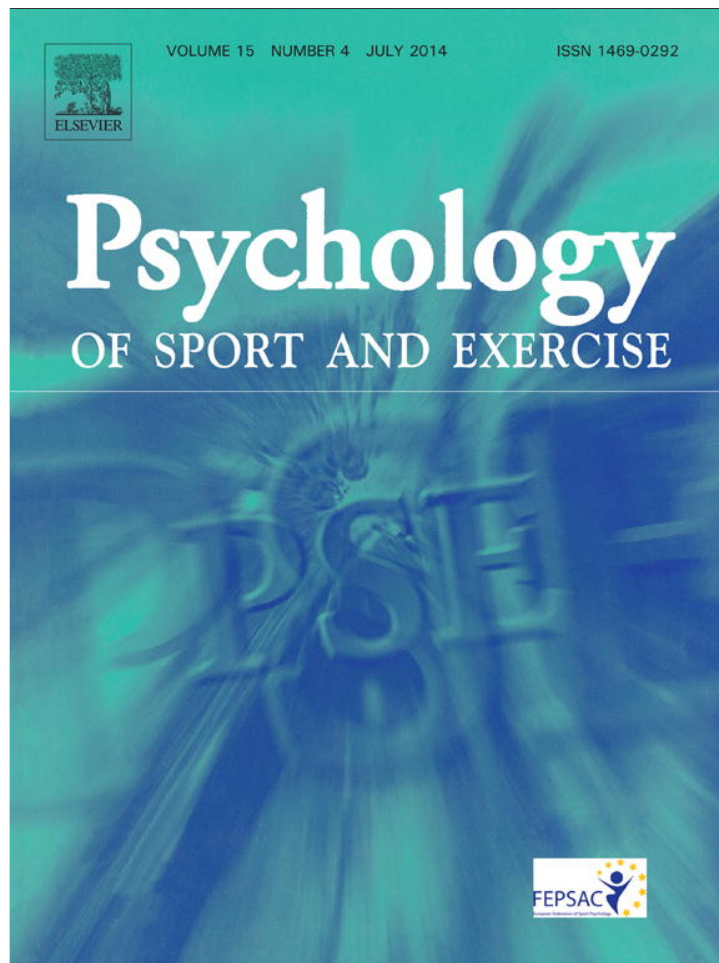


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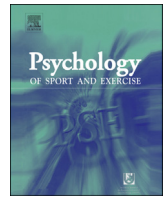
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The role of coaches' passion and athletes' motivation in the prediction of change-oriented feedback quality and quantity



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ABSTRACT

Objectives: The provision of an autonomy-supportive change-oriented feedback has been identified as a crucial coaching behaviour that is beneficial for athletes' phenomenological experience and performance. Based on past research that focused on the determinants of other autonomy-supportive coaching behaviours, the present study investigates coaches' passion toward coaching and coaches' perceptions of their athletes' motivation as potential determinants of the quality (i.e., the extent to which it is autonomy-supportive) and quantity of the change-oriented feedback that coaches provide.

Design: Quantitative cross-sectional study using a dyadic approach.

Methods: In total, 280 athletes and 48 coaches participated in this study. Coaches and athletes both filled out a questionnaire after a training session. Coaches reported their passion and evaluated their athletes' motivation, whereas the provision of feedback was assessed by athletes. HLM analyses were used to take into consideration the hierarchical structure of the data.

Results: HLM analyses showed that only obsessive passion was a significant predictor of change-oriented feedback quality. The more coaches reported having an obsessive passion toward coaching, the less their change-oriented feedback was autonomy supportive. Results pertaining to feedback quantity showed that the more coaches were obsessively passionate and the more they perceived their athletes as being motivated, the more they gave change-oriented feedback. In contrast, when controlling for athletes' age and gender, the more coaches were harmoniously passionate, the less change-oriented feedback they tended to give.

Conclusions: Results are discussed in light of their contribution to the passion, self-fulfilling prophecies and feedback literature.

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Coaches are constantly looking for ways to improve their athletes' performance, motivation and well-being. Past literature confirms that specific coaching behaviours can have important positive (or negative) consequences on athletes' phenomenological experience and performance (e.g., [Adie, Duda, & Ntoumanis, 2008](#); [Beauchamp, Halliwell, Fournier, & Koestner, 1996](#); [Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009](#); [Mageau & Vallerand, 2003](#); [Pelletier, Fortier, Vallerand, & Brière, 2001](#); [Reinboth, Duda, & Ntoumanis, 2004](#); [Smith & Smoll, 1996](#)). Recently, a new coaching behaviour has been identified as being beneficial for athletes: the provision of change-oriented feedback

that supports athletes' autonomy ([Carpentier & Mageau, 2013](#); [Mouratidis, Lens, & Vansteenkiste, 2010](#)).

Despite the benefits associated with an autonomy-supportive feedback, little is known about what can facilitate or impede the provision of such feedback. The goal of the present study is thus to investigate the determinants of the provision of an autonomy-supportive change-oriented feedback. Recent research has shown that motivational forces within both coaches and athletes can influence coaches' adoption of other autonomy-supportive behaviours (i.e., provide choice and rationales, acknowledge feelings; [Mageau & Vallerand, 2003](#)). More specifically, coaches' passion and athletes' motivation have recently been identified as important determinants of coaches' behaviours ([Lafrenière, Jowett, Vallerand, & Carbonneau, 2011](#); [Rocchi, Pelletier, & Couture, 2013](#); [Sarrazin, Tessier, Pelletier, Trouilloud, & Chanal, 2006](#); [Sarrazin, Trouilloud, Tessier, Chanal, & Bois, 2005](#)). The present research draws on this research and investigates coaches' passion toward coaching and

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coaches' perceptions of their athletes' motivation as potential determinants of the quality (i.e., autonomy-supportive vs. controlling) and quantity (i.e., frequency without specifying quality) of change-oriented feedback.

Change-oriented feedback

In the context of hierarchical relationships, such as the relationship between a coach and an athlete, feedback is defined as information conveyed to athletes about the extent to which their behaviours and/or performance correspond to expectations (Cusella, 1987; Hein & Koka, 2007). More specifically, while promotion-oriented feedback aims at confirming and promoting desirable behaviours (Carpentier & Mageau, 2013; Latting, 1992), change-oriented feedback indicates that performance is inadequate and/or that behaviours need to be modified in order to eventually achieve athletes' goals (Bloom & Hautaluoma, 1987; Carpentier & Mageau, 2013; Cusella, 1987). Studying change-oriented feedback is crucial because, when it is given optimally, it serves two important functions (Weinberg & Gould, 2011): it *motivates* athletes by increasing their desire to perform better in the future, and it *guides* them by helping them focus on the changes they need to implement if they wish to improve.

