

Determinants of coach motivation and autonomy supportive coaching behaviours



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ABSTRACT

Objective: The objective of the present study is to build upon the existing literature examining the coaching context and how it relates to coaches' use of autonomy-supportive interpersonal behaviours (i.e. Stebbings, Taylor, Spray, & Ntoumanis, 2012) by identifying additional environmental factors and exploring the role of coach motivation.

Design: An academic model designed by Pelletier, Seguin-Levesque, and Legault (2002) to predict teacher motivation and autonomy-supportive styles in academic settings, was adapted to the coaching context.

Methods: The influence of pressure from above (sport administrations) and pressure from below (athlete motivation) on coach motivation and autonomy-supportive coaching behaviours was tested using structural equation modeling.

Results: Results support the fit of the model in a sport context.

Conclusions: Pressure from above, pressure from below, and coach motivation predict coaches' reported use of autonomy-supportive behaviours.

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Introduction

Sport participation is associated with increased health and positive outcomes like well-being, vitality, and increased self-esteem (Bouchard, Blair, & Haskell, 2007). Motivational psychology has extensively examined sport participation and has provided important insight into the reasons why some athletes demonstrate an enduring desire to improve or master their sport. Research has shown that although some athletes are moved by external factors like pressure from their coach, reward systems, evaluations, and recognition, others are moved by curiosity and interest, a desire for growth and improvement, and a desire to master new skills (Vallerand, 2007). Motivational theories help explain the conditions that lead to a successful or unsuccessful sport experience by providing a framework for understanding the interactions between the forces acting on individuals (Hagger & Chatzisarantis, 2007).

Self determination theory

Self-Determination Theory (SDT; Deci & Ryan, 1985) is a theory of human motivation that has helped explain sport participation.

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More specifically, when individuals engage in activities, the underlying reasons for participating vary from being related to external outcomes, to being integrated with the self. As the external reasons for participating become internalized, they become coherent with the individual's values or objectives and the individual experiences higher quality motivation and increased positive outcomes (Deci & Ryan, 2000).

According to SDT, the three basic psychological needs, which are said to be innate, universal across cultures, and evident in all developmental periods, can aid in this internalization process. The three needs are competence (when an individual has the opportunity to seek challenges and demonstrate their capacities), relatedness (when an individual experiences a sense of belonging with others), and autonomy (when an individual acts in line with his or her own interests and values) (Ryan, 1995). When considering the fulfilment of the psychological needs, environmental factors, including the individuals within a given environment, can promote or thwart the fulfilment of the basic needs (Deci, Shwartz, Sheinman, & Ryan, 1981). Deci and Ryan (1985) explain that individuals can engage in need-supportive interpersonal behaviours which support others' needs and subsequently enhance self-determined motivation. Although need-supportive behaviours can be described in terms of each of the three basic psychological needs, the majority of current research has focused on autonomy-supportive behaviours. Extensive research has demonstrated that

autonomy-supportive environments are related to an increase in the quality of motivation and positive outcomes experienced by individuals within that environment (e.g. Deci & Ryan, 2002; Gillet, Vallerand, Amoura, & Baldes, 2010; Mageau & Vallerand, 2003).

Autonomy support

An individual engages in autonomy-supportive behaviours when they offer meaningful choice (Katz & Assor, 2007), minimize pressure and avoid controlling behaviour (Black & Deci, 2000), acknowledge others' feelings (Deci, Egharari, Patrick, & Leone, 1994), and allow the others to participate in the decision-making process (Deci, Koestner, & Ryan, 1999).

Autonomy-supportive interpersonal behaviours play an important role in dyadic interactions between supervisors and subordinates (Mageau & Vallerand, 2003). Specifically, when supervisors support their subordinates' need for autonomy, they ultimately help their subordinates meet their needs, and therefore increase self-determined motivation (Pelletier et al., 2002). These findings have implications for sport, as the coach–athlete relationship has a similar structure, which suggests that the coaches' interpersonal behaviours can have important implications on athlete motivation (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011).

Previous research in sport has found that when coaches support their athletes' autonomy, the athletes subsequently experience better performance, increased persistence, an increase in self-determined motivation, and enhanced psychological well-being (for a review: Mageau & Vallerand, 2003).

Predictors of autonomy support

Research has supported the link between autonomy-supportive interpersonal behaviours and positive outcomes, although, the predictors of autonomy-supportive behaviour have received much less empirical attention. Recently, researchers in academic, physical education, and sport settings have begun to examine the environmental and psychological factors that determine these interpersonal behaviours.

