



The light quartet: Positive personality traits and approaches to coping in sport coaches



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ABSTRACT

Objectives: Research on coping in sport has focused predominantly on athletes. However, coping is also relevant to coaches who are known to experience much competitive stress. The aim of this investigation was to examine the association between positive personality traits (the light quartet: hope, optimism, perseverance, and resilience) and coping strategies adopted by sport coaches.

Design: Cross-sectional observational study.

Method: In total, 2135 Spanish individual and team sport coaches (657 women, 1478 men, mean age = 31.10 years, range = 18–74 years), working in 41 different sports, completed a battery of questionnaires assessing approaches to coping, hope, optimism, perseverance, resilience, and various demographic questions.

Results: The data showed that facets of the light quartet were associated with the coping strategies adopted by coaches. Perseverance and resilience were most important for emotional calming and active planning, optimism was most important for mental withdrawal and turning to religion, hope and perseverance were most important for seeking social support, and optimism and perseverance were most important for taking behavioral risks. Some associations between personality and coping were moderated by coach sex and type of sport coached (team vs. individual).

Conclusions: The findings of this study provide evidence that positive personality traits are important for coping among sport coaches. Further research using prospective designs and natural experimental methods is encouraged.

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1. Introduction

Stress is known to affect those involved in competitive sport including athletes, parents, coaches, support staff, officials and sport fans (Nicholls & Polman, 2007). Much is known about the coping strategies adopted by athletes in competitive situations and the factors that contribute to those coping strategies (Nicholls, Taylor, Carroll, & Perry, 2016). In contrast, relatively little is understood about the factors that might contribute to the coping strategies adopted by coaches. Personality is one factor that has been identified as important for coping (Carver & Connor-Smith, 2010). In sport settings, research on the big five trait dimensions

(openness, conscientiousness, extraversion, agreeableness, neuroticism) has found that personality is important for athlete coping strategies (Allen, Greenlees, & Jones, 2011; Kaiseler, Polman, & Nicholls, 2012). Recently, it has been recommended that researchers move beyond the big five trait conceptualization and explore negative traits such as narcissism, Machiavellianism, and psychopathy (labelled ‘the dark triad’; see Paulhus & Williams, 2002) or positive traits such as hope, optimism, perseverance and resilience (that we term here ‘the light quartet’), as these traits might have a greater role in sport-related behavior (Laborde & Allen, 2016; Roberts & Woodman, 2015, 2017). These positive traits are also important for well-being and flourishing and therefore the current research falls within the broad domain of positive psychology (see Gable & Haidt, 2005). The aim of this study was to investigate whether facets of the light quartet relate to the coping strategies used by sport coaches.

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Coaches have been found to adopt a variety of coping strategies for dealing with stressors associated with coaching in sport (Olusoga, Butt, Maynard, & Hays, 2010). Various conceptualizations of coping have been used in research (see e.g., Nicholls et al., 2016) and coping strategies in sport are thought to be best categorized into three main dimensions (Nicholls et al., 2016): *mastery* (controlling the situation and eliminating the stressor), *internal regulation* (managing internal stress responses), and *goal withdrawal* (ceasing efforts toward goal attainment). The current study focuses on six components of coping that can be placed within this classification: 1) emotional calming, 2) active planning/cognitive restructuring, 3) mental withdrawal, 4) behavioral risk, 5) seeking social support, 6) turning to religion (Kim, Duda, Tomaas, & Balaguer, 2003). The dimensions of active planning/cognitive restructuring, seeking social support, and behavioral risk reflect mastery coping strategies; emotional calming reflects internal regulation coping; and mental withdrawal and turning to religion reflect goal withdrawal coping strategies (Nicholls et al., 2016). The effectiveness of a particular coping strategy ultimately depends on the specific stressor and context. However, in most cases mastery and internal regulation strategies represent more adaptive coping, whereas goal withdrawal represents more maladaptive coping (Nicholls et al., 2016).