Past studies on change-oriented feedback in various life domains have shown that such feedback is sometimes linked to motivation and performance improvements (Cusella, 1987; Ilgen & Davis, 2000; Latting, 1992; London, 1997), but that it can also be associated with decreased levels of performance, motivation and self-esteem, impaired coach–athlete relationship, and greater feelings of incompetence and helplessness (Baron, 1988; Fisher, 1979; Jussim, Soffin, Brown, Ley, & Kohlhepp, 1992; Latting, 1992; Mikulincer, 1988; Sansone, 1989; Tata, 2002; Wortman & Brehm, 1975). Recent findings in the sport domain suggest that these conflicting findings may be explained by the fact that the quality of the provided feedback was not evaluated in these studies. When change-oriented feedback quality is assessed in addition to its quantity, providing a high quality change-oriented feedback is consistently linked to positive athletes' outcomes (Carpentier & Mageau, 2013; Mouratidis et al., 2010).

As it is the case for numerous coaching behaviours, to be of high quality, change-oriented feedback must be autonomy supportive (Carpentier & Mageau, 2013; Mouratidis et al., 2010). Indeed, according to self-determination theory (SDT; Deci & Ryan, 1985, 2000), humans' psychological health and optimal functioning are facilitated by interpersonal contexts that support the basic psychological need for autonomy, i.e., the universal desire to feel that one is at the origin of one's actions and that one's actions are concordant with one's values. Specific autonomy-supportive behaviours adopted by coaches have been identified, such as providing choice within specific rules and limits, acknowledging athletes' feelings, giving a rationale for tasks and limits or providing athletes with opportunities for initiative taking and independent work (see Mageau & Vallerand, 2003, for a review). These behaviours have in turn been linked to many positive consequences for athletes such as more self-determined motivation, higher self-esteem and greater well-being (Amorose & Anderson-Butcher, 2007; Gagné, Ryan, & Bargmann, 2003; Quested & Duda, 2010; Reinboth et al., 2004).

Recent research has shown that autonomy-supportive coaches also provide change-oriented feedback differently than more controlling coaches (Carpentier & Mageau, 2013; Mouratidis et al., 2010). Specifically, Carpentier and Mageau (2013) showed that coaches characterized by the classic autonomy-supportive behaviours (i.e., those who provide choice and rationales and who acknowledge their athletes' feelings) also provide change-oriented

feedback that is 1) empathic, 2) accompanied by choices of possible solutions to correct the problem, 3) based on clear and attainable objectives known to athletes, 4) free from person-related statements, 5) paired with tips, and 6) given in a considerate tone of voice. Importantly, results also showed that the more coaches provide feedback characterized by these six dimensions, the more their athletes report high perceptions of autonomy (Carpentier & Mageau, 2013), confirming that this type of change-oriented feedback is indeed more autonomy supportive.

Autonomy-supportive change-oriented feedback has been linked to positive consequences above and beyond what can be explained by the adoption of other autonomy-supportive behaviours (Carpentier & Mageau, 2013), which confirms that providing change-oriented feedback is a distinct and crucial autonomy-supportive behaviour. Athletes who receive a more autonomy-supportive change-oriented feedback are more motivated, report higher levels of well-being and self-esteem and a greater satisfaction of their basic psychological needs for relatedness, competence and autonomy, and experience less negative affect and amotivation (Carpentier & Mageau, 2013; Mouratidis et al., 2010). Results also showed that athletes' performance is positively linked to receiving a more autonomy-supportive change-oriented feedback (Carpentier & Mageau, 2013).

Given the pivotal role of an autonomy-supportive change-oriented feedback in athletes' optimal functioning, it is imperative to identify the factors that facilitate or impede the provision of such feedback. Recent studies have shown that the type of passion that coaches have toward coaching can predict the adoption of other autonomy-supportive coaching behaviours (Lafrenière et al., 2011). In light of these findings, it is posited that coaches' passion may also influence their provision of change-oriented feedback.

The concept of passion toward an activity

For many years, psychologists interested by the concept of passion focused mainly on passion in romantic relationships (e.g., Hatfield & Walster, 1978). When discussing an intense commitment to an activity, many researchers have preferred the use of concepts such as personal interests (e.g., Krapp, 2002), serious play (e.g., Rathunde & Csikszentmihalyi, 1993), vital engagement (e.g., Nakamura & Csikszentmihalyi, 2003), personal expressiveness (Waterman, 2004), or undivided activity (Dewey, 1913). Despite their different names, all those concepts have in common an engagement toward an activity, an emotional component attached to the activity, and some kind of valuing of the activity. However, these constructs are not sufficient to adequately define passion toward an activity because they only apply to positive types of sustained engagement whereas passion has also often been portrayed as a negative force. Indeed, philosophers such as Spinoza (e.g., Spinoza, 1632–1677) argued that passion entails a loss of reason and a suffering. Research on intense involvement (e.g., Bonebright, Clay, & Ankenmann, 2000; Glasser, 1976; Sacks & Sachs, 1981) also suggested the presence of both a proactive and reactive form of activity engagement.

Vallerand et al.'s (2003) dualistic model of passion best captures the nature of passion by proposing both a harmonious passion, based on previous definitions of positive forms of sustained engagement (Dewey, 1913; Krapp, 2002; Nakamura & Csikszentmihalyi, 2003; Rathunde & Csikszentmihalyi, 1993; Waterman, 2004), and an obsessive type of passion, which represents a more reactive form of activity engagement. Within this model, passion is defined as a strong inclination toward an activity that one finds important, likes (or even loves), and to which one devotes a significant amount of time and energy. Vallerand et al. (2003) propose that activities are passionate when they acquire

such importance that they become central features of people's identity (Schlenker, 1985). People with a passion for hockey or for swimming do not merely play hockey or swim. They are "hockey players" or "swimmers".