In one of the first studies to examine these constructs, Pelletier et al. (2002) examined the impact of perceived administrative pressure, perceived student motivation, and teachers' self-reported motivation and their relationship with autonomy-supportive behaviours. These environmental factors were selected as they had previously been tested in laboratory settings and were related to self-determined motivation (Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982; Pelletier & Vallerand, 1996). They tested a number of models using these factors and their final model suggested that teachers' self-determined motivation positively predicted autonomy-supportive teaching behaviours. Furthermore, they found teachers' self-determined motivation was negatively impacted by their impressions of administrative burdens (*Pressure from Above*) and positively impacted by their perceptions of their students' motivation for learning (*Pressure from Below*). Taylor and colleagues (Taylor, Ntoumanis, & Smith, 2009) built upon these findings and identified additional environmental factors such as teachers' own performance evaluation, cultural norms, and time constraints that were related to autonomy-supportive teaching behaviour. In additional studies examining the psychological factors, Taylor and colleagues (Taylor, Ntoumanis, & Standage, 2008) found that teachers' perceptions of the satisfaction of their psychological needs predicted autonomy-supportive teaching styles, and Soenens and colleagues (Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2012) identified perceived emotional

exhaustion and depersonalization as predictors of controlling teaching styles.

While researchers have examined the predictors of autonomy-supportive behaviours in school physical education settings (e.g. Hagger, Chatzisarantis, Culverhouse, & Biddle, 2003; Pihu, Hein, Koka, & Hagggar, 2008), to date, only a couple of studies have examined such predictors in sport contexts. Stebbings, Taylor, and Spray (2011) focused on psychological factors and autonomy-supportive coaching behaviours. They found that the coaches' perception of the satisfaction of three basic needs predicted an increase in well-being, which subsequently predicted autonomy-supportive coaching behaviours. In a separate study, Stebbings et al. (2012) examined how environmental factors, like job security, work-life conflict, and professional development opportunities, were related to coaches' need-support, well-being, and subsequent use of autonomy-supportive behaviours.

In sport, coaches play an important role in creating the athletes' sport experience and their interpersonal styles can impact athletes' overall motivation for their sport (Vallerand & Losier, 1999). Despite having empirical support for the use of autonomy-supportive coaching styles, and some evidence supporting the factors that predict these styles, many coaches still use strategies and techniques that do not support their athletes' needs (e.g. Fraser-Thomas & Côté, 2009).

Limitations of current research

Despite important advances, there are some limitations to the current research in understanding autonomy-supportive coaching behaviours. Although Stebbings et al. (2011, 2012) begun to examine the psychological and environmental factors that impact these behaviours, they have focused exclusively on how these factors impact autonomy-supportive coaching behaviour through psychological well- and ill-being. Self-determination theory research suggests that motivation should play an important role in predicting the use of autonomy-supportive coaching behaviours (Deci & Ryan, 1985; Roth, Assor, Kanat-Maymon, & Kaplan, 2007). As such, autonomy-supportive coaching behaviours should also be examined from a motivational perspective, in addition to a well-being perspective.

Furthermore, previous research examining the coaching context has shown that club administrations and the club culture can have a significant impact on coaches (Cushion & Jones, 2006), while motivation research also suggests that athletes can have an impact on coaches' motivation through behavioural confirmation (Pelletier & Vallerand, 1996). As such, coaching research should aim to systematically examine how sport administrations and athletes can exert pressure on coaches.

Finally, Trudel and Gilbert (2006) identify three types of coaches (recreational, developmental, and elite) that vary based on their experience and level of commitment to coaching. Traditionally, most studies examining coaching contexts have focused exclusively on elite coaches (e.g. Cushion & Jones, 2006) and it was not until recent years that researchers began to examine coaches of various levels (i.e. Lemyre, Trudel, & Durand-Bush, 2007) and, when possible, have evaluated the different levels of coaches separately (e.g. Stebbings et al., 2012). Since different coaching contexts present different realities for coaches (Cushion, Armour, & Jones, 2006; Werthner & Trudel, 2009), autonomy-supportive coaching behaviours should be examined within specific coaching contexts.

Present study

The objective of the present study was to expand upon Stebbings et al.'s (2012) study by identifying additional factors within the coaching environment that are related to autonomy-

supportive coaching behaviour. This was achieved through investigating some additional environmental factors that are relevant to the coaching context, and determining how they related to coaches' motivation and autonomy-supportive behaviours. These objectives were met by replicating Pelletier et al.'s (2002) model for an academic setting in a sport setting. Specifically, this study used structural equation modelling to demonstrate that perceived pressure from above (administrative pressure) and perceived pressure from below (perceptions of athlete motivations), were related to coach motivation, and subsequently related to coaches' reported autonomy-supportive coaching styles.

