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# Unique associations between sports coaches' personality and the coach-athlete working alliance

Master's thesis in Master of Science in Education and Upbringing

Supervisor: Frode Moen

June 2020

**NTNU**  
Norwegian University of Science and Technology  
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## Abstract

The effects of a strong relationship between coaches and athletes in elite sports are well documented in research. However, less is known about the factors that mediate the strength of the relationship itself. A plethora of research in other fields has documented how personality traits can affect relational outcomes. A sample of 107 Norwegian elite coaches participated in the current study, by completing online questionnaires of the Big Five Inventory (BFI), Grit scale and Working Alliance Inventory (WAI-S). The current cross-sectional study explores unique associations between coaches' personality traits and their subjective evaluations of the coach-athlete working alliance. Hierarchical multiple regression analyses show that the BFI traits and Grit uniquely explain 38% of the variance in General WAI-S scores, and 31%, 25%, and 33% of the variance in the WAI-S sub-scales of Goal, Task and Bond, respectively. Extraversion and Grit were significant predictors of general working alliance scores. Furthermore, the results indicate that the different personality traits influence the three dimensions of the WAI in different ways. The results are discussed in light of on several coach-athlete relationship frameworks, and with applied implications and possible future research in mind.

**Keywords:** Working alliance, Big Five, Grit, Sport, Coach-Athlete relationship

## Sammendrag

Viktigheten av en sterk relasjon mellom trenere og utøvere i toppidrett er godt dokumentert i forskning. Det er derimot mindre kunnskap om hvilke faktorer som påvirker kvaliteten på relasjonen mellom trenere og utøvere. I andre hjelpekontekster er det interessant nok gjennomført flere studier som undersøker hvordan personlighetstrekk påvirker relasjoner. I dette studiet deltok 107 norske topptrenere i en web-baserte spørreundersøkelse som inkluderte Big Five Personality Inventory (BFI: personlighet), Grit-skala (tålmodighet i målarbeid) og Working Alliance Inventory (WAI-S: arbeidsallianse mellom trener og utøver). Alle trenerne var tatt opp i et trenerutviklingsprogram kalt «Trenerløftet» arrangert av Olympiatoppen. Dette studiet undersøker eventuelle unike sammenhenger mellom treneres personlighetstrekk og deres subjektive vurdering av arbeidsalliansen mellom treneren og utøveren. Analysene som ble gjennomført med hierarkiske lineære regresjonsanalyser viser at treneres personlighetstrekk unikt forklarer 38% av variansen i den generelle arbeidsalliansen mellom trener-utøver. Videre viser de samme analysene at henholdsvis 31%, 25% og 33% av variansen i mål-, oppgave- og bånd-dimensjonene unikt blir forklart av personlighetstrekk. Ekstrovertsjon og Grit påvirket unikt den generelle arbeidsalliansen signifikant. I tillegg indikerer resultatene at de ulike personlighetstrekkene påvirker de tre underdimensjonene av arbeidsalliansen på ulike måter. Resultatene er diskutert i lys av flere ulike rammeverk for trener-utøver-relasjonen, og med blick på fremtidig forskning og praktiske implikasjoner.

## Preface

My motivation for conducting research into the coach-athlete relationship is inspired by my extensive career in elite-sports. I have spent almost 20 years of my life competing at the highest level in the winter-sport of Nordic Combined. Being born in Norway, by Swiss parents, I competed the first half of my career for the Swiss national team, before changing nationality and competing as a Norwegian until the end of my active career.

Throughout a long career, in two different countries, I have been coached by a lot of different people and have seen and felt how different personalities can affect the relationship between coaches and athletes in different ways. After my career as an athlete ended, I jumped to the other side of the relationship, as part of the coaching team for the same athletes that I competed with a few years earlier.

These experiences made the study of the effects of different personality traits on the coach-athlete relationship especially interesting to me, as it allowed me to scientifically study a relationship that I have lived in for the better part of my life.





# Acknowledgments

My warmest thanks are due to my supervisor Frode Moen, for his guidance, vision, and invaluable feedback throughout the process of writing this thesis. Additionally, I would like to thank Maria Hrozanova and Maja Olsen at the Center for Elite Sports Research, NTNU for their insightful comments and constructive feedback.

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# 1 Introduction

A multitude of research has emphasized the importance of the coach-athlete relationship in sports, claiming it as an influential factor for multiple positive and negative outcomes (Hampson & Jowett, 2014; Jones, Armour, & Potrac, 2004; Jowett, 2003; Moen & Myhre, 2017; Moen, Myhre, & Hrozanova, 2017). Research has focused mainly on the strong bond between athletes and coaches, the feeling of closeness, complementarity and shared experiences (Jowett & Meek, 2000; Jowett & Cockerill, 2002; Jowett, 2005). However, a strong coach-athlete relationships in elite sports also needs to facilitate enhanced performances (Moen, Federici, & Klemetsen, 2014). A coach needs to work with athletes to help them experience progress, by setting clear goals, strategies, and boundaries (Moen, et al., 2017). Elite sports is a competitive high-stress environment, where coaches and athletes are evaluated regularly on their results and competencies in both private and public contexts (Moen & Myhre, 2017). Handling successes and failures in this type of environment requires strong attribution strategies, coping mechanisms, cognitive evaluations, and effective helping relationships between athletes and coaches. To include these facets of elite sports, recent research describes the coach-athlete relationship as a working alliance consisting of a strong bond, clear goals and defined strategies (Moen, Hrozanova, & Stenseng, 2019).

Our personality is said to determine how we relate to the world, and form our experiences (Carver & Scheier, 1992). Thus, what we do, feel and think in everyday life is influenced by our personality traits (John, Naumann, & Soto, 2008). McCrae & Costa's (1987) Big Five model includes clear definitions of five overarching personality traits (Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness) and a comprehensive list of attributes underlying each trait (John & Srivastava, 1999; McCrae & Costa, 1987). Despite some criticism (Block, 1995), the model has been widely accepted and used. Several reviews suggest (Leary & Hoyle, 2009) that the Big Five constructs can influence both intrapersonal effects and interpersonal outcomes.

Even though a lot of research has explored the effects of the coach-athlete relationship on different outcomes, less is known about how coaches' personality traits affect the relationship. Based on this, the aim of the current study is to explore unique associations between coaches' personality traits, and their subjective valuations of their working alliance with their athletes.

## 1.1 The coach-athlete relationship in an elite performance setting

Elite sports are by nature a competitive endeavor. Athletes need to continuously improve sport-specific capabilities to enhance their performance and stay competitive. Whether they feel progress is therefore a large contributor to athlete satisfaction and well-being (Moen, Myhre, & Sandbakk, 2016; Moen, Myhre, & Stiles, 2016). Additionally, the last decades have revealed the importance of the coach-athlete relationship's importance for successful outcomes and satisfaction in sports (Jowett & Cockerill, 2003; Jowett & Poczwardowski,

2007; Jowett, Rhind, & Yang, 2012; Moen & Federici, 2017). The relationship is integral in any coaching context, as a central contributing factor to athletes' development (Cote & Gilbert, 2009; Lyle, 1999), and a dysfunctional relationship can have detrimental effects to well-being and performance (Jowett, 2003; Moen, et al., 2017). A successful coach-athlete relationship is found to be an empathic relationship, that improves motivation, satisfaction and self-efficacy (Davis, Jowett, & Lafreniere, 2013; Feltz, Short, & Sullivan, 2008; Mageau & Vallerand, 2003). Several different, yet complementary, conceptual frameworks have been developed to describe the relationship (Davis, et al., 2013), including a motivational model (Mageau & Vallerand, 2003) and several relational models (e.g. 3+1 Cs) (Cote & Gilbert, 2009; Jowett, 2007). The different frameworks describe a complex relationship, where coaches and athletes inter-relate on emotional, cognitive and behavioral levels (Jowett & Cockerill, 2003; Jowett & Poczwardowski, 2007).