The investigation of coping in sport coaches has received little empirical attention. Often coaches are sampled as a means of understanding athlete coping strategies, either regarding the coaches role in influencing the athlete coping process (Nicholls & Perry, 2016) or being asked to rate the coping abilities of the athlete (Smith & Christensen, 1995). Much of the research on coping in coaches has been qualitative and exploratory in nature (Day, Bond, & Smith, 2013; Olusoga, Butt, Hays, & Maynard, 2009; Olusoga, Maynard, Hays, & Butt, 2012; Olusoga et al., 2010). This research highlights important differences between athletes and coaches regarding the various stressors encountered and coping strategies utilized. This suggests that independent research on sports coaches is necessary and that findings from athletes cannot be assumed to transfer directly to coaches. One of the few quantitative studies on coping in coaches found that coaches tend to use strategies that directly tackle the stressor (mastery coping strategies) in favor of other types of coping (Valadez Jimenez, Flores Galaz, de los Fayos Ruiz, Solís Briceño, & Reynaga Estrada, 2016). However, as far as we are aware, research has not explored individual difference factors that might contribute to the coping strategies adopted by coaches.

The light quartet (hope, optimism, resilience, and perseverance) was chosen as a framework of positive personality based on research demonstrating the importance of these traits in athletic samples (Laborde, Guillen, & Mosley, 2016; Laborde, Guillen, Dosseville, & Allen, 2015). Hope reflects an expectation of success relative to one's goals (Snyder et al., 1991) and has been consistently found to relate to favorable outcomes including positive emotions, goal-related thinking, perceived capabilities, and successful outcomes (see Snyder, 2002). In sport settings, hope has been found to predict athletic outcomes and psychological states such as self-esteem, confidence, burnout, and mood (Curry, Snyder, Cook, Ruby, & Rehm, 1997; Gustafsson, Hassmén, & Podlog, 2010; Gustafsson, Skoog, Podlog, Lundqvist, & Wagnsson, 2013; Woodman et al., 2009). Hope has also been identified as a common trait amongst Olympic gold medalists (Gould, Dieffenbach, & Moffett, 2002). As far as we are aware, dispositional hope has not been explored in sport coaches, but hope theory predicts a positive association between hope and a greater use of adaptive coping strategies (Snyder, 2002).

Optimism is defined as a generalized expectancy that good things will happen (Scheier & Carver, 1985) and has been

consistently found to positively relate to approach-based coping strategies (aiming to eliminate, reduce, or manage stressors) and negatively relate to avoidance-based coping strategies (seeking to ignore, avoid, or withdraw from stressors) (Solberg Nes & Segerstrom, 2006). In sport settings, optimism has been found to relate to adaptive coping strategies among athletes (Gaudreau & Blondin, 2004; Nicholls, Polman, Levy, & Backhouse, 2008) and overall better athletic performance (Gordon, 2008). The role of optimism in sport coaches has not been directly explored (as far as we are aware), but given the consistent associations observed across performance domains (for a meta-analysis, see Solberg Nes & Segerstrom, 2006), dispositional optimism can be predicted to have a positive association with adaptive coping strategies.

Perseverance refers to an eagerness to work hard despite fatigue or frustration (Cloninger, Praybeck, Svrakic, & Wetzel, 1994) and is described as being a critical factor for success among gold medal winning athletes (Durand-Bush & Salmela, 2002), elite modern pentathletes (Bertollo, Saltarelli, & Robazza, 2009), expert cricket batsmen (Weissensteiner, Abernethy, Farrow, & Gross, 2011), and ultramarathon runners (Jaeschke, Sachs, & Dieffenbach, 2016). Perseverance has recently been incorporated into conceptualizations of 'grit' – defined as perseverance and passion for long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007). In sport settings, trait perseverance ('grittier players') has been found to have a positive association with athletic performance (Larkin, O'Connor, & Williams, 2016; Moles, Auerbach, & Petrie, 2017). Perseverance as a disposition has not been explored in relation to coping responses of athletes or coaches. However, based on standard conceptualizations (see Duckworth et al., 2007), trait perseverance can be predicted to relate to more mastery focused coping strategies.