The passionate activity is thus internalized in a person's identity such that the mental representation of the activity becomes associated with the person's self-schemas. The process of internalization refers to the tendency to take in and transform socially sanctioned values and behaviours into personally endorsed ones (Deci & Ryan, 2000; Ryan, Connell, & Deci, 1985). In line with SDT (Deci & Ryan, 1985, 2000), Vallerand et al. (2003) further propose that depending on the context in which passionate activities are internalized in a person's identity, one can experience a more harmonious or a more obsessive passion toward the activity. Harmonious passion refers to a strong desire to engage in the activity that one loves (Vallerand et al., 2003). People with a more harmonious passion have internalized the activity into their identity in an environment where they felt autonomous (Mageau et al., 2009). As a result, the importance of the activity is freely endorsed and the activity is pursued for autonomous reasons (e.g., because of the inherent satisfaction it brings), and not because the individual feels pressured, internally or externally, to do so. Although the activity occupies a significant space in the person's identity, it is coherent with other elements of the self and it is not overpowering. Activity engagement thus remains under the person's willful control and is in harmony with other aspects of the person's life (Vallerand et al., 2003). Moreover, to the extent that they are harmoniously passionate, individuals should show more openness and less defensiveness to what is occurring in the activity (Hodgins & Knee, 2002).

In contrast, obsessive passion refers to an uncontrollable urge to partake in the activity. This type of passion results from a controlled internalization of the activity into one's identity, which occurs when people internalize their activity in a context where they feel pressured to invest themselves in the activity without consideration for their own choices and interests (Mageau et al., 2009). In controlling contexts, intra- or interpersonal pressures (or both) are internalized and these, in turn, push the person to engage in the passionate activity (Mageau et al., 2009). The individual thus feels compelled to do his or her activity because various contingencies are attached to it, such as the maintenance of one's value or sense of self-worth (Mageau, Carpentier, & Vallerand, 2011). These contingencies, in turn, prevent individuals with a predominant obsessive passion from experiencing their activity open-mindedly and make them focus mainly on contingency-relevant information and events. To the extent that they are obsessively passionate, individuals should show more reactivity and defensiveness to what is occurring in the activity (Hodgins & Knee, 2002). Moreover, because the activity serves self-protective purposes, it tends to be overly valued, to be favoured above all other aspects of the person's life, and to take disproportionate space in the person's identity (Vallerand et al., 2003).

Although passions are motivational in nature because they imply an energized and directed inclination toward an object, passions differ from motivations in that they target activities that have been internalized in the person's identity (Deci & Ryan, 1985; Koestner & Losier, 2002). Obsessive passion also differs from extrinsic motivation because, even though both are linked to maladaptive outcomes, obsessive passion necessarily includes a love for the activity. Research empirically supports the distinction between passion and intrinsic and extrinsic motivation. Indeed, studies have shown that the type of passion experienced by people predicts outcomes (e.g., positive and negative affect, goal pursuit) above and beyond their motivational regulation toward the passionate activity (Bélanger, Lafrenière, Vallerand, & Kruglanski, 2013; Houliort, Philippe, Vallerand, & Ménard, in press; Vallerand et al., 2003).

Research shows that the two types of passion can influence interpersonal relationships both inside and outside the context of the passionate activity (e.g., Lafrenière, Jowett, Vallerand, Donahue, & Lorimer, 2008; Lafrenière et al., 2011; Séguin-Lévesque, Laliberté, Pelletier, Blanchard, & Vallerand, 2003; Vallerand, Ntoumanis, et al., 2008). In the sport domain, it has been shown that coaches' passion influences their coaching behaviours. The more coaches report having a harmonious passion toward coaching, the more they adopt autonomy-supportive behaviours such as taking their athletes' perspective, providing them with a rationale for tasks, and encouraging self-initiative (Lafrenière et al., 2011). In contrast, coaches with a more obsessive passion tend to adopt more controlling behaviours to pressure athletes to feel or think in specific ways (Lafrenière et al., 2011) such as directing and dominating every aspect of the training, using conditional regard or offering tangible rewards. Considering the impact of coaches' passion on the adoption of autonomy-supportive or controlling behaviours that are not feedback-related, it is likely that this personal characteristic would also have an impact on the provision of an autonomy-supportive change-oriented feedback.

In addition to coaches' characteristics, athletes' characteristics should also influence coaches' behaviours. Experimental studies (Pelletier & Vallerand, 1996), as well as studies interested specifically to the education and sport domains (Horn, Lox, & Labrador, 2006; Pelletier, Seguin-Levesque, & Legault, 2002; Rocchi et al., 2013; Sarrazin et al., 2005, 2006), have shown that teachers' or coaches' beliefs about their students' or athletes' motivation influence the adoption of autonomy-supportive behaviours and their provision of feedback. The role of coaches' perceptions of their athletes' motivation will thus also be investigated in relation to the provision of an autonomy-supportive change-oriented feedback.

The impact of perceived motivation

The literature on self-fulfilling prophecies (Merton, 1948) suggests that behaviours of authority figures are influenced by their perception of their subordinates' characteristics. Self-fulfilling prophecies refer to the phenomenon happening when people hold initial beliefs about someone, whether these beliefs are true or false, and behave in a way that actually causes these initial beliefs to come true. This phenomenon may be described using the following six steps (Horn et al., 2006): 1) the authority figure forms initial beliefs about a subordinate (whether true or false), 2) these beliefs influence the authority figure's subsequent perception of various behaviours adopted by his/her subordinate, 3) these perceptions determine the authority figure's behaviours toward the subordinate, 4) differential treatment affects the subordinate's self-concept, achievement motivation, level of aspiration, etc., in a way that is coherent with the authority figure's initial beliefs, 5) the subordinate's subsequent behaviour or performance conforms with the superior's beliefs, which 6) reinforces the authority figure's original beliefs.

Pelletier and Vallerand (1996) conducted the first experimental study on the impact of supervisors' beliefs about their subordinate's initial motivation on their own behaviours and on their subordinate's subsequent motivation. In this study, participants taught a subordinate how to solve puzzles after being told that their subordinate was either intrinsically or extrinsically motivated. Results showed that participants who believed their subordinate to be intrinsically motivated were more autonomy supportive than participants who thought that their subordinate was extrinsically motivated. In turn, subordinates displayed a type of motivation that was concordant with their supervisors' initial beliefs. The link between supervisors' beliefs regarding their subordinates' motivation and their own autonomy-supportive behaviours was replicated in

the education (Pelletier et al., 2002) and sport (Rocchi et al., 2013) domains. Sarrazin et al. (2005) also showed that the more physical education teachers perceive their students as investing high efforts and being capable of working autonomously, the more they tend to adopt autonomy-supportive behaviours, which are linked to students' autonomous motivation in the literature (e.g., Hagger et al., 2009; Lim & Wang, 2009).

