

The effects of coach-athlete working alliance on affect, worry and performance satisfaction among junior elite athletes

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Abstract

The current study aimed to explore the association between subjective performance and coach-athlete working alliance, positive and negative affect, and worry among Norwegian junior elite athletes. A sample of 358 junior elite athletes from 3 different high schools specialized in sports participated in the investigation. A theoretical model was tested, in which working alliance between coaches and athletes was expected to be associated with positive and negative affect, worry and subjective performance. Results show that this theoretical model explains 27% of the variance in subjective performance, whereas working alliance is significantly associated with positive and negative affect. Furthermore, worry, and positive and negative affect are significantly associated with subjective performance, while worry is significantly associated with negative affect. These results are discussed based on the Cognitive Activation Theory of Stress, and indicate that there are three crucial facets essential for building an effective coach-athlete relationship. These include, firstly, coaches' abilities to establish strong emotional bonds with their athletes; secondly, coaches' competence in setting goals that are mutually understood; and thirdly, determination of tasks which are perceived by athletes as helpful in goal attainment.

Key words: working alliance, sport, affect, worry, performance

Introduction

A long history of research and practitioners' experience within sport science postulates that coaches have a significant impact on their athletes' development and well-being (Blom, Watson II, & Spadaro, 2010; Gould, Collins, Lauer, & Chung, 2007; Jones, Armour, & Potrac, 2004; Jowett, 2005). Research shows significant associations

between effective coach-athlete relationships and improvements in performance, personal treatment, team cohesion and motivation (Jowett & Chaundy, 2004; Jowett & Don Carolis, 2003; Olympiou, Jowett, & Duda, 2005; Olympiou, Jowett, & Duda, 2008). Based on these findings, effective coach-athlete relationships are said to be experienced as intersubjective fellowships. An intersubjective fellowship allows coaches and athletes to gain a mutual understanding of their different perspectives, and base their relationships on trust and respect (Moen & Federici, 2017). Thus, coaches' empathic understanding and genuine interest

in helping their athletes forms the fundamental foundation in effective coach-athlete relationships.

Improvement in performance is the ultimate goal of any athlete taking their sport seriously, and it is undeniable that the coach-athlete relationship plays a powerful role in this process (Jones et al., 2004). Perhaps the most obvious sign of improvement in performance is progress in training, exemplified by better results or improved physical attributes. However, it is important to remember that to achieve improvements in performance, training and preparation must reach far beyond the physical. Improvements in performance is greatly influenced by athletes' psychological states and processes, such as their mental well-being and coping strategies (Moen, Myhre, & Stiles, 2016). Such psychological variables are perhaps less obvious than athletes' physical attributes or excellent training outcomes, but they are certainly not any less important contributor to an athlete's performance. If the coach-athlete relationship leads to improvements in athletes' sports, athletes are most likely to experience positive affect reactions and reduce their worries since the strategies they are using are experienced as effective (Moen et al., 2016). If it does not lead to improvements in athletes' sports, athletes are more likely to experience negative affect and increased worries, since they are not able to use their strategies to cope with situational demands (Ursin & Eriksen, 2004).

The next sections will introduce the literature review used to investigate the importance of identifying goals and strategies as a part of the coach-athlete relationship, and the associations with positive and negative affect, worry and performance among junior elite athletes. The goal is to develop a coach-athlete model that addresses the importance of affect, worry, working alliance and performance satisfaction.

The coach-athlete relationship

A commonly used sport-specific measurement of the dimensions relevant for coach-athlete relationships is the

Coach-Athlete Relationship Questionnaire (CART-Q) (Jowett & Ntoumanis, 2001; Jowett & Wylleman, 2006). The CART-Q is built upon four main dimensions: closeness, commitment, complementarity (Jowett & Ntoumanis, 2001; Jowett & Ntoumanis, 2004), and co-orientation (Jowett, 2005). Closeness refers to the affective connection in the relationship, while commitment refers to the intention to stay in the relationship (Jowett & Ntoumanis, 2004). Complementarity describes the interaction and behaviors between the coach and athlete, whereas co-orientation refers to what level the perceptions of both parts are based on common ground (Jowett, 2007).

A limitation of the CART-Q is that it does not address dimensions that are directly associated with performance (Jowett & Ntoumanis, 2001; Jowett & Ntoumanis, 2004). Elite sports are competitive in nature, and athletes normally have a strong desire to be goal-driven and ambitious in their sports (Moen, Myhre, & Sandbakk, 2016). Thus, the ultimate goal for the helping relationship in junior elite sport is to help athletes improve their performance. To achieve that, athletes' goals must be related to important sport-specific capacities, and the strategies that are used must be effective to improve these capacities (Locke & Latham, 2002). The CART-Q does not address the importance of goals and strategies directly.