The framework of the 3+1 Cs is a model based on Kelley et al.'s (1983) definition of a two-person relationship. This model describes athlete's emotions, cognitions and behaviors, using the concepts of closeness, co-orientation, commitment and complementarity (Jowett & Cockerill, 2002; Jowett & Meek, 2000; Kelley, et al., 1983). Closeness refers to an emotional attachment and a feeling of familiarity with another person. Commitment covers the wish to maintain the relationship over time, while co-orientation refers to the sharing of experiences. Finally, complementarity describes the effectiveness of the relationship based on the quality of cooperation (Jowett & Cockerill, 2003). Cote & Gilbert (2009) noted that a coach's knowledge and the specific coaching context should also be included in the framework, as an effective coach-athlete relationship should improve athletes' competencies and characters, as well as their confidence and connections (Cote & Gilbert, 2009). By applying context-appropriate sport-specific knowledge coaches can positively influence the athletes' self-efficacy, which refers to an individual's belief in their capability to achieve a specific goal in a competent and effective fashion (Bandura, 1997). A long history of research has shown the importance of self-efficacy for successful performance in several environments (Feltz, et al., 2008).

In addition to satisfying the empathic values in the 3+1 Cs framework, helping the athlete understand sport-specific concepts, and improving their self-efficacy, an effective coach-athlete relationship should contribute to sustaining or improving athletes intrinsic and self-determined extrinsic motivation (Jowett, 2007; Moen & Federici, 2017). The importance of, and ways to improve, these types of motivation is documented in research (Ryan, Vallerand, & Deci, 1984; Vallerand & Rousseau, 2001). Mageau & Vallerand's (2003) motivational model is based on Deci & Ryan's (1980; 1985) cognitive evaluation theory, and Vallerand's own hierarchical motivational model (Deci & Ryan, 1980; 1985; Mageau & Vallerand, 2003). It highlights the importance of autonomy support, competence, and relatedness in coach-athlete relationships, to improve motivation (Mageau & Vallerand, 2003). Additionally, the bond between coaches and athletes needs to be characterized by trust, honesty and openness (Ryan & Deci, 2002). This will allow the athlete to be honest about his or her thoughts and emotions, and help the coach to address both sport-specific and personal issues in a productive, open and respectful manner; this in turn further strengthens their empathic understating of one another, and builds intrinsic motivation (Moen, et al., 2017; Ryan & Deci, 2002).

The most commonly used measurement of the coach-athlete relationship, the Coach-Athlete Relationship Questionnaire (CART-Q), is based on the 3+1 Cs (Jowett & Ntoumanis, 2004). It measures the empathic bond in the relationship, but does not address the performance aspect relevant to elite sports (Jowett & Ntoumanis, 2004). To address this limitation, recent research has looked outside the sport sciences, to find instruments that encompass both empathic and performance factors (Moen, et al., 2019). One such measurement is the Working Alliance Inventory (WAI), which was originally developed to measure the strength of the helping relationship between a therapist and his client in the therapeutic setting (Horvath & Greenberg, 1989). The WAI is based on Bordin's (1979) definition of a working alliance between a therapist who offers help and the client who seeks change. The success of this relationship depends on empathic cooperation between the two parties, and their work to reach defined goals (Bordin, 1979). Bordin conceptualized the working alliance by using three factors: "Goal", "Task" and "Bond". The patient and the therapist should work towards clear and mutually agreed upon goals. The tasks set to achieve these goals should be clearly defined and make sense to both parties. The bond refers to the trust, empathic attachment, and compatibility in the relationship. To agree on effective goals and tasks, there needs to be a strong consensus, and a feeling of common purpose within the dyad (Bordin, 1994; Horvath & Greenberg, 1989). The WAI has been adapted to multiple relationships outside of the clinical environment, including executive coaching (Haan, Grant, Burger, & Eriksson, 2016), supervision (Bahrack, K, & Salmi, 1991) and coach-athlete relationships in sports (Moen, et al., 2019). Crucial to sports contexts, the WAI addresses the importance of both goals and the strategies to achieve these, in addition to the empathic bond in the relationship. The need for clear and mutually agreed upon goals to effect desired changes is supported by goal setting theory, and self-efficacy research (Bandura & Locke, 2003; Locke & Latham, 2002). Additionally, a strong belief in agreed upon strategies to achieve a goal, supported by empathic feedback from a committed and understanding helper have been shown to influence performance (Moen & Myhre, 2017). Finally, the importance of a strong empathic bond between a coach and an athlete is also well documented in theory and research (Cote & Gilbert, 2009; Jones, et al., 2004; Moen & Federici, 2017).

## 1.2 Personality

When entering a helping relationship, it is natural that the relationship will be affected by both parties' beliefs, attitudes, and personality characteristics. Big Five personality traits have been extensively studied in dyadic family, romantic, organizational, clinical and academic settings (Jackson, Dimmock, Gucciardi, & Grove, 2011; Laborde, Allen, Katschak, Mattonet, & Lachner, 2019). Research conducted in sport settings has focused mostly on the association between different personality types and the empathic bond in relationships. However, potential sport-specific research is still largely un-explored (Laborde, et al., 2019).

The Big Five model includes the overarching traits of extraversion, agreeableness, conscientiousness, neuroticism and openness to experience (John & Srivastava, 1999). Extraversion is associated with underlying attributes such as being sociable, talkative, outgoing, active, optimistic, and decisive (Laborde, et al., 2019). This trait has been associated with positive social outcomes such as increased relationship satisfaction and

quality, effective conflict resolution strategies, large peer groups and effective conversational skills (Asendorpf & Wilpers, 1998; Denissen, van Aken, & Dubas, 2009; Jackson, et al., 2011). Agreeable individuals are, among other pro-social attributes, collegial in nature, trusting, altruistic, compliant, cooperative, and modest (Graziano & Tobin, 2009). Several positive between-person effects are associated with agreeableness, including reduced relationship conflict and distress, and increased closeness and relationship stability (Asendorpf & Wilpers, 1998; Gattis, Berns, Simpson, & Christensen, 2004; Neuman & Wright, 1999). Conscientious individuals are characterized by their competence, order, dutifulness, cautiousness, and self-discipline (Laborde, et al., 2019). They have been shown to exhibit less negative behaviors, including adolescent delinquency, and unhealthy life-style behaviors (Nofle & Robins, 2007). The trait has also been associated with improved performance in professional settings, enhanced relationship longevity, reduced interpersonal distress and increased dyadic commitment (Gattis, et al., 2004; Shaver & Brennan, 1992; Widiger & Smith, 2008). Neuroticism describes an individual prone to depression, self-consciousness, anxiety, and irritability. It is associated with several negative outcomes, such as negative mood, poor coping strategies and feelings of inadequacy (Widiger, 2009). It has been linked to various negative interpersonal effects, including increased conflict and insecurity, and reduced relationship satisfaction (Bolger & Zuckerman, 1995; Heller, Watson, & Ilies, 2004). Openness to experience is characterized by being curious, open-minded, creative, artistic, unconventional and open to the feelings and ideas of others (Barrick, Mount, & Gupta, 2003; McCrae & Costa, 2008). On an interpersonal level, openness to experience can reduce conflict and increase relationship satisfaction (Berry, Willingham, & Thayer, 2000; Botwin, Buss, & Schackelford, 1997).