Coaches' or teachers' perceptions about their athletes (or students) can also directly influence their provision of feedback (Horn et al., 2006; Sarrazin et al., 2005). More specifically, observation of physical education teachers revealed that teachers tend to initiate more negative affective communications (i.e., hurtful or sarcastic remarks) following inappropriate behaviours or incorrect executions with students they perceive as poorly motivated than with students they perceive as highly motivated. Coaches also tend to give more corrective feedback (i.e., feedback that tell athletes how to improve after a bad performance) to athletes for whom they have high initial expectations compared to athletes for whom they have low initial expectations (Horn et al., 2006; Sarrazin et al., 2005). Taken together, these results suggest that coaches' beliefs about their athletes' motivation influence the way they provide change-oriented feedback to these athletes.

The present study

The present study investigates the role of coaches' passion for coaching and their beliefs about their athletes' motivation in the provision of change-oriented feedback. More specifically, we test if the type of passion (harmonious or obsessive) that coaches have toward coaching, and the extent to which they perceive their athletes as being motivated in terms of efforts and autonomous work, influence the quality and the quantity of change-oriented feedback that they give to their athletes. Quality of feedback refers to the extent to which received feedback is autonomy supportive as assessed by the Quality of Change-Oriented Feedback Scale (Carpentier & Mageau, 2013), while quantity of feedback refers to the frequency with which coaches provide change-oriented feedback in general without specifying its quality. A dyadic approach is used in which determinants of change-oriented feedback (i.e., type of passion experienced by coaches and their perception of their athletes' efforts and autonomous work) are evaluated by coaches and the provision of feedback, in terms of quantity and quality, is reported by athletes. This procedure has the advantage of reducing the risk of a common variance bias.

It is first postulated that, as it is the case for other autonomy-supportive behaviours (Lafrenière et al., 2011), the more coaches report having a harmonious passion toward coaching, the more their change-oriented feedback should be autonomy supportive. In contrast, because people with a more obsessive passion feel that their sense of self-worth is contingent on their performance in their passionate activity (Mageau et al., 2011), it should be difficult for them to put their own emotions aside and take their athletes' perspective when facing failure. Given that being autonomy supportive entails considering athletes as separate individuals with unique needs and feelings (Deci & Ryan, 1985, 2000; Ryan & Grolnick, 1986), we postulate that the more coaches report having an obsessive passion toward coaching, the less their change-oriented feedback should be autonomy supportive.

In addition, based on past studies that have linked coaches' perceptions of athletes' high motivation to the adoption of autonomy-supportive behaviours (Pelletier & Vallerand, 1996; Rocchi et al., 2013; Sarrazin et al., 2005, 2006), as well as those that have associated perceptions of athletes' low motivation to negative affective feedback communications (Sarrazin et al., 2005), it is postulated that the more coaches perceive their athletes as

investing high efforts and being able to work autonomously, the more they should provide them with a high quality change-oriented feedback.

As an additional research question, the impact of coaches' passion and athletes' motivation on change-oriented feedback quantity will be investigated. It is first expected that the more coaches have an obsessive passion toward coaching, the more they should give change-oriented feedback. Given that people with a more obsessive passion tend to base their self-esteem on their performance in their passionate activity (Mageau et al., 2011), it is likely that coaches with such a passion view their athletes' counter-performance as a threat to their personal worth. One way to react to this threat, and to reduce their own stress level, would be to provide change-oriented feedback with the hope of improving athletes' performance. Coaches with an obsessive passion should thus provide a greater quantity of change-oriented feedback. In contrast, given that individuals with a harmonious passion have a more secure sense of self-worth that is not contingent on the passionate activity, harmonious passion should not necessarily be linked to change-oriented feedback quantity. Second, based on studies showing that coaches tend to give more corrective feedback to athletes for whom they have positive expectations (Horn et al., 2006; Sarrazin et al., 2005), we postulate that the more athletes are perceived as being motivated in terms of their efforts and autonomous work, the more they should receive change-oriented feedback.

Method

Participants

The sample was recruited as part of a larger study interested in the provision of feedback.¹ Out of the total sample of 58 coaches and 340 athletes, 48 coaches and 280 athletes completed the scales relevant to this study and were thus included in the analyses.² Athletes participated in 13 different sports, such as synchronized swimming (38%), track and field (12%), ice hockey (11%), soccer (7%) or handball (7%). These sports were either individual sports (23%) or team sports (43%), or included both individual and team events (34%). All coaches and athletes were French speaking. Coaches were about two-thirds women (63%) and a third men (37%), they were aged between 18 and 72 years old ($M = 30.88$), they had been coaching for 10.28 years in average ($SD = 7.75$) and almost all (98%) received training to become coach.

The athletes' sample was composed of 90 men and 190 women, aged between 11 and 35 years old ($M = 15.35$). At the time of the study, they were training 10.73 h per week on average ($SD = 6.67$), they had been involved in their sport for an average of 6.59 years ($SD = 3.73$), and they were competing at the regional (20%), provincial (58%), national (16%) or international (4%) level. Finally, they had been with the coach for whom they filled out the questionnaire for an average of 1.97 years ($SD = 1.66$).

¹ This database has been previously used to investigate the consequences of the quality and quantity of change-oriented feedback that is provided to athletes (Carpentier & Mageau, 2013). Although the measures of change-oriented feedback quantity and quality are used again for the present paper, all the other measures, as well as the research questions, differ across the two papers.

² A total of 10 coaches did not complete the passion scale. These coaches and their athletes were thus excluded from the present study. Results of *t*-tests and chi-square analyses revealed that athletes who were excluded from the analyses were younger ($M = 14.61$) than included athletes ($M = 15.33$; $t(240.40) = 2.52$, $p < .05$) but they did not differ in sport level or in their perception of their coach's change-oriented feedback (quality and quantity). Also, a greater proportion of male than female were excluded from the analyses, $\chi^2(1) = 37.22$, $p < .001$.