To overcome the limitations posed by the CART-Q in assessing the importance of goals and strategies in the coach-athlete relationship, it is necessary to look beyond measurements used in sport science. Research from other helping relationship environments, such as clinical environments, shows that effective helping relationships can be explained by the working alliances between therapists and clients (Horvath & Greenberg, 1989; Ivey, Ivey, & Zalaquett, 2014). Such working alliances are conceptualized in the Working Alliance Inventory scale (WAI).

The WAI is based around three key factors: bonds, goals and tasks (Bordin, 1979, p. 252). Bonding is the "partner compatibility" that develops from the interaction between therapists and their clients (Bordin, 1994). A high level of bonding reflects the emotional attachment and

genuine interest of the helper to take part in the relationship (Bordin, 1994; Horvath & Greenberg, 1989). Goals are defined as the desired outcome from the helping relationship. Regarding goals, the key is to reach a high level of mutuality (Bordin, 1994). Tasks are defined as actions that clients need to accomplish to reach their goals. Both parts need to perceive that these tasks are applicable and beneficial (Bordin, 1979).

Recently, the WAI has been adapted to other helping relationship domains, such as sports (Bahrick, Russel, & Salmi, 1991; Moen et al., 2016). In its sport-specific application, effective working alliances between coaches and athletes must be based on empathic understanding, clear goals that are mutually understood, and both an understanding and a strong belief in the tasks that are defined as strategies to reach these goals (Moen et al., 2016; Moen & Myhre, 2017).

Compared with the CART-Q, the WAI addresses the importance of wanted outcomes (goals) and accompanying strategies (tasks) based on mutual perspectives to examine if the coach-athlete relationship is effective or not (Jowett & Cockerhill, 2003; Moen, Giske, & Høygård, 2015). Furthermore, the WAI focuses on the importance of producing clear goals, accompanying tasks and strategies that are used to reach athletes' goals (Moen et al., 2016). Ultimately, athletes need to experience that these tasks and strategies help them to progress in their sports. Therefore, to investigate the effectiveness of relationships in junior elite sport and possible associations between the coach-athlete relationship and performance development, the dimensions that the relationship measurements are built upon must be associated with performance.

Performance

Elite sports are competitive in nature, and in order to become or continue to be competitive, the development of important sport-specific capacities is essential (Moen et al., 2016). Importantly for sport science, the framework that the WAI is built upon is found to be essential in achieving performance enhancements in user defined areas.

Empathic understanding. First of all, the importance of empathic understanding is highlighted as a necessity to achieve growth and development in helping environments (Ivey et al., 2014; Moen, 2014; Jowett, 2005; Moen & Federici, 2013). This is explained by the importance of honesty and openness that are achieved when the person who seeks help is truly heard and understood by the helper. Empathic understanding makes it possible for the coach to connect with the athlete at a deeper level, so that the athlete is honest and open in the dialogue with the coach. The coach needs to understand how the athlete thinks and feels regarding the relevant sport-specific and personal issues that are important for progress in sport. Accordingly, the open and respectful attitude towards the athlete will also stimulate the feeling of being self-determined in the process of developing own potential. Such an attitude is found to stimulate intrinsic motivation positively (Ryan & Deci, 2002; Moen & Federici, 2017). Thus, empathic understanding gives the coach the opportunity to be well-informed about the athlete's situation and accordingly stimulate intrinsic motivation in the process. This ultimately has a powerful effect on the athlete's performance. The importance of empathic understanding is well-documented in measurements used to document the coach-athlete relationship in sport, such as the CART-Q (Jowett & Ntoumanis, 2001; Jowett & Wylleman, 2006).

Clear goals. Secondly, goal setting theory claims that goals are predictive of performance (Locke & Latham, 2002). The effect from goals on performance is claimed to be influenced by moderators such as clarity, difficulty, strategies, commitment and feedback (Locke & Latham, 2002). Goals need to be clear, challenging and associated with defined strategies to effectively influence performance (Locke & Latham, 2002; Moen, 2014). Accordingly, athletes need to be committed to the goal and continuously receive feedback, in order to achieve the set goals (Locke & Latham, 2002). Interestingly, research also shows that the level of commitment and feedback are influenced by the empathic understanding between the coach and the athlete (Moen & Kvalsund, 2013; Moen & Verburg, 2012).