This model was selected as it emphasized the importance of motivation and its relationship with environmental factors and autonomy-supportive behaviours. This model also differentiated between two types of environmental factors that may be influencing the coaches' motivation: pressure from above and pressure from below. Pressure from above speaks to administrative or peer pressure that may be exerted on the coach. This type of pressure is very relevant in sport, as the coaching context can be competitive and coaches may feel additional pressure from their club administration and coaching peers to perform and be successful (e.g. Allen & Shaw, 2009). Pressure from below concerns the coaches' perceptions of their athletes' motivations for participating in sport. Research has shown that when someone in a position of authority believes that the subordinate is intrinsically motivated, or highly self-determined, they are more likely to engage in autonomy supportive behaviour (Pelletier & Vallerand, 1996). Additional research has identified other environmental factors like time constraints (Taylor et al., 2009) or job security (Stebbins et al., 2012), and psychological factors like emotional exhaustion (Soenens et al., 2012) as predictors of autonomy-supportive behaviours. However, for the purposes of shortening the length of the present study, only the factors identified in the Pelletier et al.'s model (2002) were selected for the analyses.

Finally, in order to begin systematically examining coaches within specific coaching environments, the present study targeted coaches at the developmental level, as described by Trudel and Gilbert (2006). Specifically, coaches at this level began coaching because they used to actively compete in their sport and they are often coaching their own children. At this level, they tend to be primarily male, with university educations, averaging close to 10 years of coaching experience.

Methods

In this study, it was anticipated that the final model developed by Pelletier et al. (2002) would provide the best explanation of the interaction of the factors in a coaching context. Specifically, perceived pressure from above (administrative burdens) and perceived pressure from below (perceptions of athlete motivation) would be related to self-determined coach motivation, and that this would predict autonomy-supportive coaching behaviours. Specifically, low perceptions of administrative pressure and high perceptions of athlete motivation would predict self-determined motivation for coaching and this was related to increased reports of autonomy-support. An alternative model from the original study, where coach motivation partially mediates the direct relationship between pressure from above and autonomy-support and pressure from below and autonomy-support, was also tested as a comparison (Pelletier et al., 2002).

Participants

The sample was composed of 303 youth sport developmental basketball coaches (women $n = 32$; men $n = 263$; not specified

$n = 8$) registered with their provincial basketball association. Their average age was 45.38 (SD = 9.16) and the majority ($n = 200$, 66%) had at least an undergraduate degree. Their coaching experience ranged from 1 year to 50 years and the average experience was 11.71 years (SD = 9.64), and most were the head coaches of their teams ($n = 224$, 74%). Most coaches had basketball playing experience ($n = 275$, 91%) and were currently coaching their own child ($n = 175$, 58%). The majority of coaches currently coached 1 team ($n = 176$, 58%) and some ($n = 12$, 4%) coached as many as 4 teams. The majority of teams practiced 2 times per week ($n = 218$, 72%) and participated in at least 5 tournaments annually ($n = 176$, 58%). The coaches in this study coached children ranging in age from 9 to 18. Participants were recruited through their Basketball Association as part of a general program evaluation and participation in the study involved completing a 30-min online questionnaire. Before providing informed consent, the coaches were informed that participation was voluntary and that their answers would remain completely anonymous and confidential.

Materials

All coaches completed the following measures through an online questionnaire. The measures below were used to create the four factors included in the model: (1) pressure from below, (2) pressure from above, (3) coach motivation, and (4) autonomy-support.

Coaching inventory

Coaches completed a series of questions pertaining to their team(s), their coaching and playing experience, their training and learning, their reasons for coaching, their perceived obstacles to coaching, and their future plans for coaching. Coaches also responded to demographic questions.

Pressure from above

Coaches completed a modified version of the *Constraints at Work Scale* (Pelletier et al., 2002) to assess perceptions of administrative pressure. The 3 factor scale, with 3 items per subscale, was adapted to fit the context of coaching and contained the following subscales: pressure from coaching colleagues, practice pressure, and the administration (for a review of the items, see Pelletier et al., 2002). Coaching colleague pressure referred to pressure that came from other coaches in terms of direct comparisons in coaching styles, as well as pressure to out-perform other coaches. Practice pressure referred to stress and impositions that were placed on the coach in terms of how they ran their practices and what decisions they would make about the training of their team. Finally, administrative pressure referred to the pressure placed on coaches in terms of how they ran their team, the selection of their team, and whether their club administrations required them to fulfil mandatory obligations. Coaches were required to respond to each item on a 7-point scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). A confirmatory factor analysis using SPSS AMOS 20.00 (IBM, 2012) was conducted on the adapted version of the scale to confirm the structure. The fit indices suggest that the model has an acceptable fit ($\chi^2_{(24)} = 59.54$, $p < .001$, SRMR = .074, IFI = .90, RMSEA = .078) and additional analyses revealed that the subscale reliabilities were acceptable ($\alpha > .72$). A mean score was calculated for each of the three subscales and these were used as indicator variables in the model. High scores were representative of high perceptions of administrative pressure and low scores represented less administrative pressure.