Psychological resilience is conceptualized as the interactive influence of psychological characteristics within the context of the stress process (Fletcher & Sarkar, 2013) and reflects the ability to maintain stable levels of optimal physical and mental functioning. Resilience is a key factor underlying the ability to cope with setbacks in sport (Mills, Butt, Maynard, & Harwood, 2012). Some research is available that has explored the role of resilience in coping in sport. Sport performers with higher levels of resilience have been found to use more mastery coping strategies and fewer goal withdrawal coping strategies (Nicholls, Morley, & Perry, 2016; Secades et al., 2016). Resilience has also been identified as an important factor affecting the performance of sport coaches (Weinberg, Butt, & Culp, 2011). How resilience relates to coaches' coping has not been explored. Based on findings from athlete samples, it can be predicted that greater resilience will relate to more mastery strategies and fewer goal withdrawal strategies.

To summarize, little is known about the factors associated with coping strategies adopted by sport coaches. The current investigation explores whether facets of the light quartet (hope, optimism, perseverance and resilience) relate to the coping strategies used by coaches. Based on the literature reviewed, we hypothesized that higher scores on the light quartet (higher levels of hope, optimism, perseverance and resilience) would have a positive association with mastery coping strategies (active planning/cognitive restructuring, seeking social support, behavioral risk) and internal regulation strategies (emotional calming), and a negative association with goal withdrawal strategies (mental withdrawal, turning to religion). Because coping responses tend to differ between subsamples, such as between men and women (see Nicholls & Polman, 2007), we also explore whether associations between the light quartet and coping strategies are moderated by demographic factors (age, sex, type of sport, coaching experience). Moderator analyses were exploratory and no specific hypotheses were generated.

2. Method

2.1. Participants

A total of 2135 Spanish coaches agreed to participate in the study (657 women, 1478 men; mean age = 31.10 years, age range = 18–74 years). Coaches were recruited from 796 individual athletes and 1339 teams (of which 510 were female and 1625 male). Coaches had an average of 7.3 years' experience in coaching ($SD = 7.2$) and had coached an average of 21 clients (athletes/teams) ($SD = 97.1$). At the time of sampling, all coaches were actively coaching athletes or teams in their discipline and were not involved in coaching other sports. We used a large sample size to detect small effects as is common in individual differences research (Gignac & Szodorai, 2016). In line with effect size guidelines (Ferguson, 2009), we were aiming to detect the recommended minimum effect size representing a practically significant effect ($R^2 = 0.04$ [0.25 for a medium effect, 0.64 for a large effect]).

2.2. Measures

Coping. The Spanish version of the approach to coping in sport questionnaire (ACSQ; Kim et al., 2003) was used to assess coping strategies. The ACSQ assesses the way coaches usually manage and/or counter psychological difficulties. The six dimensions of coping assessed are: emotional calming (7 items; e.g., "I tried to block negative thoughts"), active planning/cognitive restructuring (6 items; e.g., "I tried to find something positive in what happened"), mental withdrawal (6 items; e.g., "I thought there was nothing to be done, and I accepted it"), seeking social support (4 items; e.g., "I talked to someone to figure out what I could concretely do to solve the problem"), turning to religion (5 items; e.g., "I prayed more than usual"), and behavioral risk (4 items; e.g., "I was constantly changing strategy"). All items are assessed on a scale from 1 (*never*) to 5 (*always*). Internal consistency coefficients in the current sample were acceptable: emotional calming ($\alpha = 0.69$), active planning/cognitive restructuring ($\alpha = 0.74$), mental withdrawal ($\alpha = 0.76$), seeking social support ($\alpha = 0.73$), turning to religion ($\alpha = 0.84$), and behavioral risk ($\alpha = 0.68$).

Hope. Hope was assessed using the Spanish version (Guillén, 2017) of Snyder's hope scale (Snyder et al., 1991). This self-report questionnaire comprises 12 items (e.g., "I can think of many ways to get out of a jam"). Participants indicate the extent to which they agree with each item on a scale from 1 (*strongly disagree*) to 8 (*strongly agree*). Higher scores reflect greater levels of dispositional hope ($\alpha = 0.80$ in the current sample).

Optimism. The Spanish version (Otero, Luengo, Romero, Gomez, & Castro, 1998) of the life orientation test-revised (Scheier, Carver, & Bridges, 1994) was used to assess dispositional optimism. The scale consists of six items (e.g., "in uncertain times, I usually expect the best") and an additional four filler items. Respondents indicate the extent to which they agree with each item with response categories of 0 (*strongly disagree*), 1 (*disagree*), 2 (*neutral*), 3 (*agree*), or 4 (*strongly agree*). Higher scores reflect greater levels of optimism ($\alpha = 0.72$ in the current sample).