Thus, the combination of empathic understanding and focus on goals in effective working alliances may induce positive change in athletes. The importance of clear goals that are mutually understood is clearly addressed in the WAI, but not in the typical sport-specific measurements such as the CART-Q (Jowett & Ntoumanis, 2001; Jowett & Wylleman, 2006).

Strategy. Thirdly, the strategy dimension is found to be predictive of performance (Locke & Latham, 2002). Key factors argued to be influential in achieving change and progress include the focus on strategies, and the experience of strategies as efficient to achieve goals in effective working alliances (which in turn influences the athlete's self-efficacy). Bandura's self-efficacy construct has been found to be one of the most important factors, and often the single most important factor, contributing to successful performances in several change-inducing environments (Feltz, Short, & Sullivan, 2008). Self-efficacy is defined as the belief in one's ability to reach their goals (Bandura, 1997; Feltz et al., 2008). Thus, athletes' beliefs in their capabilities to organize and execute the actions required (tasks) to produce given attainments are found to be an important variable in predicting performance. The importance of believing that decided tasks will lead to goal achievement is addressed in the WAI, but not in the CART-Q (Jowett & Ntoumanis, 2001; Jowett & Wylleman, 2006).

Cognitive Activation Theory of Stress (CATS)

The coach-athlete relationship and performance seem to be tightly associated with cognitive activation (worry) and affective reactions (affect). The cognitive activation theory of stress (CATS) can be used as a theoretical framework to elucidate this association.

Elite junior athletes who experience goal achievements are more likely to experience a positive stress response, because of the confirmed ability to meet situational demands (Moen, Abrahamsen, & Furrer, 2015; Ursin & Eriksen, 2004). However, when young elite athletes experience an inability to meet situational demands, for

example lack of goal attainments, the experience of negative stress is a natural response (Moen et al., 2016). Such negative stress is closely related to negative affect, while positive stress is closely related to positive affect (Lazarus, 1999). Importantly, worry is also stimulated when a situation is considered to be beyond an athlete's control, such as when an athlete is exposed to negative stress (Borkovec, Robinson, Pruzinsky, & DePree, 1983; Moen et al., 2016). Worry is defined as a mental problem-solving process on an uncertain issue containing the possibility of one or more negative outcomes (Borkovec et al., 1983). However, in effective relationships that are grounded in the WAI, where the elite junior athletes believe that the actions they have agreed upon with their coaches are helping them accomplish their goals, there is no need to worry (Moen et al., 2016). Additionally, when athletes experience mastery in situations they are exposed to, they are most likely to experience positive affect (Moen et al., 2016; Ursin & Eriksen, 2004).

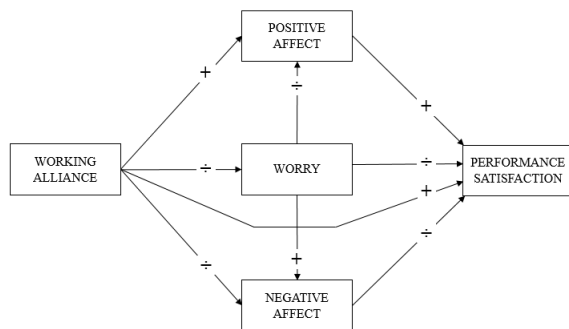
Interestingly for sport science, a recent study claims that the WAI is a suitable measure to explain dysfunctional experiences among elite junior athletes (Moen & Myhre, 2017). This finding shows that ineffective coach-athlete relationships can potentially explain different types of performance impairments. Earlier research also claims that effective coach-athlete relationships are crucial for successful outcomes such as performance enhancements (Rhind, Jowett, & Yang, 2012). However, to our knowledge no studies have investigated if the coach-athlete working alliance is associated with performance. In elite junior sport, there is an expectation that coaches are supposed to help their athletes in achieving their goals and become competitive in their sports (Benson et al., 2006; Jones et al., 2004). Being competitive or not is of importance in elite junior sport, and the coach-athlete relationship is therefore associated with affect and worry. These variables may serve as mediators of performance (Moen et al., 2016). To our knowledge, no other studies have investigated these potential associations.

The present study

The primary aim of this study is to investigate associations between the coach-athlete working alliance, affect, worry and perceived performance in a group of Norwegian high-level junior athletes. The present study will test a measurement that addresses the goal and strategy dimensions in the coach-athlete relationship, and investigate possible associations with positive and negative affect, worry and perceived performance among junior elite athletes.