Pressure from below

Coaches completed the *Revised Sport Motivation Scale* (SMS; Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013) to assess their

perceptions of athlete motivation. The SMS-II is a six-factor scale comprised of 18 items measuring sport motivation according to each of the six types of behavioural regulation, according to Self-Determination Theory (Deci & Ryan, 1985). The item stems were modified and coaches were asked to indicate the reasons they believed their athletes played their sport, using a 7-point scale, ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). A confirmatory factor analysis using SPSS AMOS 20.00 (IBM, 2012) was conducted on the scale using the modified stems and the fit indices support the overall structure of the scale ($\chi^2_{(120)} = 226.18, p < .001, SRMR = .055, IFI = .95, RMSEA = .055$). The Cronbach's alpha was calculated for each subscale and revealed they were above the acceptable limit ($\alpha > .77$). Athlete motivation index scores were calculated using the Self-Determination Index (SDI; Blais, Sabourin, Boucher, & Vallerand, 1990), where one item from each of the six subscales were weighted according to their level of autonomy and control and combined into one score. Specifically, with the autonomous measures, the *Intrinsic* subscale items were given a weight of 3, the *Integrated* subscale a weight of 2, and the *Identified* subscale a weight of 1. With the non-autonomous measures, the *Introjected*, *External*, and *Amotivated* subscales were given a weight of $-1, -2,$ and $-3,$ respectively. High index scores indicated high perceptions of athlete motivation.

Coach motivation

Coaches completed a modified version of the *Work Motivation Scale* (Tremblay, Blanchard, Taylor, Pelletier, & Villeneuve, 2009) to assess their motivation towards coaching, according to self-determination theory. The scale items were adapted to fit the context of coaching and coaches were required to respond to each item on a 7-point scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). The subscales contain 4 items and Tremblay et al. (2009) report a strong internal reliability for the subscales ($\alpha = .62-.72$). One item from the external regulation subscale (*“For the income it provides me”*) was eliminated from subsequent analyses because none of the coaches in the sample reported receiving monetary compensation for their duties as a coach. A confirmatory factor analysis using SPSS AMOS 20.00 (IBM, 2012) was conducted on the modified version of the scale to confirm the structure. The fit indices suggest that the model is a good fit ($\chi^2_{(120)} = 224.94, p < .001, SRMR = .055, IFI = .94, RMSEA = .06$) and support the structure of the scale. Additional analyses revealed that after the removal of the external item, the subscale reliabilities were acceptable ($\alpha > .78$). Using the same methods outlined under *Pressure from Below*, index scores were calculated for the coach motivation indicators, where high scores indicated high coach motivation. Given that each indicator variable was composed of an indexed score using a variable from each subscale and that an external regulation item had been removed, only three index variables were calculated. As such, an item from each of the other five subscales was randomly excluded from the subsequent analyses.

Autonomy support

Coaches also completed a shortened version of the *Interpersonal Behaviours Scale* (Beaudry & Pelletier, 2008), a 9-item scale, with three subscales, measuring different types of interpersonal behaviours under the tenants of self-determination theory. This scale was developed for the purpose of measuring individual's perceptions of significant others', or their own, use of need-supportive interpersonal behaviours in different life domain (i.e. *“I provide athletes with opportunities to make decisions”*). The scale can be adapted to various domains by modifying the stems of the item depending on the research context (i.e. *“People in my life...”, “My coach...”,* or *“I...”*). In the present study, only the autonomy-support subscale was used. The scale was validated through a series of four studies that examined the

factor structure and outcome correlations in various life-domains including: home, school, sports, work, and life in general. Coaches indicated, using a 7-point scale ranging from 1 (*Never*) to 7 (*Always*), the extent to which they regularly engaged in autonomy-supportive interpersonal behaviours with their athletes, while coaching. Beaudry and Pelletier (2008) report strong internal reliabilities for the subscales ($\alpha > .78$). Since this measure has not yet been formally published, a confirmatory factor analysis using SPSS AMOS 20.00 (IBM, 2012) was conducted to confirm the structure of the scale. The fit indices suggest that the model is a good fit ($\chi^2_{(24)} = 40.62, p < .001, SRMR = .053, IFI = .96, RMSEA = .049$) and support the overall structure of the scale. For the purposes of the present study, the three items measuring autonomy-supportive behaviours were used as indicator variables for the autonomy-support factor in the model.