Resilience. Resilience was measured using the Spanish version (Alessandri, Vecchione, Caprara, & Letzring, 2012) of the ego resilience 89 scale (Block & Kremen, 1996). This questionnaire measures the capacity of individuals to effectively adjust to frustrating or stressful encounters. The scale consists of 14 items (e.g., "I quickly get over and recover from being startled"), with responses provided on a four point scale from 1 (*does not apply at all*) to 4 (*applies very strongly*). Higher scores represent higher levels of resilience ($\alpha = 0.85$ in the current sample).

Perseverance. Perseverance was assessed using the

perseverance subscale of the Spanish version (Gutiérrez-Zotes et al., 2004) of the temperament and character inventory-revised (Cloninger et al., 1994). The perseverance subscale comprises four dimensions: eagerness of effort (9 items), work hardened (8 items), ambitious (10 items), and perfectionist (8 items), with a total of 35 items (e.g., "I am often so determined that I continue working long after other people have given up"). Items are scored on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A single global score for perseverance combining the four dimensions was used in this study ($\alpha = 0.84$ in the current sample).

2.3. Procedure

Ethical approval was obtained from a university research ethics committee. A team of research assistants ($n = 6$) contacted participants through sport clubs before attending training sessions to describe the study to coaches, who were then given the opportunity to participate. After signing an informed consent form, participants were asked to complete the battery of questionnaires, the order of which was counterbalanced across participants. Participants also provided information on their age, sex, sport coached, and years of coaching experience. Completion of the questionnaires took between 20 and 30 min and participants did not receive any compensation for their involvement in the study.

2.4. Data analysis

To explore the contribution of the light quartet to coaches' coping strategies we ran a series of linear regression models. The six dimensions of coping were set as dependent variables and all models controlled for age, sex, coaching experience, and sport type at Step 1 before entering personality traits at Step 2. On the final Step 3, we tested whether associations between personality traits and coping strategies differed as a function of sex (Step 3a), sport type (Step 3b) age (Step 3c), or coaching experience (Step 3d). Moderator terms were computed from standardised data (z -scores) and significant effects were followed up using simple slope analyses to identify the direction of the effect (Hayes, 2013). Computation of moderator terms from standardised data is recommended to help avoid problems associated with high collinearity between main effects and moderator terms (Aiken & West, 1991). Moderator analyses were computed using PROCESS (Hayes, 2013) for IBM SPSS 21. For all regression models, there was no evidence of multicollinearity (VIF values < 5.00) and no multivariate outliers (Cook's distance values < 0.10). Normality of the residuals was confirmed through visual inspection of normal probability plots (standardised residuals against predicted values). There were no missing data and statistical significance was set at 0.05.

3. Results

Means, standard deviations, and zero-order correlations among study variables are reported in Table 1. There were notable subgroup differences on personality and coping variables between men and women, and between team sport coaches and individual sport coaches, and these are reported in Table 2. Individual sport coaches had higher scores on the light quartet, were more likely to use withdrawal coping strategies, and less likely to use social support, than team sport coaches. Female coaches were more likely to use support seeking and emotional calming as coping strategies than male coaches.

Findings from the linear regression models are reported in Table 3. Across models, demographic factors were associated with the coping strategies adopted by coaches, albeit with trivial-small effect sizes (Step 1 across models). Of note, coaches with more

Table 1
Means, standard deviations, and zero-order correlations among study variables.