Based on the theoretical arguments in the current study, it is hypothesized that the WAI predicts worry negatively, positive affect positively, and negative affect negatively. Further, it is expected that worry predicts positive affect negatively, and negative affect positively. Finally, the WAI and positive affect is expected to predict performance satisfaction positively, whereas worry and negative affect is expected to predict performance satisfaction negatively. The model is shown in Figure 1.

Figure 1. Hypothesized model



Method

Participants

Five hundred and twenty-nine junior athletes practicing a wide variety of sports were invited by the authors in the end of October 2015 to voluntarily participate in the investigation. The invited athletes were from three different

Norwegian high schools specialized for elite sports. The athletes have to document both talent and ambition to gain admission to these schools. Training is on the schedule at school every day of the week, and athletes normally practice their sports after school some of the days during weekdays and weekends.

From the 539 participants, 358 (54% males and 46% females) completed the study, which gives a response rate of 66.4%. The sample had a mean age of 18.2 years (ranging from 17 to 20 years), and practiced a variety of sports with cross country skiing (28%), soccer (22%) and biathlon (13%) being those most frequently reported. Data from the current study is a part of a bigger data set that is used in different theoretical approaches. Theoretical approaches where illness and injuries and athlete burnout are published from this data set (Moen & Myhre, 2017; Moen, Myhre, Klöckner, Gausen, & Sandbakk, 2017).

Procedure

The Norwegian Social Science Data Services (NSD), which is the research ethic board for social sciences in Norway, approved this study. The researchers visited the three involved schools, and gave oral information about the study and the data collection to athletes and their coaches. Thereafter, athletes received an invitation to the survey by e-mail, and were given three weeks to complete the survey. In this period, a reminder was sent every four days to those who had not completed the survey.

In the survey, athletes had to respond to general variables covering demographics such as age, gender and type of sport. Further, questionnaires measuring coach-athlete working alliance, positive and negative affect, worry and performance satisfaction were included. These measurements were based on previously developed scales, proven to hold satisfactory validity and reliability. If a Norwegian translation of a scale was not available, translation-back-translation methods were performed (Duda & Hayashi, 1998). Thus, first the translation was done and from English to Norwegian, and then back to English to check for potential translation errors.

Instruments

Working Alliance Inventory – Short Form. The Working Alliance Inventory-Short Form (WAI-S; Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989) is a version adjusted for the sport context. WAI-S was used to assess the characteristics of the coach– athlete relationship. This 12-item questionnaire yields three central dimensions: (a) agreement on the goals pursued in the relationship (the goal dimension); (b) agreement on tasks to be accomplished to achieve these goals (the task dimension); and (c) the development of a personal bond between the coach and the athlete (the bonding dimension). Athletes were asked to consider these 12 items regarding their thoughts and feelings towards their responsible coach on a 7-point scale ranging from 1 (never) to 7 (always). Examples of items covering these dimensions are “My coach and I collaborate on setting goals for me in my sport”, “I feel that the things my coach and I do in training will help me accomplish what I aim for” and “I feel that my coach appreciates me” for the goal, task and bonding dimensions, respectively. WAI-S is commonly used in psychotherapy research (Martin, Gaske, & Davis, 2000), and validation studies have proven good construct validity and high reliability (Corbière, Bisson, Lauzon, & Ricard, 2006; Tracey & Kokotovic, 1989). The Cronbach’s alpha for the total measurement in the current study was .92, while it was .64, .89 and .90 for the goal, task and bond dimension respectively (see Table 1).

Penn State Worry Questionnaire. To measure worry, a Norwegian version of Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990; Pallesen, Nordhus, Carlstedt, Thayer, & Johnsen, 2006) was used. PSWQ consists of 16 items, each rated on a five-point Likert scale ranging from 1 (not at all typical) to 5 (very typical). Athletes were asked to rate how typical or representative each of the different items were for them. An example of an item is “As soon as I finish one task, I start to worry about everything else I have to do”. The Norwegian version of the questionnaire is proven to hold reliability and validity in line with former studies

conducted with the original PSWQ (Davey, 1993; Molina & Borkovec, 1994; Pallesen et al., 2006). The Cronbach’s alpha for this measurement in the current study was .93 (see Table 1).