Procedure

Coaches were recruited by email, through their provincial federation. Coaches and athletes were asked to fill out a questionnaire after a training session. This procedure ensured that coach–athlete interactions were present in their minds when they completed their questionnaire. Coaches' questionnaire included a measure assessing their type of passion toward coaching. Coaches also evaluated each of their athletes' motivation. Each coach had between 1 and 22 athletes participating in the study. Athletes' questionnaire assessed the change-oriented feedback they usually received. Demographic variables such as age, gender, and sport experience were also included in both questionnaires.³ When needed, instruments were translated using the back-translation procedure proposed by Vallerand (1989).

Coaches' measures

Coaches' passion for coaching

Coaches' passion was assessed using an adapted version of coaching (Lafrenière et al., 2008, 2011) of the Passion Scale (Vallerand et al., 2003). The Passion Scale has two components: one that distinguishes between passionate and non-passionate individuals and another that assesses the relative importance of harmonious and obsessive passion. Participants were asked to think about their coaching experience and to indicate the extent to which they agreed with each statement, using a 7-point Likert-type response scale ranging from "Do not agree at all" (1) to "Very strongly agree" (7). The level of passion is measured using the mean of the three criterion items that together define passion. Specifically, participants are asked to report the extent to which they value coaching, devote time and energy to it, and love it. These three items were intercorrelated in the present study ($\alpha = .70$). Following a procedure used in previous studies (Mageau et al., 2009; Vallerand & Houliort, 2003), coaches were judged to be passionate when their mean score on the three passion criteria was situated at midpoint (4) or above on the response scale. Only passionate coaches were retained for the analyses to study the impact of the type of passion toward coaching while removing any confounding variability due to having a passion or not. Following this procedure, only one coach scored below the midpoint on the response scale. His scores were thus removed from the sample, along with the scores from the two athletes he coached.

The second component of the Passion Scale assesses harmonious and obsessive passions using two six-item subscales. Sample items for harmonious passion are "Coaching is in harmony with the other activities in my life", "Coaching allows me to live a variety of experiences" and "Coaching is well integrated in my life" ($\alpha = .77$). Examples of items for obsessive passion are "I have almost an obsessive feeling for coaching", "I have difficulties controlling my urge to coach" and "I have the impression that coaching controls me" ($\alpha = .63$). Previous research has supported the psychometric properties of the Passion Scale (Vallerand et al. 2003), including research with coaches (Lafrenière et al., 2008, 2011).

³ Coaches' questionnaire also included scales assessing their autonomy-supportive style as well as their athletes' performance (see Carpentier & Mageau, 2013, for more details). Athletes' questionnaire also included scales assessing the consequences of change-oriented feedback (i.e., motivation, amotivation, well-being, negative affect and self-esteem) as well as athletes' perception of their coach's autonomy-supportive style (see Carpentier & Mageau, 2013, for more details). Finally, homemade measures of promotion-oriented feedback quantity and quality were also included in athletes' questionnaire for exploratory purposes. These variables were not included in the manuscript because they were not the focus of the present study.

Perceived athletes' motivation

To assess coaches' perception of each of their athletes' motivation, coaches were asked to rate the extent to which each athlete generally provides efforts (i.e., "According to you, does this athlete provides efforts during training sessions?") and can work autonomously (i.e., "According to you, is this athlete able to work autonomously during training sessions?"). Participants used a 7-point Likert-type response scale ranging from "Not at all" (1) to "Totally" (7). These two items were strongly correlated ($r = .73$, $p < .001$) and their scores were thus averaged to obtain a global score of perceived motivation. This procedure was chosen because it was not too taxing on coaches' time and, more importantly, it has been shown to be reliable to assess the perceived intensity and quality of athletes' motivation in previous studies (Sarrazin et al., 2005, 2006).

Athletes' measures

Quantity of change-oriented feedback

A short three-item scale was adapted from the work domain (Smith, 2007) to evaluate the quantity of change-oriented feedback given by coaches. Participants were asked to rate on a 7-point scale going from "Never" (1) to "Always" (7) the frequency with which they received change-oriented feedback. The three items are "When my coach is not satisfied with my performance, he lets me know", "When I am not performing a drill well, my coach gives me negative feedback", and "When I am not performing well, my coach points it out to me". This scale showed acceptable reliability in the present study ($\alpha = .67$).

Quality of change-oriented feedback

The Quality of Change-Oriented Feedback Scale is a 22-item multidimensional scale that assesses change-oriented feedback quality. Quality is evaluated using six autonomy-supportive characteristics of change-oriented feedback. Specifically, it evaluates the extent to which the change-oriented feedback is perceived as being 1) empathic (e.g., "When my coach tells me that he is not satisfied with my performance, I don't feel that he realizes how much efforts I had to put in to overcome the obstacles" (recoded); 4 items; $\alpha = .69$), 2) accompanied by choices of solutions (e.g., "My coach lets me try various strategies to correct my mistakes so that I can see which one suits me best"; 3 items; $\alpha = .85$), 3) based on clear and attainable objectives (e.g., "When my coach wants me to correct something, I know which objective this change will eventually allow me to reach"; 4 items; $\alpha = .79$), 4) free from person-related statements (e.g., "Following a bad performance, my coach has a tendency to depreciate me as an individual" (recoded); 4 items; $\alpha = .85$), 5) paired with tips (e.g., "When my coach is not satisfied with my performance, he gives me tips so that I can improve in the future"; 3 items; $\alpha = .83$), and 6) given in a considerate tone of voice (e.g., "When my coach is not satisfied with my performance, he tells me using a respectful tone of voice"; 4 items; $\alpha = .88$). For each item, participants were asked to indicate the extent to which each statement corresponds to the way their coach gives change-oriented feedback using a 7-point Likert-type scale ranging from "Never" (1) to "Always" (7). Factorial analyses supported the six-factor structure of this scale (see Carpentier & Mageau, 2013, for more details). The total quality score is computed by averaging across subscales ($\alpha = .84$).

Hierarchical linear modeling analyses

The present study involves a hierarchically structured data set, where athletes' measures (level 1) are nested under coaches' measures (level 2). Hierarchical linear modeling (HLM) analyses

with the restricted maximum likelihood method of estimation were used because these analyses have the advantage of examining variables from different levels of generality simultaneously and independently. These analyses thus allowed us to examine between-group (level 2; coaches' passion) and within-group (level 1; athletes' motivation) sources of variance, on level-1 variables (perceptions of change-oriented feedback quantity and quality). During HLM analyses, level-1 variables were centered on the group mean while level-2 variables were centered on the sample mean (Raudenbush & Bryk, 2002). Robust standard errors were used to calculate inference statistics.