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Optimism	3.79	0.60									
2. Hope	6.78	0.78	0.44***								
3. Perseverance	3.66	0.47	0.28***	0.45***							
4. Resilience	5.96	0.63	0.46***	0.65***	0.43***						
5. Emotional calming	3.84	0.55	0.34***	0.42***	0.40***	0.43***					
6. Active planning/cognitive restructuring	3.93	0.57	0.31***	0.43***	0.42***	0.44***	0.68***				
7. Mental withdrawal	2.04	0.72	-0.38***	-0.31***	-0.27***	-0.29***	-0.27***	-0.30***			
8. Behavioural risk	3.05	0.75	-0.07**	0.07**	0.23***	0.07**	0.15***	0.16***	0.20***		
9. Seeking social support	3.49	0.78	0.06**	0.16***	0.18***	0.13***	0.29***	0.30***	0.04	0.25***	
10. Turning to religion	1.79	0.91	-0.21***	-0.07**	0.01	-0.08***	-0.04	-0.08***	0.44***	0.22***	0.15***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2
Effect size differences between subgroups for personality and coping variables.

	Sex					Sport				
	Men		Women		<i>d</i>	Team		Individual		<i>d</i>
	M	SD	M	SD		M	SD	M	SD	
1. Optimism	3.80	0.60	3.76	0.60	0.07	3.78	0.60	3.81	0.60	0.06
2. Hope	6.79	0.75	6.75	0.84	0.05	6.75	0.74	6.83	0.83	0.10*
3. Perseverance	3.65	0.47	3.67	0.46	0.04	3.64	0.46	3.69	0.48	0.10*
4. Resilience	5.96	0.59	5.95	0.69	0.02	5.92	0.61	6.02	0.65	0.16***
5. Emotional calming	3.82	0.55	3.89	0.55	0.11*	3.81	0.54	3.90	0.56	0.15***
6. Active planning/cognitive restructuring	3.93	0.56	3.94	0.57	0.01	3.95	0.54	3.91	0.61	0.06
7. Mental withdrawal	2.03	0.74	2.05	0.70	0.02	1.99	0.69	2.12	0.77	0.17***
8. Behavioural risk	3.05	0.75	3.04	0.74	0.01	3.03	0.72	3.07	0.79	0.05
9. Seeking social support	3.45	0.77	3.58	0.79	0.15***	3.52	0.76	3.45	0.81	0.09*
10. Turning to religion	1.78	0.91	1.83	0.91	0.05	1.77	0.87	1.83	0.98	0.07

Note: men, $n = 1478$; women, $n = 657$; team sport coaches, $n = 1339$; individual sport coaches, $n = 796$.

* $p < 0.05$, *** $p < 0.001$.

Table 3
Linear regression models for coping dimensions regressed on control variables, the light quartet, and moderation terms.

	Emotional calming	Active planning	Mental withdrawal	Behavioural risk	Social support	Religion
Step 1	[$R^2 = 0.01$]***	[$R^2 = 0.01$]***	[$R^2 = 0.02$]***	[$R^2 = 0.01$]*	[$R^2 = 0.01$]***	[$R^2 = 0.01$]***
Age	0.07*	0.07*	0.06	-0.06	-0.01	0.13***
Sex	-0.05*	-0.03	0.01	0.02	-0.09***	-0.03
Sport	-0.06**	0.04*	-0.09***	-0.03	0.06**	-0.03
Experience	0.01	0.05	-0.13***	-0.01	-0.00	-0.09**
Step 2	[$\Delta R^2 = 0.26$]***	[$\Delta R^2 = 0.27$]***	[$\Delta R^2 = 0.18$]***	[$\Delta R^2 = 0.07$]***	[$\Delta R^2 = 0.05$]***	[$\Delta R^2 = 0.05$]***
Optimism	0.14***	0.08***	-0.27***	-0.15***	-0.03	-0.23***
Hope	0.15***	0.16***	-0.11***	0.01	0.11***	-0.00
Perseverance	0.21***	0.25***	-0.12***	0.26***	0.13***	0.08**
Resilience	0.17***	0.19***	-0.06*	0.03	0.04	-0.03
Step 3a	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.01$]*	[$\Delta R^2 = 0.01$]*	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]
Step 3b	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.01$]*	[$\Delta R^2 = 0.01$]*	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.01$]***
Step 3c	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.01$]***	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]
Step 3d	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]	[$\Delta R^2 = 0.00$]

Note: Standardised regression coefficients reported: Step 3a, sex moderation effects; Step 3b, sport type moderation effects; Step 3c, age moderation effects; Step 3d, coaching experience moderation effects.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

experience showed a less frequent use of mental withdrawal and turning to religion; individual sport coaches showed a more frequent use of mental withdrawal and emotional calming, and a less frequent use of social support and active planning, compared to team sport coaches; female coaches showed a more frequent use of social support and emotional calming, compared to male coaches; and older coaches showed a more frequent use of emotional calming, active planning and turning to religion, compared to younger coaches.