Results

Preliminary analyses

Before testing the measurement and structural models, the data was cleaned and screened for out-of-range values, outliers, and sample distribution normality. The results indicated that the variables were normally distributed. All raw data values for the model variables were within their expected theoretical ranges and were screened for univariate outliers. The scores were standardized and data with Z-scores below -3.29 and above 3.29 were considered to be outliers. Across all variables, 23 outlier scores were identified and recoded to the most extreme, but within normal range, values for the particular variable (Tabachnick & Fidell, 2001). Next, the composite or index scores were calculated for each of the model indicators, according to the procedures outlined above. Table 1 highlights the descriptive statistics of all of the indicator variables included in the structural model. Finally, the deleted residuals were calculated for each of the model variable pairings to identify any additional outliers. Participants with scores outside the recommended cut-off point of ± 3 (Tabachnick & Fidell, 2001) were removed from the sample for the subsequent analyses. A total of 8 participants were identified for removal, reducing the sample size to 295 participants for the model testing analyses.

Measurement model

The four-factor model, with 3 indicator variables for each factor, was estimated using the maximum likelihood function, to confirm

Table 1
Descriptive statistics and reliabilities for composite, index, and model variables.

Measure	Mean	Standard deviation	Range
Pressure from above			
1. Colleague Pressure	2.16	0.84	1.00–4.00
2. Practice Pressure	3.31	0.98	1.33–5.33
3. Administrative Pressure	2.48	1.00	1.00–4.67
Pressure from below			
1. Indexed Score 1	16.25	7.29	0.00–31.00
2. Indexed Score 2	18.25	7.22	2.00–33.00
3. Indexed Score 3	17.85	8.36	0.00–36.00
Coach motivation			
1. Indexed Score 1	19.22	7.75	3.00–36.00
2. Indexed Score 2	18.83	7.73	2.00–33.00
3. Indexed Score 3	19.32	8.38	2.00–36.00
Autonomy-support			
1. Item 1	6.22	0.76	3.00–7.00
2. Item 2	6.30	0.69	3.00–7.00
3. Item 3	6.26	0.73	3.00–7.00

Note. $n = 295$.

that the indices were measuring the appropriate latent constructs. One factor represented pressure from above (three indicators: perceptions of pressure from coaching colleagues, practice, and administration), one factor represented pressure from below (three indicators of coaches' perceptions of athletes' motivation), one factor represented coach motivation (three indicators of coaches' motivation for coaching), and one factor autonomy-support (three indicators). The measurement model was tested using SPSS AMOS 20.00 (IBM, 2012), using the maximum likelihood fitting function. All the latent constructs were allowed to correlate. The measurement model showed adequate fit ($\chi^2_{(120)} = 82.15, p < .001, SRMR = .068, IFI = .94, RMSEA = .049$). Examination of the pattern coefficients revealed that they were all significant and loading on the appropriate factors.

Structural model

The structural model predicting coaches' reported use of autonomy-supportive behaviours was estimated using the maximum likelihood function. Since the objective of this study was to replicate the results of the Pelletier et al. (2002) study, a full mediation model was tested. In this model, coach motivation fully mediated the relationship between pressure from above and pressure from below, and autonomy-supportive behaviours. It was hypothesized that the regression coefficient predicting coach motivation from pressure from above would be negative and significant, while the coefficient of pressure from below and coach motivation would be positive and significant. Finally, the regression coefficient predicting autonomy-support from coach motivation would be positive and significant. The analyses revealed that the model fit the data well ($\chi^2_{(48)} = 89.56, p < .001, SRMR = .072, IFI = .93, RMSEA = .052$). The regression coefficients were estimated through a bootstrap analysis using 10,000 resamples and results indicated that each of the paths in the model were significant. Please consult Fig. 1a for the structural model and Table 2 for the confidence intervals of the regression coefficients. Through the bootstrap analyses, the significance of the mediations and their confidence intervals were estimated using the bias-corrected percentile method. Results found that the standardized indirect effect of pressure from above on autonomy-support was negative and significant ($\beta = -.10, p < .001, CI_{95} [.15, .06]$) and the standardized indirect effect of pressure from below on autonomy-support was positive and significant ($\beta = .18, p < .001, CI_{95} [.13, .25]$).