Results

Descriptive statistics

All variables were normally distributed, as indicated by skewness and kurtosis scores ranging from -1.02 to $.88$. To obtain the descriptive statistics for athlete-level variables, we aggregated the data from the athletes who were trained by the same coach. The aggregated variables were also normally distributed, with skewness and kurtosis scores ranging from $-.55$ to 1.18 . Descriptive statistics for coaches' measures and the aggregated coaches and athletes' measures are presented in Table 1 together with their correlations. Intraclass correlations revealed that most variability was found within coaches (i.e., 73.62% for perceived motivation) or across athletes (i.e., 56.21% for feedback quality, 82.25% for feedback quantity), which highlights the importance of adopting a multilevel analytical approach.

Passion and perceived motivation predicting change-oriented feedback quality

HLM analyses were conducted to examine the relations amongst the two types of passion, perceived motivation, and the quality of change-oriented feedback received by athletes. We first specified an unconditional model, where the dependent variable, but no predictor, was modeled. The unconditional model provides the grand mean (γ_{00}), which represents the mean of each coach's mean on the dependent variable (change-oriented feedback quality) across the level-1 units (i.e., coach's own athletes). As shown in

Table 1
Descriptive statistics and correlations among level-2 and aggregated level-1 variables.

Variables	Correlations						
	1	2	3	4	5	6	7
<i>Coaches' measures (Level-2)</i>							
1. Obsessive passion	–	.30*	.50***	-.29*	.09	-.19	.24
2. Harmonious passion		–	-.01	-.06	.24	.02	.08
<i>Aggregated athletes' measures (Level-1)</i>							
3. Change-oriented feedback quantity			–	-.56***	.04	-.39**	.39**
4. Change-oriented feedback quality				–	.35*	.30*	-.08
5. Perceived motivation					–	.26	-.03
6. Age						–	-.36*
7. Gender (0 = Male, 1 = Female)							–
N	47	47	47	47	46	47	47
Mean	3.22	5.83	4.66	5.46	5.45	15.87	.73
SD	1.03	0.78	0.88	0.75	0.93	5.39	0.39

Note. * $p < .05$, *** $p < .001$.

Table 2, before the inclusion of any predictors, the grand mean of change-oriented feedback quality was 5.44 (γ_{00}).

In order to test the impact of obsessive and harmonious passion on change-oriented feedback quality, the two types of passion (*Obs* and *Harm*) were entered as level-2 predictors of means. When adding level-2 predictors to an unconditional model to investigate variability of means, one predicts *between-coaches* differences on the dependent variable (i.e., change-oriented feedback quality) using level-2 variables (passion). Perceived motivation (*PerMot*) was entered as a level-1 predictor of change-oriented feedback quality to predict *between-athletes* differences. Table 2 presents the results from the unconditional and conditional models.

Results showed that, as predicted, obsessive passion had a significant and negative association with change-oriented feedback quality. The more coaches had an obsessive passion toward coaching, the less they tended to give an autonomy-supportive change-oriented feedback ($\gamma_{01} = -.18, p < .05$).⁴ However, surprisingly, harmonious passion ($\gamma_{02} = -.04, p = .75$) and perceived motivation ($\gamma_{10} = .09, p = .11$) did not have a significant impact on change-oriented feedback quality. Indeed, even though correlations indicated that perceived motivation was positively related to change-oriented feedback quality ($r = .35, p < .05$), this link disappeared when coaches' passion was taken into account. Adding coaches' passion to the unconditional model explained 12.4% of the between-coach variability of change-oriented feedback quality.

Given that athletes included in the analyses differed from the excluded ones on their age and gender (see Footnote 2), we tested our model while adding age and gender as level-1 predictors to control for these potentially confounding variables.⁵ When controlling for age and gender, obsessive passion remained a significant predictor of change-oriented feedback quality ($\gamma_{01} = -.17, p < .05$), while results pertaining to harmonious passion ($\gamma_{02} = -.08, p = .52$) and perceived motivation ($\gamma_{10} = .07, p = .19$) remained non-significant. Results also showed that the older the athletes, the more they perceive their coach's change-oriented feedback as autonomy supportive ($\gamma_{11} = .08, p < .001$). Athletes' gender was not linked to perceptions of change-oriented feedback quality ($\gamma_{12} = .10, p = .57$). Adding level-1 predictors to the unconditional model explained 15.00% of the within-group variability of change-oriented feedback quality.

Passion and perceived motivation predicting change-oriented feedback quantity

The impact of coaches' passion toward coaching and their perception of their athletes' motivation on change-oriented feedback quantity was also investigated. The same model-building procedure was used, where an unconditional model was first specified, followed by a model that included the predictors. The grand mean of change-oriented feedback quantity was 4.64 (γ_{00}).

As presented in Table 3, results pertaining to the impact of coaches' passion showed that only obsessive passion significantly predicted mean levels of change-oriented feedback quantity. The more coaches had an obsessive passion toward coaching, the more they tended to give change-oriented feedback often ($\gamma_{01} = .36, p < .001$). Results pertaining to harmonious passion suggested an

⁴ In HLM analyses, coefficients are not standardized and the effects should therefore be interpreted as expected change in the outcome variable's measuring units (e.g., a 1-to-7 response scale) for each increase of 1 in the predictor's own measuring units.

⁵ Please note that also adding athletes' level of experience and the intensity of coaches' passion (i.e., coaches' mean score on the three passion criteria) to the models predicting feedback quality and quantity, as level-1 and level-2 predictors respectively, does not alter the results.

Table 2
Fixed effects and variance components of the multilevel models predicting change-oriented feedback quality from coaches' passion and perceived motivation.

	Parameters	Unconditional model	Conditional model
<i>Fixed effects</i>			
<i>Grand mean</i>			
Initial status	γ_{00} (SE)	5.44*** (.10)	5.45*** (.10)
<i>Grand means</i>			
Obsessive passion (Obs)	γ_{01} (SE)	–	–.18* (.08)
Harmonious passion (Harm)	γ_{02} (SE)	–	–.04 (.12)
<i>Grand slope</i>			
Perceived motivation (PerMot)	γ_{10} (SE)		.09 (.06)
<i>Variance components</i>			
Level-1 Residual variability	σ^2	.48	.43
Level-2 Residual variability of means	σ^2_{00}	.38	.35
Level-2 Residual variability of slopes	σ^2_{01}		.03

Note. * $p < .05$, *** $p < .001$.

opposite relation with harmonious passion, where the more coaches had a harmonious passion the less they tended to give change-oriented feedback. However, this finding was only marginally significant ($\gamma_{02} = -.19, p = .07$). Results also showed that coaches' perception of their athletes' motivation had an impact on the quantity of change-oriented feedback that is provided. Indeed, the more coaches perceived athletes as being highly motivated, the more they tended to give change-oriented feedback often ($\gamma_{10} = .17, p < .05$). Adding coaches' passion to the unconditional model explained 45.18% of the between-coach variability of means of change-oriented feedback quantity, while adding perceived motivation to the unconditional model explained 7.04% of the within-group variability.