Positive and Negative Affect Schedule. To measure positive and negative affect in this study, the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used. PANAS consist of two subscales that measure positive affect and negative affect respectively. Athletes were asked to rate the extent to which they have experienced each particular emotion within the last week as an athlete, with reference to a 5-point Likert scale from 1 (not at all) to 5 (very much). Ten descriptors representing different emotions are used for positive affect (i.e. inspired - strong – enthusiastic) and negative affect (i.e. afraid – distressed – hostile), respectively. The factor structure of PANAS has previously been supported in a study among young athletes (Crocker, 1997). The Cronbach’s alphas for this measurement in the current study were .84 (positive affect) and .85 (negative affect) (see Table 1).

Athlete Satisfaction Questionnaire. To measure athletes’ perceived satisfaction with their own performance, the sub-scale “Individual performance” from the Athlete Satisfaction Questionnaire (ASQ; Reimer & Toon, 2001) was used. In this scale, athletes are asked to evaluate four items related to their satisfaction with their own task performance over the last month. Task performance includes absolute performance, improvements in performance, and goal achievement. Athletes gave their answers on a 7-point Likert-scale, which ranged from 1 (not at all satisfied) to 7 (extremely satisfied). An example item from this scale is “I am satisfied with the degree to which I have reached my performance goals during the last month”. Previous research has supported the criterion validity and the internal consistency of ASQ (Reimer & Chelladurai, 1998). Cronbach’s alpha for the subscale “Individual performance” of ASQ in the current study was .91 (see Table 1).

Data analysis

Firstly, data was examined for correlations between variables by using Pearson correlational coefficient. To establish the quality of the measurement instruments and to determine the zero-order correlations between study variables, data was analyzed using confirmatory factor analysis (CFA). Secondly, the proposed model was tested with structural equation modeling (SEM) using the IBM SPSS Amos™ 21 software. Due to its robustness towards violations of the multi-normality assumptions, the maximum likelihood estimator (MLR) was used, as suggested by Brown (2006). The first indicator of each scale was used to set the metric of the latent variables, in accordance with the standard approach in most latent variable models (Brown, 2006).

We further explored relations between variables in both the CFA, and the structural model by means of SEM, which is a statistical methodology that takes a confirmatory approach to the analysis (Byrne, 2010). In this approach, a hypothesized model of the relations between constructs is tested statistically to determine the extent to which it is consistent with the data, also referred to as the goodness of fit. If the goodness of fit is adequate, the plausibility of the proposed relations among the constructs is supported.

To assess the model fit, we used well-established

indices, such as CFI, IFI, TLI, and RMSEA, as well as the chi-square test. Fit indices for SEM refer to the ability of a model to reproduce the data in the study. For the CFI, IFI, and TLI indices, values higher than .90 are typically considered acceptable, and values higher than .95 indicate a good fit of the data (Byrne, 2010; Hu & Bentler, 1999). For well-specified models, an RMSEA of .06 or less reflects a good fit (Hu & Bentler, 1999; Tabachnick & Fidell, 2007).

Results

Correlations and descriptive statistics

Table 1 shows the correlations between study variables as well as possible maximum scores, statistical means, standard deviations, and Cronbach's alphas. Worry exerted the strongest correlation with NA (positive = more Worry equals more NA), followed by WAI and PA (positive), WAI and NA (negative), WAI and subjective performance (positive), and WAI and Worry (negative).

The zero order correlations between the study variables vary from .17 to .43 (positive or negative relationships). The Cronbach's alphas of the variables in this study varied from excellent to acceptable (see Table 1).

Table 1. Pearson correlations and descriptive statistics of the study variables

Variable	1	2	3	4	5
1. Working alliance	-				
2. Worry	-.28**	-			
3. Positive affect	.39**	-.17**	-		
4. Negative affect	-.31**	.43**	-.19**	-	
5. Performance satisfaction	.31**	-.20**	.43**	-.26**	-
Maximum score	7	7	5	5	7
Number of items	12	16	10	10	4
Mean	5.35	2.63	3.76	2.24	4.70
Standard deviation	1.10	.85	.59	.70	1.10
Cronbach's alpha	.92	.93	.84	.85	.91

Note.*** $p < .001$. The estimates are based on the observed data.

Measurement model (CFA)

To investigate the measurement model and the relations between variables, we initially conducted a confirmatory factor analysis of the latent variables. Results from the preliminary CFAs, calculated for each latent variable separately, revealed good fit for the model of Athlete Satisfaction as a latent variable with four indicators. However, the preliminary CFAs, calculated for WAI, Worry and PA and NA separately, did not reveal good fit to data, probably due to high complexity in relation to sample. This appeared for WAI when entered as a second-order latent variable with "Goal", "Task" and "Bond" as primary factors (each primary factor containing four indicators, conform to the items of the questionnaires). Same results occurred for Worry, NA and PA when entered as latent variables with sixteen, ten and ten indicators respectively (each conform to the items of the questionnaires).