To confirm that the fully mediated model provided the best fit, an alternative model that was also examined by Pelletier et al. (2002) was also tested, using the same procedures. A partially mediated model, where pressure from above and below predicted coach motivation and autonomy supportive behaviours, was selected. It was hypothesized that the regression coefficients of pressure from above on coach motivation and autonomy-support would be negative and significant. The regression coefficients of pressure from below on coach motivation and autonomy-support would be positive and significant. Finally, the regression coefficient of coach motivation on autonomy-support would be positive and significant. The results suggested that this model also had a good fit ($\chi^2_{(50)} = 82.15, p < .001, SRMR = .068, IFI = .94, RMSEA = .049$). All coefficients were significant and in the expected direction, except for the regression coefficient predicting pressure from above to autonomy-support, which was not significant. Please consult Fig. 1b for the structural model and Table 2 for the confidence intervals of the regression coefficients. Again, the significance of the mediations and their confidence intervals were estimated and the results found that the standardized indirect effect of pressure from above on autonomy-support was negative and significant ($\beta = -.07, p < .001, CI_{95} [-.14, -.03]$) and the

standardized indirect effect of pressure from below on autonomy-support was positive and significant ($\beta = .13, p < .001, CI_{95} [.08, .20]$). These findings suggest that coach motivation fully mediates the relationship between pressure from above and autonomy-support, while it only partially mediates the relationship between pressure from below and autonomy-support. Since the two models are nested (fully mediated model is nested within the partially mediated model), a chi-square difference test was conducted to determine which of the models provides the best explanation of the data. The difference tests results reveal that there was a significant difference between the two models ($\chi^2_{(2)} = 6.76, p < .05$), which supports that the partially mediated model provides a better explanation of the data.

Since the regression coefficient between pressure from above and autonomy-support was not significant in the partially mediated model, a third model was tested without this relationship, using the same procedures. In this third model, the relationship between pressure from above and autonomy-support was fully mediated by coach motivation, while the relationship between pressure from below and autonomy-support remained partially mediated by coach motivation. It was hypothesized that the significance and direction of the factors would remain consistent with the second model, but that this more parsimonious version would provide a better fit. Results suggest that this model had a very good fit ($\chi^2_{(49)} = 82.79, p < .001, SRMR = .067, IFI = .94, RMSEA = .048$) and that all regression coefficients were significant and in the expected direction (see Fig. 1c and Table 2 for the results). The standardized indirect effect of pressure from above on autonomy-support was negative and significant ($\beta = -.07, p < .001, CI_{95} [-.12, -.04]$) and the standardized indirect effect of pressure from below on autonomy-support was positive and significant ($\beta = .12, p < .001, CI_{95} [.08, .17]$). A chi-square difference test was conducted to determine whether this third model was a better fit and results support that there was no significant difference between the two models ($\chi^2_{(1)} = .64, p > .05$). Since there were no differences between the two models, the more parsimonious model (third model), has the better fit.

Discussion

The purpose of this study was to validate a model that suggested developmental coaches' self-determined motivation would be positively influenced by their low perceptions of pressure from administrative sources (pressure from above) and high perceptions of self-determined motivation in their athletes (pressure from below). Furthermore, this self-determined motivation for coaching would predict reports of autonomy-supportive coaching styles.

The results supported the fit of slightly different model where coach motivation fully mediated the relationship between pressure from above and autonomy-supportive behaviours, and partially mediated the relationship between pressure from below and autonomy-supportive behaviours. As expected, coaches' self-determined motivation was positively associated with autonomy-supportive coaching behaviours. Of particular interest was the direct relationship between pressure from below and autonomy-supportive behaviours that appeared to be evident in the coaching context, but not the academic context. The findings supporting this additional relationship was not completely unexpected as it replicated previous findings (e.g. Pelletier & Vallerand, 1996). As suggested by Pelletier and Vallerand (1996) this is potentially the result of a behavioural confirmation where individuals in a supervising role (i.e. coaches) who perceive subordinates (i.e. athletes) as having higher quality motivation are more likely to engage with that subordinate and to want to spend time with them. On the other hand, supervisors who perceive subordinates as not being