Less is known about the effects of the Big Five trait dimensions in sport-specific contexts, with athletes and sport coaches being underrepresented in personality research (Laborde, et al., 2019). Positive personality traits have been found to be important for coping strategies for both coaches (Laborde, Guillen, Watson, & Allen, 2017) and athletes (Allen, Greenless, & Jones, 2011; Kaiseler, Polman, & Nicholls, 2012), and can predict interpersonal relationship satisfaction in coach-athlete dyads (Jackson, et al., 2011). Non-relational effects have also been found in sport-specific context, with Big Five dimensions predicting, among other things, short-term athletic behaviors (Kaiseler, et al., 2012) and long-term athletic success (Steca, Baretta, Greco, D'Addario, & Monzani, 2018).

In recent years, the tendency to pursue long term goals with perseverance has been introduced as a facet of Big Five conscientiousness (Ducksworth, Peterson, Matthews, & Kelly, 2007). This tendency is defined as Grit, and gritty individuals display high perseverance, passion for long-term goals, and a tendency not to abandon tasks and goals of personal importance in the face of obstacles or difficulties (Ducksworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011; Ducksworth, et al., 2019). Additionally, gritty individuals tend to keep loving something even if it requires large sacrifices in the process. They have great stamina and can work towards a goal for years without losing interest and passion (Ducksworth & Eskreis-Winkler, 2013; Lee & Ducksworth, 2018). Given the performance driven, goal-oriented and stressful context in which elite sports operate, researchers have started investigating grit in sport settings, and grit has been found to affect coaches' well-being and burnout (Moen & Olsen, 2020). Even though grit is highly correlated with Big Five conscientiousness, it has been shown to add predictive validity



beyond the Big Five measures (Ducksworth, et al., 2007). The theoretical sport-specific relevance of grit, and the historically strong predictive capabilities of the Big Five dimensions make the study of personality interesting in the context of elite-performance (Laborde, et al., 2019; Moen & Olsen, 2020).

### 1.3 The Present Study

The main aim of the present study is to investigate unique associations between coaches' personality traits and their subjective evaluations of the coach-athlete working alliance in a sample of Norwegian elite sports coaches. Based on the theoretical frameworks and arguments presented above, it is hypothesized that extraversion, agreeableness, openness, conscientiousness, and grit will predict the working alliance positively, and that neuroticism will predict the alliance negatively.

## 2 Method

### 2.1 Participants

Data was collected as part of a Norwegian coach education program for future elite coaches, overseen by the Norwegian Olympic Sport Center (NOSC). A total of 185 coaches applied for participation in the two-year program. 109 coaches were accepted (66 in 2019, 43 in 2020), based on their level of ambition (prioritized by their sport federation) and age (preferably 30 years or younger). The program included coaches from a wide variety of sports ( $N > 30$ ), including individual and team sports. The sample consisted of 35 women (32.7%) and 72 men (67.3%), ranging from the age of 22 to 43 ( $M = 29.8$ ,  $SD = 3.7$ ). The majority were serving a role as head coach (72.9%), while the remaining 27.1% were assistant coaches or otherwise part of a coaching team. Coaches were asked to describe their athletes, as "elite athletes on an international level" (13.1%), "future elite athletes with ambitions to reach international level" (73.8%), or "recreational sports level athletes" (13.1%). The coaches' years of experience varied from less than a year to 18 years ( $M = 8.19$ ,  $SD = 3.9$ ).

### 2.2 Procedure and measurements

As part of the coach-education program, the participating coaches completed sets of questionnaires to assess the effects of the program. These were issued to all coaches in the beginning of year one (two sets: profile and pre-test), two (one set: post-test 1) and upon completing the program (one set: post-test 2). The data used in the current study is from the two sets issued at the start of the program. Of the 109 coaches invited to participate, 107 completed the surveys (response rate = 98%). The questionnaire included demographic measures, and a variety of psychological instruments including the Working Alliance, Short form inventory (WAI-S) (Moen, Hrozanova, & Stenseng, 2019; Tracey & Kokotovic, 1989), Grit scale (Ducksworth, et al., 2007) and Big Five Inventory (BFI) (John & Srivastava, 1999). The survey was conducted on-line, over a period of 5 weeks, and took approximately 15-20 minutes to complete. Reminders were sent to non-responding participants. The coaches provided their consent to the scientific use of the collected data when agreeing to participate in the program. The relevant instruments are described in further detail below. All the standardized inventories were translated from their original language to Norwegian by collaborating authors. The program was cleared with the relevant Norwegian data-protection authorities.

#### 2.2.1 Big Five Personality Inventory

The BFI (John & Srivastava, 1999) was used to measure participants personality traits, according to Goldberg's five dimensions of personality (Goldberg, 1990). This 44-item scale is composed of positively and negatively worded statements which the respondent can rate on a Likert scale ranging from 1 ("Do not agree") to 7 ("Agree completely"). It measures extraversion (8 items), agreeableness (9 items), conscientiousness (9 items), neuroticism (8 items) and openness (10 items). The instrument has shown extensive evidence of

reliability and validity (John, et al., 2008). The inventory used in the present study was a Norwegian translation (Appendix A). Examples of items include – “I see myself as someone who is...talkative” (Extraversion) – “...has a forgiving nature” (Agreeableness) – “...does a thorough job” (Conscientiousness) – “...worries a lot” (Neuroticism) and – “...is curious about many different things” (Openness). Cronbach’s alpha coefficients in the present study were .74 for agreeableness, .75 for extraversion and conscientiousness, .78 for openness, and .84 for neuroticism. Given the difference in the number of items per dimension, average scores were used for all dimensions.

### 2.2.2 Patience for goal-oriented work

A 12-item Grit-scale was used to assess passion and perseverance for long-term goals (Duckworth, et al., 2007). The items include positively and negatively worded statements, rated on a Likert scale ranging from 1 (“Very much like me”) to 5 (“Not at all like me”). A Norwegian translation was used in the current study (Appendix B). Examples of items included are “I am a hard worker” and “My interests change from year to year”. The version of the instrument used in the present study used a reversed Likert scale compared to the original Grit-scale, and therefore reverse scored positively worded items as opposed to negatively worded items. The Cronbach’s alpha coefficient of .64 is rather low. Lower alpha levels have also been found in previous studies using the Grit-scale (Moen, et al., 2019). Given that the scale has been found to have good scale-and test-retest reliability (Duckworth, et al., 2007) it was considered acceptable.

### 2.2.3 Working Alliance Inventory

The WAI-S was used to measure the quality of the coach-athlete relationship. This short form inventory is a revised version of the full-length version (Busseri & Tyler, 2003; Tracey & Kokotovic, 1989). The 12-item scale consists of positive and negative statements, which are rated on a 7-point Likert scale ranging from 1 (“Never”) to 7 (“Always”). The WAI-S assesses one general scale (General Working Alliance) and 3 sub-scales (“Bond”, “Task” and “Goal”). The version used in the current study was translated to Norwegian and adjusted to a sport-specific context (Appendix C). An example of an item included is “The athlete feels that I as a coach appreciate him/her as a person”.