Observation of variances explained across models at Step 2 indicates that facets of the light quartet were most important for the use of emotional calming ($\Delta R^2 = 0.26$, $p < 0.001$), active planning

($\Delta R^2 = 0.27$, $p < 0.001$), and mental withdrawal ($\Delta R^2 = 0.18$, $p < 0.001$) coping strategies. The standardised regression coefficients show that higher scores on the light quartet were associated with more frequent use of emotional calming and active planning, and less frequent use of mental withdrawal strategies. The light quartet was also important for behavioral risk ($\Delta R^2 = 0.07$, $p < 0.001$), seeking social support ($\Delta R^2 = 0.05$, $p < 0.001$) and turning to religion ($\Delta R^2 = 0.05$, $p < 0.001$), albeit with smaller effects. The standardised regression coefficients show that higher scores on optimism were associated with a less frequent use of behavioral risk strategies and turning to religion, higher scores on hope were associated with a more frequent use of seeking social

support, and higher scores on perseverance were associated with a more frequent use of behavioral risk strategies, seeking social support, and turning to religion.

Some of the associations between the light quartet and coping strategies were moderated by participant demographics (Step 3). There was a significant moderation of resilience on active planning/cognitive restructuring by sport type ($\beta_{\text{interaction}} = -0.09$, $p = 0.019$). Follow-up slope analysis showed that there was a stronger association between resilience and active planning/cognitive restructuring among individual sport coaches ($t = 6.60$, $p < 0.001$) than among team sport coaches ($t = 4.23$, $p < 0.001$). For mental withdrawal, there was also a significant moderation for hope by sex ($\beta_{\text{interaction}} = 0.11$, $p = 0.012$) and for optimism by sport ($\beta_{\text{interaction}} = 0.12$, $p = 0.001$). Follow-up slope analyses showed that hope had a negative association with mental withdrawal among men ($t = -4.52$, $p < 0.001$) but was unrelated to mental withdrawal among women ($t = -1.74$, $p = 0.081$), and optimism had a stronger negative association with mental withdrawal among individual sport coaches ($t = -10.00$, $p < 0.001$) than among team sport coaches ($t = -7.68$, $p < 0.001$). There was also a significant moderation of optimism ($\beta_{\text{interaction}} = 0.12$, $p = 0.002$) and resilience ($\beta_{\text{interaction}} = -0.12$, $p = 0.011$) on turning to religion by sport type. Follow-up slope analyses showed that optimism had a stronger negative association with turning to religion among individual sport coaches ($t = -8.21$, $p < 0.001$) than among team sport coaches ($t = -5.55$, $p < 0.001$), and that resilience was unrelated to turning to religion among individual sport coaches ($t = 1.37$, $p = 0.172$) but had a negative association among team sport coaches ($t = -2.30$, $p = 0.021$). For mental withdrawal, there was also a significant effect at Step 3c ($\Delta R^2 = 0.01$, $p = 0.009$) indicating potential age moderation effects, but with no significant regression coefficients observed.

4. Discussion

This study examined associations between positive personality traits (the light quartet: hope, optimism, perseverance, and resilience) and the coping strategies used among active sport coaches. Supporting our first hypothesis, higher scores on the light quartet were associated with a more frequent use of active planning and seeking social support (mastery coping strategies). Also supporting study hypotheses, higher scores on the light quartet were associated with a more frequent use of emotional calming (internal regulation strategy). Offering partial support for study hypotheses, perseverance had a positive association, but optimism had a negative association, with behavioural risk (mastery strategy) and turning to religion (goal withdrawal strategy). Last, and again supporting study hypotheses, higher scores on the light quartet were associated with a less frequent use of mental withdrawal (goal withdrawal strategy). Based on effect size guidelines (Ferguson, 2009), the light quartet had a medium effect contribution to emotional calming, active planning and mental withdrawal, and a small effect contribution to behavioral risk, seeking social support and turning to religion.