Age and gender were once again entered as control variables in the model. When controlling for the impact of these variables, results pertaining to obsessive passion ($\gamma_{01} = .36, p < .001$) and perceived motivation ($\gamma_{10} = .15, p < .05$) remained the same. However, the link between harmonious passion and perceived change-oriented feedback quantity became significant ($\gamma_{02} = -.26, p < .05$).

Discussion

The main purpose of the present research was to test the impact of coaches' and athletes' characteristics on the provision of change-oriented feedback. Regarding coaches' characteristics, results

Table 3
Fixed effects and variance components of the multilevel models predicting change-oriented feedback quantity from coaches' passion and perceived motivation.

	Parameters	Unconditional model	Conditional model
<i>Fixed effects</i>			
<i>Grand mean</i>			
Initial status	γ_{00} (SE)	4.64*** (.11)	4.66*** (.09)
<i>Grand means</i>			
Obsessive passion (Obs)	γ_{01} (SE)	–	.36*** (.10)
Harmonious passion (Harm)	γ_{02} (SE)	–	–.19† (.10)
<i>Grand slope</i>			
Perceived motivation (PerMot)	γ_{10} (SE)		.17* (.07)
<i>Variance components</i>			
Level-1 Residual variability	σ^2	1.38	1.26
Level-2 Residual variability of means	σ^2_{00}	.30	.16
Level-2 Residual variability of slopes	σ^2_{01}		.04

Note. † $p < .07$, * $p < .05$, *** $p < .001$.

revealed that coaches' passion influenced the way they give change-oriented feedback. The more coaches reported having an obsessive passion toward coaching, the more they gave change-oriented feedback and the less this feedback was of high quality. Although no link was expected between harmonious passion and change-oriented feedback quantity, one was observed when the influence of athletes' age and gender was controlled. It is possible that coaches with a harmonious passion are more likely to believe that giving frequent change-oriented feedback is potentially harmful, and to be able to refrain from giving it in some situations, considering that their personal worth is not tied to the passionate activity (Mageau et al., 2011). As this belief may vary with athletes' age and gender, it could account for the observed suppression effect found in the present data. Unfortunately, this hypothesis may not be tested here because coaches' beliefs about the potential impact of providing change-oriented feedback were not measured. Future research is thus needed to further investigate the potential link between harmonious passion and change-oriented feedback quantity.

Contrary to expectations, having a more harmonious passion toward coaching and perceiving athletes as highly motivated did not facilitate the provision of a high quality change-oriented feedback. These non-significant findings suggest that, of the coaches who have a harmonious passion and who perceive their athletes as highly motivated, some give high quality feedback and others do not. A lack of knowledge about what high quality feedback looks like may account for these non-significant relations. Indeed, even though coaches with a harmonious passion and who interact with highly motivated athletes should feel less pressured to engage in more controlling change-oriented feedback, some of them might not provide autonomy-supportive feedback because they do not know how to provide such high quality feedback. Research on change-oriented feedback quality is recent and it would make sense that some coaches do not intuitively know what type of feedback is the most appropriate. A look at coaches' knowledge about the different types of change-oriented feedback might shed light on another determinant of change-oriented feedback quality, that is coaches' beliefs about the efficiency of different types of feedback.

Coaches' perception of their athletes' motivation also influenced change-oriented feedback quantity. Athletes perceived as more motivated received change-oriented feedback more often, which is concordant with past research on the impact of superiors' expectations on the frequency of their interactions with subordinates (Biddle & Goudas, 1997). However, no relation was found between coaches' perception of their athletes' motivation and change-oriented feedback quality. Past research (Rocchi et al., 2013) suggests that the impact of athletes' perceived motivation on the provision of a high quality change-oriented feedback might be better understood with a mediational model involving coaches' characteristics (e.g., passion) as the psychological process responsible for the impact of athletes' motivation on coaches' behaviours. Unfortunately, the link between perceived motivation and coaches' passion was not significant in the present data, preventing us from testing such mediational model. The limited number of level-2 units (i.e., coaches) in our study may explain this non-significant link. Furthermore, although the perceived motivation scale was successfully used in past studies (Sarrazin et al., 2005, 2006), it is comprised of only two items, which may limit the stability of the findings. For example, one of the item (i.e., "According to you, is this athlete able to work autonomously during training sessions?") may have generated different interpretations from coaches. Some of them may have interpreted "autonomous work" as "independence" and others as the SDT construct of "being motivated by self-endorsed reasons". Finally, given that passions target activities that are more central to people's self-definition than motivations, it

is possible that coaches' perceptions of their athletes' motivation do not directly influence coaches' passion the way it would influence their motivation. Future research with sufficient power is greatly needed to investigate the relations between coaches' beliefs about their athletes' motivation, coaches' passion, and coaches' behaviours.

Showing that coaches' passion and perception of their athletes' motivation are determining psychological factors in the provision of change-oriented feedback leads to a number of implications. First, this research contributes to the literature on passion by confirming that passion influences interpersonal relationships within the purview of the passionate activity. Within the sport domain specifically, past studies have shown that the more coaches have a harmonious passion toward coaching, the more they tend to take their athletes' perspective into account, to provide them with a rationale for tasks, and to encourage self-initiative (Lafrenière et al., 2011). In contrast, obsessively-passionate coaches tend to pressure their athletes to feel or think in specific ways to a greater extent (Lafrenière et al., 2011). The present research shows that coaches with an obsessive passion also differ from their counterparts in the way they provide change-oriented feedback. Obsessively-passionate coaches tend to give more change-oriented feedback as well as to give a change-oriented feedback of poorer quality. Given that change-oriented feedback is an inherent part of the coach–athlete relationship, showing that coaches' obsessive passion can negatively influence the quality of the change-oriented feedback that is given to athletes constitutes an important step in the understanding of the impact of passion on interpersonal relationships related to the passionate activity in the sport domain.