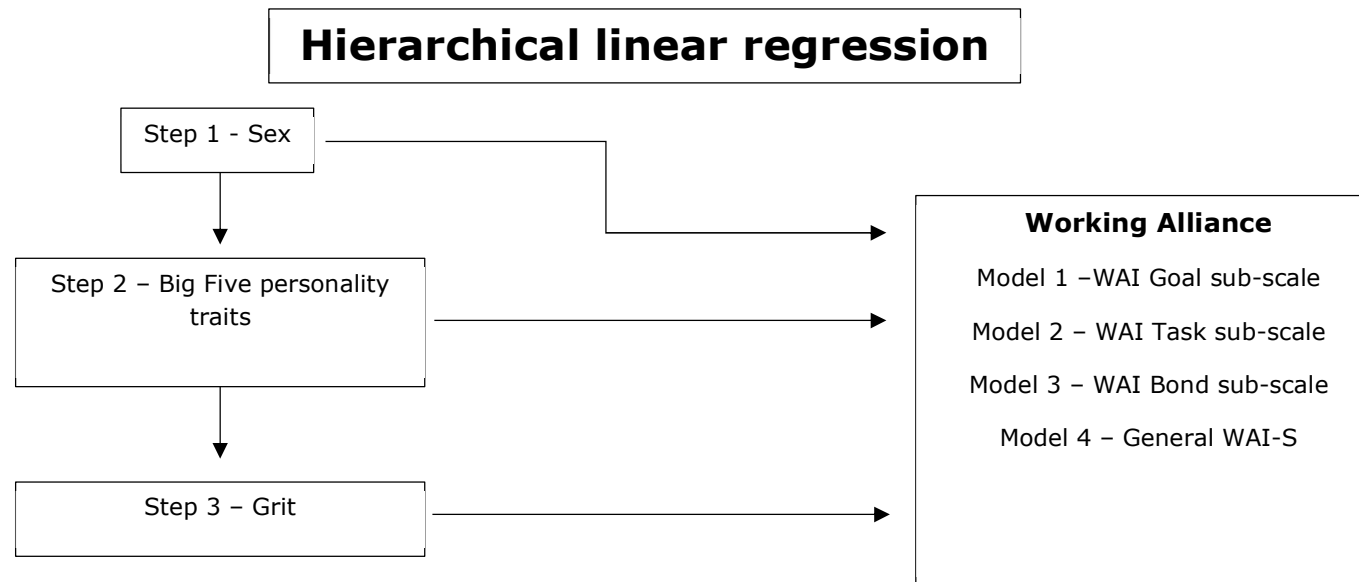
The distinctiveness of the different sub-scales has proven problematic in some studies (Horvath & Greenberg, 1989; Moen, et al., 2019). The reliability coefficient of the “Goal”-dimension sub-scale in the present study was not satisfactory with all items included. This has been remedied by removing a problematic item (item 10) in a validation study (Moen, et al., 2019), and by doing this the Cronbach’s alpha was elevated to a more acceptable .69 in the present sample as well. The alpha value of .69 for a low number of items (3) was considered sufficient for the current study. As a result of this choice, the same item (item 10) was also removed from the calculation of the general WAI-S score (General Working Alliance) in this analysis. The General Working Alliance has shown good evidence of reliability and construct validity (Busseri & Tyler, 2003; Moen, et al., 2019; Tracey & Kokotovic, 1989). The Cronbach’s alpha for the present sample was .84.

#### 2.2.4 Statistical analyses

Descriptive statistics, including means, standard deviations, minimums, and maximums for all variables in the model were calculated. Cronbach's alpha coefficients were computed for all scales and sub-scales, and a factor analysis was performed to assess whether the WAI-S sub-scales could be used with the sample in question. Pearson's correlation coefficients were calculated to investigate linear relationships between the variables. Preliminary analyses were conducted to ensure no violation of the assumptions required to perform a hierarchical multiple regression analysis (normality, linearity, multicollinearity, and homoscedasticity).

4 multiple-step hierarchical linear regression analyses were run to assess the personality traits' (BFI and Grit) individual and collective contribution to the working alliance sub-scale and general scores. Hierarchical linear regression analysis is used to explain the relationship between a dependent variable, and various independent variables. Linear regressions attempt to fit a linear equation to the observed data. Using a hierarchical regression, allows for the possibility to observe the effect of additional variables on the explanatory power of the regression model ( $R^2$ ), while controlling for (an) initial variable(s). A control variable ("Sex", Female = 0, Male = 1) was entered at step 1 in each model, based on some moderate correlations with several of the Big Five personality traits. The Big-Five personality-scores were entered at step 2, and Grit was entered as the last step in every model. Models 1-4 use the same steps and independent variables but explores their relationship to 4 different dependent variables (WAI-S Goal, WAI-S Task, WAI-S Bond, General WAI-S). Given the different scales used for the BFI and the Grit scores, the unstandardized regression coefficients (B) are a good representation of effects at step 2 of the regressions, whereas the standardized coefficients (SB) must be used at step 3 (Pallant, 2016). Significance levels were set to  $p < .050$  for all statistical analyses. All analyses were performed using IBM SPSS (version 25). The models are shown in Figure 1.

**Figure 1: Overview of step- wise linear regression analyses.**



*Note.* Steps 1-3 show the order in which the independent variables were entered into the analysis. "Dependent variables" shows the 4 different models, based on 4 different dependent variables.

## 3 Results

### 3.1 Distribution characteristics, Pearson's correlations, descriptive statistics, and reliability estimates

Table 1 presents Pearson's correlations, means, standard deviations, minimum and maximum scores, reliability coefficients (Cronbach's alpha) and number of items for each variable. Distribution skewness was within acceptable range for all variables ( $< 1.0$ ) (Pallant, 2016). Means and standard deviations revealed that the participants scored moderately high to high on extraversion, agreeableness, conscientiousness, openness, and grit, and moderately low on neuroticism. The mean working alliance scores were moderately high. All Cronbach's alpha coefficients were acceptable or good ( $> .70$ ) (Furr, 2011; Pallant, 2016), except for the Grit-scale (.64) and the WAI-S Goal sub-scale (.69). Pearson's correlations indicated large ( $> .50$ ) (Cohen, 1988; Pallant, 2016) positive correlations between extraversion and the WAI-S- Bond sub-scale and General WAI-S scores (.54 and .52) and between grit and conscientiousness (.56). There was moderate positive correlation ( $> .40$ ) between extraversion and WAI-S Task and Goal sub-scale scores (.40, .41), and between grit and WAI-S Goal sub-scale and General WAI-S scores (.41, .41). Neuroticism correlated negatively at a low or medium level with all variables (-.20, to -.42) except openness. Openness did not correlate significantly with any of the other variables.

**Table 1: Pearson's correlations, descriptive statistics, and reliability estimates.**

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Sex	-										
2. Extraversion	-.11	-									
3. Agreeableness	<b>-.24*</b>	<b>.27**</b>	-								
4. Conscientiousness	<b>-.20*</b>	<b>.28**</b>	<b>.32**</b>	-							
5. Neuroticism	<b>-.20*</b>	<b>-.32**</b>	<b>-.42**</b>	<b>-.23*</b>	-						
6. Openness	-.07	.08	.06	.07	.12	-					
7. Grit	-.12	<b>.34**</b>	<b>.27**</b>	<b>.56**</b>	<b>-.30**</b>	-.03	-				
8. WAI-S: Goal	-.05	<b>.41**</b>	<b>.28**</b>	<b>.34**</b>	<b>-.27**</b>	.16	<b>.43**</b>	-			
9. WAI-S: Task	-.01	<b>.40**</b>	<b>.25**</b>	<b>.28**</b>	<b>-.29**</b>	.12	<b>.35**</b>	<b>.68**</b>	-		
10. WAI-S: Bond	-.08	<b>.54**</b>	<b>.21*</b>	<b>.28**</b>	<b>-.26**</b>	.11	<b>.30**</b>	<b>.57**</b>	<b>.64**</b>	-	
11. WAI-S: General	-.05	<b>.52**</b>	<b>.28**</b>	<b>.35**</b>	<b>-.32**</b>	.15	<b>.41**</b>	<b>.86**</b>	<b>.89**</b>	<b>.85**</b>	-
Mean	-	4.87	5.69	5.56	2.93	4.64	3.87	5.43	5.52	5.68	5.55
Standard deviation	-	.83	.67	.71	.99	.88	.44	.84	.60	.64	.59
Max. score	1	6.75	7	6.89	5.63	6.6	4.75	7	7	7	6.91
Min. score	0	2.88	3.56	3.89	1.25	2.8	2.58	2.33	4	4.25	4.18
Cronbach's alpha	-	.75	.74	.75	.84	.78	.64	.69	.71	.76	.86
N. items	1	8	9	9	8	10	12	3	4	4	11

Note. \*p < .050, \*\*p < .010; Computations are based on cross-sectional data collected from 107 elite coaches.