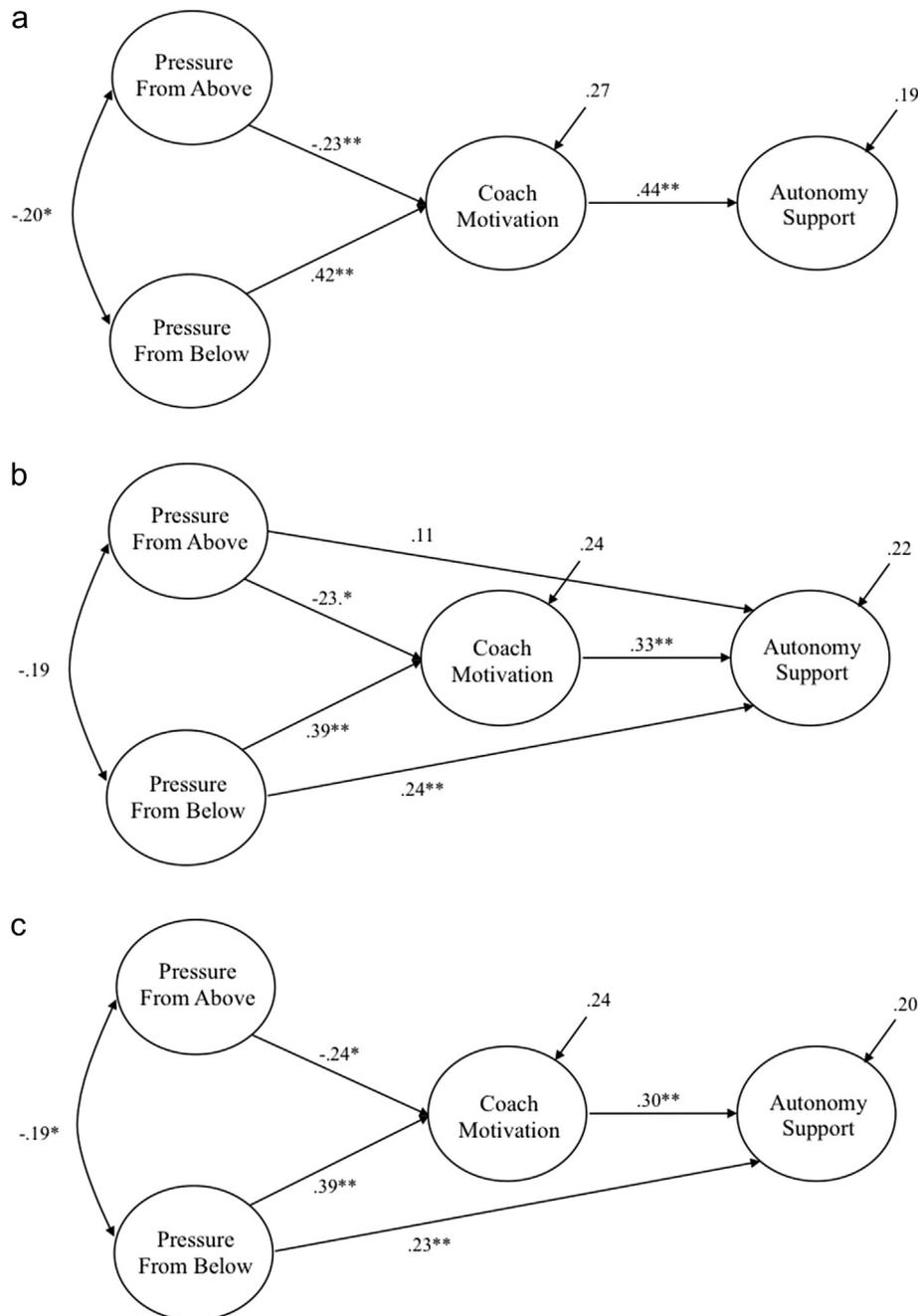


Fig. 1. Structural equation model illustrating the standardized relationships among “Pressure From Above”, “Pressure From Below”, “Coach Motivation”, and “Autonomy Support”. Regression coefficients were calculated using 10,000 bootstrapped resamples and the confidence intervals are available in Table 2. Values adjacent to endogenous variables represent the squared multiple correlations. The latent constructs for “Pressure From Above” are (1) colleague pressure, (2) practice pressure, and (3) administrative pressure. The latent constructs for “Pressure from Below” and “Coach Motivation” are the Index Scores for the six regulation-types in sport and coach motivation calculated according to the methods described by Blais et al. (1990). The latent constructs for “Autonomy Support” are the three items measuring autonomy-supportive behaviours. * $p < .05$, ** $p < .01$.

motivated toward an activity are likely to take less interest in these individuals.

Overall, the results support that the proposed model is appropriate for explaining autonomy-supportive behaviours in coaching contexts. This study focused on the context of developmental coaches and the results provide important insight to the current literature on autonomy-supportive coaching behaviours. Specifically, these results suggest that motivated coaches are more likely to engage in autonomy-supportive behaviours. Furthermore, this study identified new environmental factors that impact coaches and examined how they subsequently, through coaches’ motivation,

influence whether coaches engage in autonomy-supportive behaviours with their athletes.