The finding that coaches with higher scores on positive traits more frequently used mastery coping strategies (active planning/cognitive restructuring and seeking social support) is an important new development and builds on previous research demonstrating an important association between personality and mastery coping among athletes (e.g., Allen et al., 2011; Kaiseler et al., 2012). All four facets of the light quartet were important for active planning, whereas hope and perseverance were important for seeking social support. This suggests that personality traits have a greater role in coaches' self-directed coping strategies (active planning) than other-directed coping strategies (seeking social support). The third

mastery strategy (behavioural risk) showed less consistent findings. Perseverance had a positive association as hypothesized, but optimism had a negative association. We can speculate that more optimistic coaches take fewer risks in stressful circumstances because they hold more optimistic perceptions that circumstances might change without intervention.

The finding that higher scores on the light quartet were associated with a more frequent use of internal regulation strategies (emotional calming) is consistent with study hypotheses and previous research in other domains showing that positive traits such as optimism relate to adaptive coping strategies (e.g., Solberg Nes & Segerstrom, 2006). All four facets of the light quartet showed medium effect positive associations (Gignac & Szodorai, 2016) demonstrating that coaches with more positive traits in general are more inclined to adopt internal regulation strategies. Emotional calming as a coping strategy was generally higher among female coaches – and this is consistent with the socialization hypothesis that predicts women socialize more through emotion-focused behaviors (see Ptacek, Smith, & Zanas, 1992) – but the magnitude of associations between traits and emotional calming was not moderated by coach gender. This indicates that personality is just as important for emotional calming for male coaches as for female coaches.

Mental withdrawal was also found to be associated with facets of the light quartet. Coaches with lower scores on positive traits reported a more frequent use of mental withdrawal as a mechanism of coping with stress. Consistent with research in other domains (Solberg Nes & Segerstrom, 2006), optimism in particular showed a large effect (Gignac & Szodorai, 2016) for both mental withdrawal and turning to religion, with more optimistic coaches reporting an infrequent use these coping strategies. However, the trait of perseverance was less consistent showing a small negative association with mental withdrawal and a small positive association with turning to religion. The negative association between perseverance and mental withdrawal is consistent with study hypotheses, but the positive association between perseverance and turning to religion is less easy to explain. It is possible that persistent coaches turn to religion as an auxiliary coping strategy that might not necessarily be grounded in goal withdrawal. Future research might look to explore further whether turning to religion is a reflection of ceasing efforts toward goal attainment, taking into account as well the influence of how religious a person is.

There were also some notable moderation effects for sex and sport coached on the association between personality and coping. It was found that the trait of hope had a negative association with mental withdrawal among men but was unrelated to mental withdrawal among women. We can speculate that women coaches might be more pragmatic in general meaning low levels of hope become less important for goal withdrawal. In several instances it was also found that associations between traits and coping strategies were stronger among individual sport coaches than among team sport coaches. Individual behaviour (coping) occurs as a complex interaction between traits and environmental factors. We might speculate that the individual sporting environment offers greater opportunity for stress meaning personality becomes a more formidable factor in governing coping responses in this environment. Indeed, our preliminary analyses showed that frequency of coping strategies was generally higher across the board among individual sport coaches (see Table 2). An alternative explanation is that the moderation effects detected might simply be a function of the multiple tests explored (i.e., a Type 1 error). Indeed, effect sizes for moderation effects were below the RMPE (recommended minimum effect size representing a practically significant effect) in all instances (Ferguson, 2009) meaning main effects are the more important findings emerging from this study. Nevertheless, we

encourage other researchers to explore these moderation effects further.

Strengths of this study include the large sample of sport coaches (an underrepresented population in research) and control of demographic factors in study analyses. Limitations include the assessment of general coping style rather than coping responses to a particular competitive event (or stressor), and no assessment of perceived coping effectiveness. Previous research in athletes has demonstrated that personality is important for perceived coping effectiveness in addition to reported coping strategies (Kaiseler et al., 2012) and future research might look to explore whether the light quartet is important for perceived coping effectiveness among sport coaches. Another important limitation is that the study was cross-sectional in nature meaning we are unable to make inferences about cause and effect. Most researchers consider coping responses as an outcome of personality (see Carver & Connor-Smith, 2010), but it might also be the case that frequent stress and poor coping choices over a prolonged period of time also contribute to personality change (see McCrae & Costa, 2008). Prospective longitudinal studies and natural experimental methods might be a useful next step towards understanding the role of personality in coping in sport.