### 3.2 Hierarchical linear regression analyses

Model 1 – Working Alliance Goal-dimension: The full model accounted uniquely for 31% of the explained variance in the dependent variable ( $R^2 = .31$ ,  $F(7, 98) = 6.24$ ,  $p < .001$ ). The Big Five personality traits entered at step 2 in the analysis accounted uniquely for 26% of the explained variance in the WAI-S Goal-dimension ( $R^2 = .26$ ,  $F(6, 99) = 5.82$ ,  $p < .001$ ). At this step, extraversion ( $SB = .29$ ,  $p < .010$ ) and conscientiousness ( $SB = .21$ ,  $p < .050$ ) were the two significant variables. When grit was added at step 3, the full model uniquely explained an additional 5% of the variance in the dependent variable ( $\Delta R^2 = .06$ ,  $p < .050$ ). In the full model, extraversion ( $SB = .25$ ,  $p < .010$ ) and grit ( $SB = .28$ ,  $p = .010$ ) were statistically significant.

Model 2 – Working Alliance Task-dimension: This model accounted uniquely for 25% of explained variance in the dependent variable ( $R^2 = .25$ ,  $F(7, 98) = 4.68$ ,  $p < .001$ ). Step 2 accounts for 23% of the explained variance in the WAI-S Task-dimension ( $R^2 = .23$ ,  $F(6, 99) = 4.91$ ,  $p < .001$ ). Extraversion was the only significant independent variable at this step ( $SB = .30$ ,  $p < .010$ ). The addition of grit at step 3 had no significant impact on the full model.

Model 3 – Working Alliance Bond-dimension:  $R^2$  for this model was the highest of the models using WAI-S dimensions as dependent variables ( $R^2 = .33$ ,  $F(7, 98) = 6.79$ ,  $p < .001$ ). Step 2 accounts for 32% of the explained variance in the WAI-S Goal-scores ( $R^2 = .32$ ,  $F(6, 99) = 7.85$ ,  $p < .001$ ), with extraversion being the sole significant variable ( $SB = .47$ ,  $p < .001$ ).

Model 4 – General Working Alliance:  $R^2$  for the final model was .38 ( $F(7, 98) = 8.42$ ,  $p < .001$ ). The Big-Five traits entered at step 2 accounted for 35% of the explained variance of the General Working Alliance (WAI-S General) scores ( $R^2 = .35$ ,  $F(6, 99) = 8.85$ ,  $p < .001$ ). Extraversion ( $SB = .41$ ,  $p < .001$ ) and conscientiousness ( $SB = .18$ ,  $p < .050$ ) were the significant variables at step 2. The addition of grit as a variable at step 3 raised the explained variance to 38% ( $\Delta R^2 = .03$ ,  $p < .050$ ). In the full model extraversion was still highly significant ( $SB = .38$ ,  $p < .001$ ), while grit ( $SB = .21$ ,  $p < .050$ ) replaced conscientiousness as the other significant independent variable.

All 4 models were statistically significant at  $p < .001$ . The control variable ("Sex") explained less than 1% of the variance in all models. The full results from the 4 hierarchical multiple regressions are presented in Table 2.



**Table 2: Hierarchical linear regression analyses**

		Model 1 WAI-S Goal			Model 2 WAI-S Task			Model 3 WAI-S Bond			Model 4 WAI-S General		
Independent variables		B	SE B	SB	B	SE B	SB	B	SE B	SB	B	SE B	SB
Step 1	Sex	-.09	.17	-.05	-.01	.13	-.01	-.10	.13	-.08	-.07	.12	-.05
Step 2	Extraversion	.30	.10	<b>.29**</b>	.21	.07	<b>.30**</b>	.37	.07	<b>.47***</b>	.29	.06	<b>.41***</b>
	Agreeableness	.12	.12	.10	.07	.10	.08	.00	.10	.00	.06	.09	.07
	Conscientiousness	.24	.11	<b>.21*</b>	.13	.08	.15	.11	.08	.12	.15	.07	<b>.18*</b>
	Neuroticism	-.08	.09	-.09	-.08	.07	-.13	-.06	.07	-.09	-.07	.06	-.12
	Openness	.12	.08	.13	.07	.06	.10	.05	.06	.07	.08	.06	.11
	R <sup>2</sup>	<b>.26***</b>			<b>.23***</b>			<b>.32***</b>			<b>.35***</b>		
	Adjusted R <sup>2</sup>	<b>.22***</b>			<b>.18***</b>			<b>.28***</b>			<b>.31***</b>		
Step 3	Extraversion	.26	.10	<b>.25**</b>	.20	.07	<b>.27**</b>	.36	.07	<b>.46***</b>	.27	.06	<b>.38***</b>
	Agreeableness	.12	.13	.10	.07	.10	.08	.00	.10	.00	.06	.09	.07
	Conscientiousness	.08	.12	.07	.05	.09	.06	.07	.10	.08	.07	.08	.08
	Neuroticism	-.04	.09	-.05	-.06	.07	-.10	-.05	.07	-.08	-.05	.06	-.09
	Openness	.14	.08	.15	.07	.06	.11	.06	.06	.08	.09	.06	.13
	Grit	.53	.20	<b>.28*</b>	.25	.15	.18	.12	.15	.08	.28	.14	<b>.21*</b>
	Δ R <sup>2</sup>	<b>.05*</b>			.02			< .01			<b>.03*</b>		
Full model	R <sup>2</sup>	<b>.31***</b>			<b>.25***</b>			<b>.33***</b>			<b>.38***</b>		
	Adjusted R <sup>2</sup>	<b>.26***</b>			<b>.20***</b>			<b>.28***</b>			<b>.33***</b>		

*Note.* Sex: Female = 0, B = unstandardized regression coefficient, SE B = coefficient standard error, SB = standardized coefficient beta, \*p < .050, \*\*p < .010, \*\*\*p < .001. Computations are based on cross-sectional data collected from 107 elite coaches.

## 4 Discussion

The aim of the current study was to investigate associations between the Big Five personality traits and grit, and the coach-athlete working alliance. It was hypothesized that extraversion, agreeableness, conscientiousness, openness, and grit would be positively associated with WAI-S scores. Neuroticism was hypothesized to negatively influence the alliance. The present study confirms the predicted positive association between extraversion and grit/conscientiousness, and positive alliance ratings. The other predicted associations between personality traits and WAI-S scores were not confirmed. Even though the correlation matrix shows moderate positive correlations between agreeableness and General WAI-S scores, and negative correlation between neuroticism and General WAI-S scores, these traits did not significantly influence WAI-S scores in the hierarchical regression.

