coach, the AR process that was analyzed for this study was somewhat short, and as Kemmis and McTaggart

(1988) stated, the AR process should be ongoing if it is to be beneficial. Hatton and Smith (1995) identified time limitations as problematic in their AR work with student teachers and in this study the participant coach identified that more time spent in this process could facilitate further change and to this end Joe reported that he continued to implement the AR process post intervention.

A final limitation of this case study was the facilitation of the AR process by the researcher. Whilst comments from Joe showed that he valued the facilitation process, the researchers are conscious that the AR process could have been affected by this facilitation role. The reflective questions that were used during the review and planning phases were developed by the investigators and a general focus on improving autonomy-supportive coaching behaviors was taken. Also, whilst Joe identified all behaviors selected for improvement, the principal researcher facilitated the change process by asking open-ended questions so that the Joe was focused on a specific action plan.

Conclusions and Implications for Coaching

Coach behaviors can be modified such that they contribute to the promotion of an autonomy-supportive learning environment (Mageau & Vallerand, 2002) which, in turn, facilitates adaptive motivation and subsequent coach-player relationships (Vallerand & Losier, 1999). Two major goals of the AR process are to increase one's understanding of his or her professional practice and to use this understanding to improve the quality of that practice (Kemmis & McTaggart, 1988). It was the aim of this study to use the AR process to facilitate coach development and specifically create an environment that encourages players' self-determined motivation. The results of the current study suggest that a 'technical' AR process (Carr & Kemmis, 1986) can be beneficial in: (a) increasing a coaches' awareness of own and players' behaviors; (b) developing a systematic coach review process - with information from varying sources-that promotes coach development; and (c) facilitating players' perceptions of autonomy in training sessions and subsequent development. Future research that considers other forms of reflection, (e.g., 'practical' reflection; Carr & Kemmis, 1986) and its impact upon the coaching process has merit (Cassidy, Jones, & Potrac, 2004).

The participant coach found the AR process valuable and stated that he believed it should be used in coach development as a way for filling a gap between the "what" of coaching (typical of formal coach accreditation) and the "how" of coaching. For example, Joe stated:

> Once coaches have their level 3, there probably needs to be another avenue of education [accreditation]
> where there is a facilitation process to guide them through. That's where I reckon this process has its

main benefit.

The above quote supports the utility of AR processes in guiding coach development and the potential engagement in AR processes to enhance the authenticity of coach accreditation.

Although this research provided some insight into the benefits and limitations of AR processes in coach development, further research is encouraged. For example, future research might examine the benefits and limitations of undertaking AR processes during different stages of coach development (e.g., beginner coach); or perhaps consider minimum lengths of engagement in AR processes to effect lasting coach behavior change. Moreover, longitudinal research on players' perceptions of changes to coach practices and the subsequent impact on players' thoughts, feelings, behaviors, and performance variables is warranted. Eventually, the development of guidelines for coach educators in using AR processes would be of significant benefit to coach development. Further research might also consider the implications of generational differences (e.g., generation X versus Y) in what young athletes expect of coaches in terms of their pedagogical style and the development of autonomy-supportive environments in sport.

In conclusion, this study used an Action Research approach to improving the coaching practices of an elite youth level rugby coach; specifically they encouraged player choice and greater understanding of the rationales behind training tasks. The data suggests that some positive changes were evident in their targeted practices but that with more time the reflective process could yield further, more meaningful and lasting changes that will benefit the players. The findings suggests that the AR process could be beneficial in terms of coach development at the elite level and they are consistent with Mageau and Vallerand's (2003) findings that changes in coach behaviors can create an environment that has the potential, in part, to satisfy players' psychological need of autonomy.

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