The present results, combined with Stebbings et al.’s (2012) findings, suggest that a number of environmental factors are affecting coaches and their ability to engage in autonomy-supportive behaviours with their athletes. Athlete-focused research has already highlighted the importance of autonomy supportive coaching behaviour (i.e. Mageau & Vallerand, 2003). Since the research is suggesting that there is a link between environmental factors and coaches likelihood of engaging in autonomy-supportive coaching behaviours, increasing the understanding of

Table 2
Standardized regression coefficients, confidence intervals, and significance of direct effects in models.

Direct effects	β	p	CI ₉₅
Model 1 – Fully mediated			
Pressure from above → Motivation	-.23	.001	-.36, -.14
Pressure from below → Motivation	.42	.001	.31, .51
Motivation → Autonomy	.44	.001	.20, .47
Model 2 – Partially mediated			
Pressure from above → Motivation	-.23	.001	-.33, -.10
Pressure from below → Motivation	.39	.001	.28, .47
Pressure from above → Autonomy	.11	ns	-.07, .22
Pressure from below → Autonomy	.24	.001	.14, .34
Motivation → Autonomy	.33	.001	.20, .49
Model 3 – Final model			
Pressure from above → Motivation	-.24	.001	-.33, -.14
Pressure from below → Motivation	.39	.001	.28, .49
Pressure from below → Autonomy	.23	.001	.13, .33
Motivation → Autonomy	.30	.001	.14, .41

Note. $n = 295$. Bootstrapping was conducted with 10,000 cases of resampling. Confidence intervals were calculated using the bias-corrected percentile method.

the factors that influence coaches will not only have positive benefits for coaches, but for athletes too.

Limitations

Although this study represents an important step in furthering the examination of the environmental factors that are related to autonomy-supportive coaching behaviours, there are some limitations. The first limitation refers to the measure of pressure from above. Since the aim of this project was to replicate Pelletier and colleagues' model (2002) for predicting teachers' autonomy-supportive behaviours, the measures of pressure from above were adapted from measures that were specific to the teaching context. Although the results of this study did provide support for the relevance of these factors in the coaching context, these factors did not include some specific aspects of the coaching context that may be relevant. For example, coaching research should also examine the role of parents and their influence on the coaches' perceived administrative pressure as a separate factor. A second limitation is that the model was tested in only one sport context. It is important to replicate the model with coaches and athletes from other areas, representing both individual and team sports.

Future directions

Given the overall lack of empirical research on coaches, compared to athletes, future research should continue to examine sport coaches. When considering the understanding of autonomy-supportive coaching, research should focus on is the integration of Stebbings et al. (2012) findings and the findings of the present study. Specifically, the roles of coach need satisfaction, well-being, and motivation should be examined in combination to see how they mediate the relationship between environmental factors and autonomy-supportive behaviours. Taylor et al. (2008) conducted a similar study in an academic context and found that satisfaction of the basic psychological needs mediated the relationship between the environmental factors (e.g. pressure from above and pressure from below) and teaching motivation. Testing a similar model in a coaching context would consolidate the existing findings in the autonomy-supportive coach literature and help create a parsimonious model predicting autonomy-supportive coaching behaviours. Research should also examine how other factors that have been related to teachers' use of autonomy-supportive behaviours, such as performance evaluation, time constraints, and emotional

exhaustion (Soenens et al., 2012; Taylor et al., 2009), are related to coaches' use of autonomy-supportive behaviours.

Building on this model, future research should aim to examine the factors that predict all three types of need-supportive behaviour. Specifically, what factors influence whether coaches will engage in relatedness- and competence-supportive behaviours. No studies to date, from any field, have examined the predictors of all three types of need-supportive behaviour. A potential reason for this gap in the research is the lack of a validate tool designed to measure the interpersonal behaviours that both support, and thwart, all three basic psychological needs. Examining the contributions and predictors of these behaviours is important as SDT posits that the support of these needs can lead to important motivational outcomes (e.g. Pomerantz, Cheung, & Qin, 2012).

Finally, future research should examine which of the identified environmental factors have the greatest influence on coaches' and determine whether the relative influence of these factors fluctuate depending on the type of coach (recreational, developmental, or elite) and whether it changes throughout a coaching season. Current studies, including the present study, have focused exclusively on cross-sectional measures of coach behaviour. A longitudinal study grounded within a particular coaching context, would demonstrate how these factors fluctuate throughout a coaching season. By harnessing the relative influence of each factor and determining how their saliency fluctuates throughout the season, this research will identify which factors coach training programs should focus upon, as well as the ideal time of the season to administer training. These results can then be incorporated into training programs and help coaches learn the importance of autonomy supportive behaviours and the role that external factors could have on their motivation and their behaviour.

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