### 4.1 Extraversion affects perceived relational quality

Extraversion was the one personality trait which was uniquely associated with the dependent variable in all the models in the study. Attributes associated with extraversion, such as sociability, being positive and outgoing, decisiveness and having good conversational skills are expected to contribute to a positive coach-athlete relationship. The tendency to be optimistic, confident in social situations and talkative can bolster coaches' perceptions of their relationships to their athletes (Jackson, et al., 2011). All these attributes can potentially contribute positively to the alliance and could be conducive of a strong bond. However, extraversion is also associated with being argumentative and overly sensitive, and extraverts are predisposed to rate social interactions more positively in general (Berry & Hansen, 2000). A recent study shows that the positive effect of a coach's extraversion largely disappears when the relationship is rated by the athlete (Jackson, et al., 2011). This was in part due to a dissimilarity effect, where dyads with differences in extraversion rated the quality of the relationship very differently. This is a relevant point, given the highly significant effect of extraversion on the WAI-S scores in the current study, as the data is based on self-reports by coaches. If extraverts overestimate the quality of their relationship with their athletes, this could lead to miscommunication and poor cooperation, and result in reduced progress and performance. This could also be an interesting point for coach education practices, as it could speak to the utility of teaching extraverted attributes as positive for coach-athlete relationships. The need for trust, empathic understanding and shared understanding of goals and tasks, might be undermined if the coach and the athlete misunderstand each other or communicate superficially.

### 4.2 The importance of persistence in the coach-athlete relationship

Conscientiousness and grit were significantly correlated, as expected. Conscientiousness was significantly associated with the WAI-S general score, and the WAI-S Goal dimension before the inclusion of grit into the model. The main contribution of conscientiousness to the

WAI-S score seems to be on the goal dimension. The shared understanding of and belief in a set of goals to reach a desired outcome, could be positively influenced by a conscientious person's competence, persistence, and order. Conscientiousness is also associated with improved performance in professional settings (Widiger & Smith, 2008), which is highly applicable to an elite sports setting.

When grit was included in the model at the last step in the regressions, the effects of conscientiousness largely disappeared. Grit increased the predictive power, mainly by explaining more of the variance in the goal and, to a lesser degree, the task dimension of the WAI-S. Grit is characterized by a passion and perseverance for long term goals (Duckworth, et al., 2007). Given the importance of goals, and the tasks to accomplish them, in achieving performance enhancements in sports, grit should contribute positively to these dimensions. Additionally, gritty individuals are persistent and tend to maintain their belief in a project even when faced with obstacles and hardships (Duckworth & Eskreis-Winkler, 2013). These attributes could contribute to a strong coach-athlete relationship, by providing stability and direction through the inevitable ups and downs of a career in elite sports.

### 4.3 No associations between Agreeableness, Neuroticism, Openness, and the WAI?

The current study did not find significant associations between agreeableness, openness and neuroticism and WAI-S scores. Agreeableness has been shown to contribute positively to relationship measures in other studies (Graziano & Tobin, 2009; Jackson, et al., 2011). The sample in the current study was above average on agreeableness, and the variance in the sample was low, which could influence the results. Additionally, the self-report method used could have played a role. Disagreeable people tend to be willing to make difficult decisions, stand tall against popular opinion and not give in to criticism (Hunter & Cushenbery, 2014). This could be positive in elite sport contexts, e.g. in team-sports where a coach cannot always take all opinions into account when making decisions. Thus, agreeable, and disagreeable coaches might rate their coach-athlete relationship similarly but based on different factors.

It is also worth noting that the present study did not find a significant negative association between neuroticism and WAI ratings. Most research suggests that neurotic individuals tend to view their relationships in a negative light (Widiger, 2009), but there are also examples where this is not the case (Jackson, et al., 2011). The present sample presented rather low average neuroticism scores, so there is a possibility that the results would be different with a sample with more variance or higher average neuroticism. It could also be the case, that a coach's commitment to his role and his position of authority, help suppress the influence of his neurotic attributes when rating the relationship. Finally, openness surprisingly did not even correlate significantly with any other variables in the study, even though openness is characterized by several seemingly positive attributes for relationship quality (Berry, et al., 2000).

## 4.4 Goals are different from bonds, the unique dimensions of the WAI

The results of the current study also suggest that there are some notable differences in how the different personality traits predict the unique dimensions of the WAI-S. These dimensions are what differentiates the WAI-S from more commonly used measures of the coach-athlete relationship, as they include the more performance and process-specific dimensions of goal and task, in addition to the empathic relational dimension of bond (Moen, et al., 2019). The personality traits predicted 33% of the variance in the bond, 31% in goal, and 25% in task dimension of the WAI-S scores, with extraversion being the only trait to significantly predict ratings across all dimensions.

There is, however, a notable difference in the effect of extraversion on the bond-dimension compared to the other two dimensions. On the WAI bond-dimension, the empathic connection between coach and athlete, extraversion is the only predictive trait. As mentioned above, there are several possible explanations for why extraversion is predictive of positive self-rating of a relationship, and the results of the dimension models suggests that most of these show themselves in the rating of the quality of the bond between a coach and his athletes. Extraversion is significantly associated with the task and goal dimensions as well, but to a lesser degree. Interestingly, the goal-dimension differs from the two other dimensions in the unique effect of conscientiousness and grit. On the goal-dimension of the WAI-S, grit is the independent variable with the highest significance.

The difference between the results of the dimension models, suggests that different personality traits influence the relational bond and the goal-dimension of coach-athlete relationships. By focusing solely on the empathic bond when rating the quality of a coach-athlete relationship, some very important factors for elite sport performance could be missed. The main goal of elite sports is to increase performance, and one of the most important psychological contributing factors to this is self-efficacy (Moen, et al., 2014). To build self-efficacy it is necessary to experience progress and goal-achievement. Thus, a coach-athlete relationship will not be effective by only building a strong bond (Locke & Latham, 2002; Moen, 2014; Moen & Kvalsund, 2013).

## 4.5 Limitations and future research

While the current study provides several novel insights into the associations between personality traits and the coach-athlete relationship, the study also has limitations that must be considered. The study is limited by the cross-sectional design and by its reliance on self-report measurements (Cheung & Slavin, 2016). Self-report measurements can be influenced by multiple biases, and it is unclear how accurately the instruments reflect the variables that are investigated (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Additionally, the study is limited by the lack of athlete-ratings of the working alliance. Finally, the measurements of grit, and the goal and task dimension of the WAI, showed relatively low reliability estimates. These results should therefore be considered critically. The results of the present study need to be replicated in future studies, and longitudinal studies could investigate if and how effects change over the course of a relationship. Differences in coach- and athlete-ratings of the working alliance, as well as actor-partner and dissimilarity-effects with respect to coaches' personality traits also require further investigation.

## 5 Conclusion

The present study shows that extraversion and grit are predictive of coaches' rating of their coach-athlete relationship when measured using the WAI-S. Extraversion may be a filter through which coaches rate the quality of their relationship with their athletes. This could have different implications for coaches. It could suggest that extraverted attributes are positive for coach-athlete relationships and should be nurtured. Another possibility could be that extraverted coaches tend to overestimate the quality of their relationships and need to take this into account in their interactions with athletes. The study also shows that there are differences in how personality traits predict different aspects of the coach-athlete relationship. This shows the importance of focusing on the performance and process aspects of coaching, as well as the emotional connection, when educating future elite-sport coaches.