Thus, to reduce complexity, a parceling method was applied. Parceling is a common practice in structural equation modeling and involves using composite scores derived from multiple individual scale items (Landis, Beal, & Tesluk, 2000). The technique has a number of proposed advantages that include higher sample-size-to-estimated-paths ratios, increased reliability of manifest indicators and less violation of normality assumptions (Bandalos & Finney, 2001). For indicators of the latent variables Worry, PA and NA, three parcels constructed from item means of three to four single items were used (Landis et al., 2000). For the latent variable Working alliance, three parcels

constructed from item means conformed to the sub-scales goal, task and bond, were used as indicators. With these adjustments, acceptable model fit was achieved for these models as well.

For the final measurement model, a covariance structure model where all latent variables were specified to correlate with one another was tested. This model had good fit to data ($\chi^2(109) = 181.623$, $p < .001$, $CMIN/DF = 1.666$, $RMSEA = .043$, $IFI = .979$, $TLI = .973$, and $CFI = .979$), and all loadings in the model were significant at $p < .001$.

Supporting the zero-order correlations (see Table 1), correlations between the latent variables varied from low to moderate/strong, as showed in Table 2. Result from the CFA supports the conceptualization of five separate but correlated constructs (see Table 3).

Structural model

As acceptable model fit was achieved in the CFA, the hypothetical model displayed in Figure 1 was further tested by means of specifying relations between variables as depicted in the model. Standard errors and confidence intervals of the model parameter estimates were bias corrected by a bootstrapping procedure with 500 bootstrap samples. The path model had acceptable fit to the data ($\chi^2(110) = 183.863$, $p < .001$, $CMIN/DF = 1.671$, $RMSEA = .043$, $IFI = .978$, $TLI = .973$, and $CFI = .978$). Estimates of the standardized regression weights and the squared multiple correlations are shown in Figure 2, whereas unstandardized regressions weights, standard errors, total effects, and indirect effects are presented in Table 4.

Table 2. Correlations between the latent variables in the covariance structure model

Variable	1	2	3	4	5
1. Working alliance	-				
2. Worry	.21***	-			
3. Positive affect	.46***	-.11	-		
4. Negative affect	.33***	.55***	.23***	-	
5. Performance satisfaction	.35***	-.13*	.49***	-.29***	-

Note. *** $p < .001$, ** $p < .01$, * $p < .05$.

Table 3. Results of the Confirmatory Factor Analysis of Working alliance, Negative affect, Positive affect and dimensions of Burnout.

Indicator		Latent variable	b	S.E.	β	p
Bond	←	Working alliance	1		.85	
Goal	←	Working alliance	.81	.04	.80	***
Task	←	Working alliance	1.06	.05	.94	***
Neg_affect1	←	Negative affect	1		.77	
Neg_affect2	←	Negative affect	.77	.06	.69	***
Neg_affect3	←	Negative affect	.99	.07	.85	***
Pos_affect1	←	Positive affect	1		.80	
Pos_affect2	←	Positive affect	.85	.07	.68	***
Pos_affect3	←	Positive affect	1.02	.07	.85	***
Worry_1	←	Worry	1		.82	
Worry_2	←	Worry	.87	.05	.83	***
Worry_3	←	Worry	.55	.05	.59	***
Worry_4	←	Worry	.83	.05	.80	***
Performance1	←	Performance satisfaction	1	.05	.85	
Performance2	←	Performance satisfaction	.91	.05	.77	***
Performance3	←	Performance satisfaction	1.05	.05	.88	***
Performance4	←	Performance satisfaction	1.15		.91	***

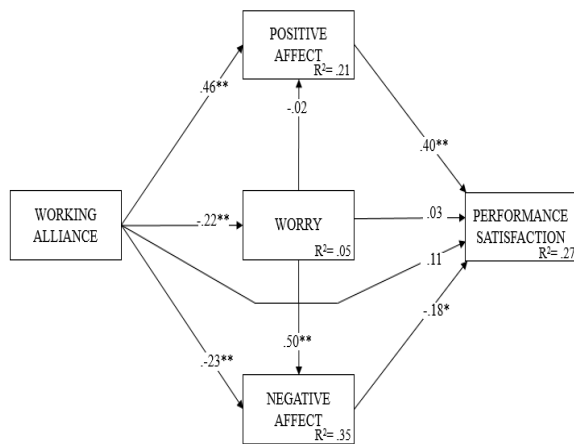
Note: ***p < .001

Table 4. Unstandardized regressions weights with its standard errors, total effects and indirect effects