The results of the present study also contribute to the self-fulfilling prophecies literature. The fact that coaches' perceptions of their athletes' motivation were positively linked to change-oriented feedback quantity provides support to the proposition that superiors' behaviours are influenced by their perception of their subordinates' characteristics. Athletes who are perceived as more motivated receive more feedback. Considering that change-oriented feedback is positively linked to positive outcomes when given in an autonomy-supportive way (Carpentier & Mageau, 2013), the differential treatment received by athletes perceived as more highly motivated is likely to influence their subsequent sport experiences.

Third, the present study contributes to change-oriented feedback research by suggesting new determinants of the type of change-oriented feedback that is provided. Recent research has demonstrated that receiving an autonomy-supportive change-oriented feedback is pivotal for the quality of athletes' phenomenological experience and performance (Carpentier & Mageau, 2013; Mouratidis et al., 2010). Determining the factors that would help coaches deliver such a feedback is a crucial step in helping coaches maximize their athletes' well-being and performance. Although the present study failed to uncover what could facilitate the provision of an autonomy-supportive change-oriented feedback, it identifies obsessive passion as an important obstacle to providing high quality feedback. Future research is needed to better understand what are the coaches' and athletes' characteristics that can facilitate the provision of a high quality change-oriented feedback.

Finally, an important contribution of the present research lies in its dyadic methodological approach. In the sport literature, athletes' experiences have often been studied without considering the impact of their social environment (e.g., Donahue, Rip, & Vallerand, 2009; Vallerand, Mageau, et al., 2008) such that studies on coaches' motivation and behaviours toward their athletes are scarce. The present study extends past research by investigating the impact of coaches' passion and their perceptions of athletes' motivation on their provision of change-oriented feedback. In addition, studies

often include only one informant, resulting in high risk of inflated relations due to the common variance bias. This study uses separate informants to evaluate the independent and dependent variables, thereby removing the common variance bias.

Although this study contributes to passion, self-fulfilling prophecies and change-oriented feedback literature, three main limitations need mentioning. First, the scale used to measure change-oriented feedback has been developed and validated in the context of this study (see Carpentier & Mageau, 2013, for more details). Although the scale has good psychometric properties, future research is needed to replicate the factorial structure of this new scale.

Second, the correlational design used in the present study makes causality inferences impossible. One may argue that obsessively-passionate coaches do not necessarily give a change-oriented feedback of poorer quality, but that athletes who interact with obsessively-passionate coaches perceive their coaches' feedback differently than athletes with less obsessively-passionate coaches. For instance, athletes with an obsessively-passionate coach may have a more negative view of their coach, which in turn would lead them to see their coaches' change-oriented feedback as more controlling. Future research could either control for other variables such as the quality of the coach–athlete relationship, or objectively observe the way obsessively-passionate coaches give change-oriented feedback.

Finally, although the measures chosen to assess perceived athletes' motivation and coaches' passion have been successfully used in past studies, these scales show some weaknesses that could be improved. As already mentioned, the perceived motivation scale could be more comprehensive. This scale was originally chosen to reduce coaches' completion time as they were asked to report their perception of the motivation of all their athletes. However, future research using a more elaborate scale of perceived motivation should replicate the present findings. Regarding the passion scale, it is important to underscore that the obsessive passion subscale displayed a lower reliability index ($\alpha = .63$) than the harmonious passion subscale ($\alpha = .77$). Given that our results are consistent with results from past studies showing that obsessive passion is linked to negative consequences such as more interpersonal conflicts inside and outside the purview of the activity (e.g., Lafrenière et al., 2008; Séguin-Lévesque, et al., 2003; Vallerand, Ntoumanis, et al., 2008) as well as the adoption of controlling coaching behaviours (Lafrenière et al., 2011), the relatively low Cronbach's alpha of the obsessive passion subscale does not seem to have influenced our results. Yet, attempts to improve this subscale's reliability are recommended.

Despite its limitations, the present study has important practical implications. Coaches play an important role in athletes' lives. Not only do they represent important authority figures, they also act as models, confidants and motivators, giving them the power to inspire athletes with their passion. Yet, the present findings show that not all types of passion have desirable outcomes for coaches and athletes. On the contrary, having an obsessive passion may impair the provision of change-oriented feedback. Given that these results echo previous findings showing that obsessive passion is also linked to more interpersonal conflicts (Séguin-Lévesque et al., 2003; Vallerand, Ntoumanis, et al., 2008), lower levels of concentration and positive affect during activity engagement (Mageau & Vallerand, 2007; Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005; Vallerand et al., 2003) and decreased level of well-being when prevented from engaging in the activity (Carpentier, Mageau, & Vallerand, 2012), research on passion should encourage coaches to strive for a more harmonious form of passion, not only for their own benefit but also to maximize their positive influence on their athletes' experiences. Results of the

present study are also concordant with past studies on the impact of coaches' expectations on athletes' experience. Our findings suggest that the more coaches believe their athletes to be highly motivated, the more they give them change-oriented feedback. It thus seems that coaches do not necessarily provide the same opportunities to all athletes. Most coaches have several years of sport experience, either as athletes themselves or as coaches, which may lead them to rely heavily on their intuitions regarding the motivation and the potential of their athletes. Given the important influence of these expectations on coaches' behaviours toward their athletes, the present study points to the importance of informing coaches about the impact of their initial expectations toward their athletes on their subsequent behaviours toward them and on their athletes' future development.

In sum, while for many years research within SDT has focused on the negative impact of giving change-oriented feedback compared to providing promotion-oriented feedback or no feedback (Koka & Hein, 2003; Vallerand & Reid, 1984; Whitehead & Corbin, 1991), recent studies have suggested that this type of feedback can be given in a more autonomy-supportive way (Carpentier & Mageau, 2013; Mouratidis et al., 2010). More importantly, these studies also highlighted that a more autonomy-supportive change-oriented feedback is linked to numerous positive outcomes (e.g., well-being, self-esteem, performance). The present research suggests that obsessive passion may constitute an obstacle to providing such high quality change-oriented feedback. This study also constitutes a first step toward a better understanding of what can influence the quantity of change-oriented feedback. Identifying the antecedents of feedback quality and quantity, and of other coaching behaviours, will empower coaches and enable them to guide their athletes in a way that maximizes positive outcomes.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.psychsport.2014.02.005>.

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