## References

- Allen, M. S., Greenless, I., & Jones, M. V. (2011). An investigation of the five-factor model of personality and coping behavior in sport. *Journal of Sports Sciences*(29(8)), pp. 841-850.
- Asendorpf, J. B., & Wilpers, S. (1998). Personality effects on social relationships. *Journal of Personality and Social Psychology*(74), pp. 1531-1544.
- Bahrnick, A. S., K, R. R., & Salmi, S. W. (1991). The effects of role induction on trainees' perceptions of supervision. *Journal of Counseling and Development*(69(5)), pp. 434-438.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A., & Locke, E. (2003). Negative Self-Efficacy and Goal Effects Revisited. *The Journal of applied psychology*, pp. 87-99.
- Barrick, M. R., Mount, M. K., & Gupta, R. (2003). Meta-analysis of the relationship between the five-factor model of personality and Holland's occupational types. *Personnel Psychology*(56), pp. 45-74.
- Berry, D. S., & Hansen, J. S. (2000). Personality, nonverbal behavior, and interaction quality in female dyads. *Personality and Social Psychology Bulletin*(26), pp. 278-292.
- Berry, D. S., Willingham, J. K., & Thayer, C. A. (2000). Affect and personality as predictors of conflict and closeness in young adults' friendships. *Journal of Research in Personality*(34), pp. 84-107.
- Block, J. (1995). A Contrarian View of the Five-Factor Approach to Personality Description. *Psychological Bulletin*(117(2)), pp. 187-215.
- Bolger, N., & Zuckerman, A. (1995). A framework for studying personality in the stress process. *Journal of Personality and Social Psychology*(69), pp. 890-902.
- Bordin, E. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research and Practice*(16), pp. 252-260.
- Bordin, E. (1994). Theory and research on the therapeutic working alliance: New directions. In A. Horvath, & L. Greenberg (Eds.), *The working alliance: Theory, research and practice* (pp. 13-37). New York: Wiley.
- Botwin, M. D., Buss, D. M., & Shackelford, T. (1997). Personality and mate preferences: five factors in mate selection and marital satisfaction. *Journal of Personality*(65), pp. 107-136.
- Busseri, M. A., & Tyler, J. D. (2003). Interchangeability of the Working Alliance Inventory and Working Alliance Inventory, Short Form. *Psychological Assessment*(15(2)), pp. 193-197.
- Carver, C. S., & Scheier, M. F. (1992). *Perspectives on personality*. Boston, MA: Allyn & Bacon.
- Cheung, A. C., & Slavin, R. E. (2016). How Methodological Features Affect Effect Sizes in Education. *Educational Researcher*(45), pp. 283-292.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2 ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

- Cote, J., & Gilbert, W. (2009). An Integrative Definition of Coaching Effectiveness and Expertise. *International Journal of Sports Science & Coaching*(4(3)), pp. 307-323.
- Davis, L., Jowett, S., & Lafreniere, M. A. (2013). An attachment theory perspective in the examination of relational processes associated with coach-athlete dyads. *Journal of Sport and Exercise Psychology*(35), pp. 156-167.
- Deci, E. L., & M, R. R. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology, Vol. 13* (pp. 39-80). New York: Academic Press.
- Denissen, J. J., van Aken, M. A., & Dubas, J. S. (2009). It takes two to tango: how parents' and adolescents' personalities link to the quality of their mutual relationship. *Developmental Psychology*(45), pp. 928-941.
- Ducksworth, A. L., & Eskreis-Winkler, L. (2013). True grit. *The Observer*(26(4)), pp. 1-3.
- Ducksworth, A. L., Kirby, T., Tsukayama, E., Berstein, H., & Ericsson, K. (2011). Deliberate practice spells success: Why grittier competitors triumph at the National Spelling Bee. *Social Psychological and Personality Science*(2(2)), pp. 174-181.
- Ducksworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*(92(6)), pp. 1087-1101.
- Ducksworth, A. L., Quirk, A., Gallop, R., Hoyle, R. H., Kelly, D. R., & Matthews, M. D. (2019). Cognitive and noncognitive predictors of success. *Proceedings of the National Academy of Sciences*(116(47)), pp. 23499-23504.
- Feltz, D. L., Short, S. E., & Sullivan, P. J. (2008). *Self-efficacy in sport: Research and strategies for working with athletes, teams and coaches*. Champaign, IL: Human Kinetics.
- Furr, M. R. (2011). *Scale construction and psychometrics for social and personality psychology*. London: SAGE.
- Gattis, K. S., Berns, S., Simpson, L. E., & Christensen, A. (2004). Birds of a feather or strange birds? Ties among personality dimensions, similarity and marital quality. *Journal of Family Psychology*(18), pp. 564-574.
- Goldberg, L. R. (1990). An Alternative "Description of Personality": The Big-Five Factor Structure. *Journal of Personality and Social Psychology*(59(6)), pp. 1216-1229.
- Graziano, W. G., & Tobin, R. M. (2009). Agreeableness. In M. R. Leary, & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 46-61). New York: Guilford.
- Haan, E., Grant, A. M., Burger, Y., & Eriksson, P. O. (2016). A large-scale study of executive and workplace coaching: The relative contributions of relationship, personality match, and self-efficacy. *Consulting Psychology Journal: Practice and Research*(68(3)), pp. 189-207.
- Hampson, R., & Jowett, S. (2014). Effects of coach leadership and coach-athlete relationship on collective efficacy. *Scandinavian Journal of Medicine & Science in Sports*(24), pp. 454-460.
- Heller, D., Watson, D., & Ilies, R. (2004). The role of person versus situation in life satisfaction: a critical examination. *Psychological Bulletin*(130), pp. 574-600.

- Horvath, A. O., & Greenberg, L. S. (1989). Development and validation of the Working Alliance Inventory. *Journal of Counseling Psychology*(36), pp. 223-233.
- Hunter, S. T., & Cushenbery, L. (2014). Is being a jerk necessary for originality? Examining the role of disagreeableness in sharing and utilization of original ideas. *Journal of Business and Psychology*(30), pp. 621-639.
- Jackson, B., Dimmock, J. A., Gucciardi, D. F., & Grove, J. R. (2011). Personality traits and relationship perceptions in coach-athlete dyads: Do opposites really attract? *Psychology of Sport and Exercise*(12(3)), pp. 222-230.
- John, O. P., & Srivastava, S. (1999). The Big Five taxonomy: history, measurement, and theoretical perspectives. In L. A. Pervin, & O. P. John (Eds.), *Handbook of personality: Theory and research* (2 ed., pp. 102-138). New York: Guilford.
- John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five taxonomy: history, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3 ed., pp. 114-158). New York: Guilford.
- Jones, R., Armour, K., & Potrac, P. (2004). *Sports coaching cultures: From practice to theory*. London: Routledge.
- Jowett, S. (2003). When the "Honeymoon" Is Over: A Case Study of a Coach- Athlete Dyad in Crisis. *The Sport Psychologist*(17), pp. 444-460.
- Jowett, S. (2005). On repairing and enhancing the coach-athlete relationship. In S. Jowett, & M. Jones (Eds.), *The psychology of coaching* (pp. 14-26). Leicester: The British Psychological Society.
- Jowett, S. (2007). Interdependence analysis and the 3 + 1Cs in the coach-athlete relationship. In S. Jowett, & D. Lavelle (Eds.), *Social psychology in sport* (pp. 63-77). Champaign: Human Kinetics.
- Jowett, S., & Cockerill, I. (2002). Incompatibility in the coach-athlete relationship. In I. Cockerill (Ed.), *Solutions in Sport Psychology* (pp. 16-31). London: Thompson Learning.
- Jowett, S., & Cockerill, I. M. (2003). Olympic medalists' perspective of the athlete-coach relationship. *Psychology of Sport and Exercise*(4(4)), pp. 313-331.
- Jowett, S., & Meek, G. (2000). Coach-athlete relationships in married couples: An explanatory content analysis. *The Sport Psychologist*(14), pp. 157-175.
- Jowett, S., & Ntoumanis, N. (2004). The Coach-Athlete Relationship Questionnaire (CART-Q): development and initial validation. *Scandinavian journal of medicine & science in sports*(14(4)), pp. 245-257.
- Jowett, S., & Poczwardowski, A. (2007). Understanding the coach-athlete relationship. In S. Jowett, & D. Lavelle (Eds.), *Social psychology in sport* (pp. 3-14). Champaign: Human Kinetics.
- Jowett, S., Rhind, D. J., & Yang, S. X. (2012). A comparison of athletes' perceptions of the coach-athlete relationship in team and individual sports. *Journal of Sport Behavior*(35(4)), pp. 433-452.
- Kaiseler, M., Polman, R. C., & Nicholls, A. R. (2012). Effects of the big five personality dimensions on appraisal coping, and coping effectiveness in sport. *European Journal of Sport Science*(12(1)), pp. 62-72.
- Kelley, H. H., Berscheid, E., Christensen, A., Harvey, J. H., Huston, T. L., Levinger, G., . . . Peterson, D. R. (Eds.). (1983). *Close relationships*. New York: Freeman.