	Regressions Weights				Total Effects				Indirect Effects					
	b	SE	β	p	b	SE	CO90	p	b	SE	CO90	p		
Effects on Worry:														
Working alliance	-.13	.03	-.22	**	.15	.04	-.20	-.06	**					
Effects on Positive affect:														
Working alliance	.23	.03	.46	**	.23	.03	.18	.30	**	.01	.01	-.01	.02	.84
Worry	-.01	.05	-.02	.85	-.01	.07	-.12	.10	.86					
Effects on Negative affect:														
Working alliance	-.14	.03	-.23	**	-.21	.05	-.30	-.14	**	-.07	.02	-.10	-.03	**
Worry	-.53	.07	-.50	**	.53	.07	.41	.64	**					
Effects on Performance satisfaction:														
Working alliance	.10	.06	.11	.09	.33	.06	.23	.42	**	.23	.04	.16	.29	**
Worry	.05	.14	.03	.67	-.11	.11	-.30	.06	.30	-.16	.09	-.34	-.02	.06
Positive affect:	.74	.12	.40	**	.74	.12	.55	.94	**					
Negative affect:	-.27	.14	-.18	*	-.27	.14	-.51	-.06	*					

Note. *** p < .001, ** p < .01, *p < .05.

Figure 2. Structural Equation Model (Standardized Solution; $N=358$),



** $p < .01$

As shown in Figure 2, the WAI influenced worry significantly. In total, working alliance explained 5% of the variance in worry. Further, working alliance and worry explained 21% and 35% of the total variance in positive affect and negative affect respectively. Finally, working alliance, worry, positive affect and negative affect explained 27% of the variance in performance satisfaction.

Discussion

The purpose of the present study was to explore relations between working alliance, worry, affect and performance satisfaction among Norwegian high-level junior athletes attending high schools specialized for sports. Specifically, the theoretical model in the present study hypothesized WAI to be negatively associated with worry and NA, and positively associated with PA. Further, worry was expected to be negatively associated with PA and positively associated with NA. Finally, WAI and PA were expected to be positively associated with performance satisfaction, whereas worry and NA was expected to be negatively associated with performance satisfaction. The results in the present study mainly confirm these hypotheses.

The impact of working alliance on worry and affect

In the hypothesized model, it was expected that WAI was negatively associated with worry and NA, and positively associated with PA. These expectations were confirmed. This result can be explained by the principles the WAI is built upon; bond, goals and task. Bond is representing the athlete's feeling of emotional commitment and genuine interest from the coach to help the athlete in the relationship. A high score on this dimension means athletes feel that they are heard and understood by their coach. If athletes are heard and understood, it is likely that they are experiencing an emotional attachment in the relationship with their coaches (Jowett, 2005). Accordingly, being heard and understood has the potential to stimulate athlete's PA, since their fundamental needs are met on an emphatic level in the relationships with their coaches (Jowett & Ntoumanis, 2004). The dimensions of goal and task represent the degree of interaction and clarity between coaches and their athletes regarding the goals they should work towards, and what tasks they should complete to achieve these goals. The task dimension also represents to what degree athletes experience and believe that the tasks they have agreed on with their coaches are helping (or not helping) to move closer towards their goal. Normally, junior athletes who attend high schools specialized for their sports start at these schools because they aim to develop their capacities and grow their potentials as athletes. If these athletes experience that their goals are achieved as a result of the task they have agreed upon with their coaches, it should stimulate PA and reduce worry, since the situation will not be experienced to be beyond their control (Ursin & Eriksen, 2004). On the contrary, when the dimensions describing a functional WAI are not satisfied, it is an indication of an inability to meet situational demands. As a result from this, NA might ultimately be stimulated. Accordingly, when goals are not achieved, the situation might be considered to be beyond the athletes' control, and they might start with mental problem solving to understand the situation (Ursin & Eriksen, 2004). As a

result, worry might also be stimulated (Borkovec et al., 1983; Moen et al., 2016).

The impact of worries and affect on performance satisfaction

The current study hypothesized that worry and NA are negatively associated with performance satisfaction, while NA is positively associated with performance enhancement. These expectations were only partly confirmed. A significant negative association of NA and a significant positive association of PA with performance satisfaction were found. However, worry was not significantly associated with performance satisfaction. CATS claims that when a situation is considered to be beyond an athlete's control, as when junior athletes believe that they do not have the necessary resources to achieve their goals, they will experience a NA response (Ursin & Eriksen, 2004). It is further assumed that the possibility of negative outcomes prompts athletes in such situations to engage in mental problem solving, which stimulates worry (Borkovec et al., 1983; Moen et al., 2016). Thus, when NA and worry are stimulated, there is reason to believe that athletes do not have a strong belief in their capabilities to achieve the tasks that are necessary to cope with the situation. As a consequence, athletes might experience that their self-efficacy is reduced. Since self-efficacy is considered to be one of the variables that is most predictive of performance, it can serve as a potential explanation to these results (Feltz et al., 2008).

A possible cause of the lack of significant association between worry and performance satisfaction may be elucidated by the relationship between cognition and emotion (Lazarus, 1999; Aldwin, 2007). According to CATS, cognitions and affect work together through the cognitive evaluations athletes complete when they are exposed to situations that they need to resolve (Reme, Eriksen, & Ursin, 2008). Worry indicates a lack of resources to cope with situational demands, which leads to a negative stress response (Moen et al., 2016). Negative stress further stimulates NA (Crawford & Henry, 2004).

This potential explanation indicates that worry does not influence performance if it is not associated with NA. Thus, it is hereby proposed that worry is indirectly associated with subjective performance through NA.

The impact of working alliance on performance satisfaction

Finally, the current study hypothesized WAI to be positively associated with performance satisfaction. The coach-athlete relationships are ultimately defined as helping, where coaches are supposed to help and support their athletes to achieve their sport-related goals (Jones, 2006). Thus, effective coach-athlete relationships are expected to be associated with performance satisfaction. The positive association between WAI and performance satisfaction may be attributed to the fact that its principles are built upon factors predictive of performance (Bandura, 1997; Jowett, 2005; Locke & Latham, 2002). First of all, empathic understanding is necessary for an appreciation of what athletes aim to achieve, and for an understanding of the associated emotional and cognitive states (Jowett, 2005). In order to meet athletes' needs of being involved in this process with their coaches, intrinsic motivation and empathic behavior are necessities (Ryan & Deci, 2002). Goals with predefined tasks, which athletes ultimately experience as helpful on their paths to achieve their goals, are important variables that are predictive of positive performance outcomes (Feltz et al., 2008). Thus, empathic understanding and a genuine interest from coaches towards their athletes, as well as helpful goals and tasks set for athletes to reach their goals, all seem to have the potential to influence performance satisfaction positively based on the results in the current study, both directly and indirectly through worry, NA and PA.

Conclusion and limitations

Results of the current study hold interesting implications for sport science. According to CATS, a situation that is considered to be beyond an athlete's control might

stimulate a negative stress response (Lazarus, 1999; Reme et al., 2008). Worry and negative affect are typical symptoms caused by stress. There are at least two possible interpretations for the association between working alliance, worry and affect. First of all, a dysfunctional coach-athlete relationship might in itself serve as a possible stressor because athletes expect to receive help and support. Secondly, the principles that the WAI is built upon are predictive of performance, and therefore low scores on bond, goals and tasks might be a consequence of situations in training or competition (or both) that athletes experience to be beyond their control. In such cases, athletes may experience reduced performance satisfaction in a situation where the relationship is supposed to help them develop their talents, but where both the relationship itself and the outcomes from the relationship (bond, goal and task) are not strengthening their beliefs that they have the resources to manage such situations. Thus, is not optimal for the development of athletes' performance satisfaction in the future. Thus, the three principles that the WAI addresses seem to be necessary if coaches are to be effective and successful in their roles.

The current study adds important findings regarding the coach-athlete relationship in junior elite sports to the current literature. Based on the current study, coaches have three essential tasks in the coach-athlete relationship in junior elite sports. Firstly, they need to establish a strong emotional bond with their athletes. Secondly, they need to help their athletes define clear, mutually understood goals. Thirdly, they need to develop accompanying tasks and strategies that help athletes reach their goals, and experience that these tasks and strategies really help them. With this in mind, it is suggested that coaches working with athletes on a high level should be educated in social and processual skills as well as general and specific sport knowledge. This might prevent stress-related issues in the coach-athlete relationship and increase athletes' performances.

It is worth noticing that this study was limited by its cross-sectional design. Such data do not support analyses in causal terms, even though our interpretations are based

on previous findings and theoretical analyses.

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