- Laborde, S., Allen, M. S., Katschak, K., Mattonet, K., & Lachner, N. (2019). Trait personality in sport and exercise physiology: A Mapping review and research agenda. *International Journal of Sport and Exercise Psychology*. Retrieved from <https://doi.org/10.1080/1612197X.2019.1570536>
- Laborde, S., Guillen, F., Watson, M., & Allen, M. S. (2017). The light quartet: Positive personality traits and approaches to coping in sport coaches. *Psychology of Sport and Exercise*(32), pp. 67-73.
- Leary, M. R., & Hoyle, R. H. (2009). *Handbook of individual differences in social behavior*. New York: Guilford.
- Lee, T. H., & Ducksworth, A. L. (2018). Organizational grit. *Harvard Business Review*(96(5)), pp. 98-105.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*(57), pp. 705-717.
- Lyle, J. (1999). Coaching philosophy and coaching behavior. In N. Cross, & J. Lyle (Eds.), *The coaching process: Principles and practice for sport* (pp. 25-46). Oxford: Butterworth-Heinemann.
- Mageau, G. A., & Vallerand, R. J. (2003). The coach athlete relationship: A motivational model. *Journal of Sports Sciences*(21), pp. 883-904.
- McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*(52), pp. 81-90.
- McCrae, R., & Costa, P. T. (2008). The five-factor theory of personality. In O. P. John, R. W. Robins, & I. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3 ed., pp. 159-181). New York: Guilford Press.
- Moen, F. (2014). The Coach-Athlete Relationship and Expectations. *International Journal of Humanities and Social Science*(4(11)), pp. 29-40.
- Moen, F., & Federici, R. A. (2017). Can Athlete-Centered Coaching Stimulate Need Satisfaction and Prevent Athlete Burnout? *International Journal of Sport Management*(18).
- Moen, F., & Kvalsund, R. (2013). Subjective beliefs among sport coaches about communication during coach-athlete conversations. *Athletic Insight: The Online Journal of Sport Psychology*(5(3)), pp. 229-250.
- Moen, F., & Myhre, K. (2017). Can the Working Alliance between Coaches and athletes explain athlete burnout among junior athletes? *The Sport Journal*. Retrieved from <http://thesportjournal.org/article/working-alliance-between-coaches-and-athletesexplain-athlete-burnout/>
- Moen, F., & Olsen, M. (2020). Grit: A unique protective factor of coaches' well-being and burnout? *New Ideas in Psychology*(59). Retrieved from <https://doi.org/10.1016/j.newideapsych.2020.100794>
- Moen, F., Federici, R., & Klemetsen, H. (2014). Elite athletes' perceptions of their coaches' Coach Competencies in Nordic combined. *Journal of Excellence*(16), pp. 62-71.
- Moen, F., Hrozanova, M., & Stenseng, F. (2019). Validating the working alliance inventory as a tool for measuring the effectiveness of coach-athlete relationships in sport. *Cogent Psychology*(6). Retrieved from <https://doi.org/10.1080/23311908.2019.1695414>

- Moen, F., Myhre, K., & Hrozanova, M. (2017). The effects of coach-athlete working alliance on affect, worry and performance satisfaction among junior elite athletes. *International Journal of Applied Sports Sciences*(29(2)), pp. 180-194.
- Moen, F., Myhre, K., & Sandbakk, Ø. (2016). Psychological Determinants of Burnout, Illness and Injury among Elite Junior Athletes. *The Sport Journal*.
- Moen, F., Myhre, K., & Stiles, C. T. (2016). An exploration about how Passion, Perceived performance, Stress and Worries uniquely influence Athlete Burnout. *Journal of Physical Education and Sports Management*(3(1)), pp. 88-107.
- Neuman, G. A., & Wright, J. (1999). Team effectiveness: beyond skills and cognitive ability. *Journal of Applied Psychology*(84), pp. 376-389.
- Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: Big Five correlates of GPA and SAT scores. *Journal of Personality and Social Psychology*(93), pp. 116-130.
- Pallant, J. (2016). *SPSS Survival Manual. A Step by step guide to data analysis using IBM SPSS* (6 ed.). Maidenhead: Open University Press.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*(88), pp. 879-903.
- Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory. In E. L. Deci, & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: University of Rochester Press.
- Ryan, R. M., Vallerand, R. J., & Deci, E. L. (1984). Intrinsic motivation in sport: a cognitive evaluation theory interpretation. In W. Straub, & J. Williams (Eds.), *Cognitive Sport Psychology* (pp. 231-242). Lansing, NY: Sport Science Associates.
- Shaver, P. R., & Brennan, K. A. (1992). Attachment style and the Big Five personality traits: their connection with romantic relationship outcomes. *Personality and Social Psychology Bulletin*(18), pp. 536-545.
- Steca, P., Baretta, D., Greco, A., D'Addario, M., & Monzani, D. (2018). Associations between personality, sports participation and athletic success. A comparison of Big Five in sporting and non-sporting adults. *Personality and Individual Differences*(121(15)), pp. 176-183.
- Tracey, T. J., & Kokotovic, A. M. (1989). Factor structure of the Working Alliance Inventory. *Psychological Assessment*(1), pp. 207-210.
- Vallerand, R. J., & Rousseau, F. L. (2001). Intrinsic and extrinsic motivation in sport and exercise: a review using the Hierarchical Model of Intrinsic and Extrinsic Motivation. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of Sport Psychology* (2 ed., pp. 389-416). New York: Wiley.
- Widiger, T. A. (2009). Neuroticism. In M. R. Leary, & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 129-146). New York: Guilford.
- Widiger, T. A., & Smith, G. T. (2008). Personality and psychopathology. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3 ed., pp. 743-769). New York: Guilford Press.

## Appendices





## 14. Tålmodighet og lidenskap i målarbeid

\*

Vennligst svar på følgende spørsmål om deg selv. Vennligst svar ærlig - det er ikke noe riktig eller feil svar!

	Veldig enig	Ganske enig	Noe enig	Litt enig	Ikke enig i det hele tatt
Jeg har trosset tilbakeslag for å komme meg gjennom en viktig utfordring.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nye ideer og prosjekter distraherer meg av og til fra det jeg holder på med.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interessene mine forandrer seg fra år til år.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tilbakeslag berører meg ikke.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg har vært opplukt med enkelte ideer eller prosjekter for en kort tid men har senere mistet interessen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg er hardtarbeidende.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg setter meg ofte mål, men ombestemmer meg gjerne senere.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg har utfordringer med å holde fokus på prosjekter som tar mer enn et par måneder å fullføre.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg avslutter det jeg holder på med.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg har nådd et mål som det tok år med arbeid for å oppnå.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg blir interessert i nye prosjekter annenhver måned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg er flittig.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