To conclude, this study provides evidence that positive personality traits are important for coping among sport coaches. Perseverance and resilience were most important for emotional calming and active planning, optimism was most important for mental withdrawal and turning to religion, and optimism and perseverance were most important for behavioral risk. Further research is required before recommendations regarding the practical usefulness of findings can be made in confidence, but should findings be replicated in subsequent independent research they might have value in terms of identifying coaches that engage in maladaptive coping responses who might benefit greatest from inclusion in coping targeted psychological interventions. This is the first large-scale quantitative examination of coaches' use of coping strategies, and we recommend further (prospective) studies extend these preliminary findings to other components of personality (e.g., the dark triad) and other components of coping (e.g., perceived effectiveness).

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. London, UK: Sage.
- Alessandri, G., Vecchione, M., Caprara, G., & Letzring, T. D. (2012). The ego resiliency scale revised. *European Journal of Psychological Assessment, 28*(2), 139–146. <http://dx.doi.org/10.1027/1015-5759/a000102>.
- Allen, M. S., Greenlees, I., & Jones, M. V. (2011). An investigation of the five-factor model of personality and coping behaviour in sport. *Journal of Sports Sciences, 29*(8), 841–850.
- Bertollo, M., Saltarelli, B., & Robazza, C. (2009). Mental preparation strategies of elite modern pentathletes. *Psychology of Sport and Exercise, 10*, 244–254.
- Block, J., & Kremen, A. M. (1996). IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology, 70*, 349–361.
- Carver, C. S., & Connor-Smith, J. (2010). Personality and coping. *Annual Review of Psychology, 61*, 679–704.
- Cloninger, C. R., Praybeck, T. R., Svrakic, D. M., & Wetzel, R. D. (1994). *The temperament and character inventory (TCI): A guide to its development and use*. St. Louis, MO: Center for Psychobiology of Personality.
- Curry, L. A., Snyder, C. R., Cook, D. L., Ruby, B. C., & Rehm, M. (1997). Role of hope in academic and sport achievement. *Journal of Personality and Social Psychology, 73*(6), 1257–1267.
- Day, M. C., Bond, K., & Smith, B. (2013). Holding it together: Coping with vicarious trauma in sport. *Psychology of Sport and Exercise, 14*, 1–11.
- Duckworth, 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), 1087–1101.
- Durand-Bush, N., & Salmela, J. H. (2002). The development and maintenance of expert athletic performance: Perceptions of world and Olympic champions. *Journal of Applied Sport Psychology, 14*, 154–171.
- Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice, 40*(5), 532.
- Fletcher, D., & Sarkar, M. (2013). Psychological resilience. *European Psychologist, 18*, 12–23.
- Gable, S. L., & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology, 9*(2), 103.
- Gaudreau, P., & Blondin, J. P. (2004). Differential associations of dispositional optimism and pessimism with coping, goal attainment, and emotional adjustment during sport competition. *International Journal of Stress Management, 11*(3), 245–269.
- Gignac, G. E., & Szodorai, E. T. (2016). Effect size guidelines for individual differences researchers. *Personality and Individual Differences, 102*, 74–78.
- Gordon, R. (2008). Attributional style and athletic performance: Strategic optimism and defensive pessimism. *Psychology of Sport and Exercise, 9*, 336–350.
- Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology, 14*, 172–204.
- Guillén, F. (2017). *Spanish validation of Snyder's hope scale*. Manuscript submitted for publication.
- Gustafsson, H., Hassmén, P., & Podlog, L. (2010). Exploring the relationship between hope and burnout in competitive sport. *Journal of Sports Sciences, 28*(14), 1495–1504.
- Gustafsson, H., Skoog, T., Podlog, L., Lundqvist, C., & Wagnsson, S. (2013). Hope and athlete burnout: Stress and affect as mediators. *Psychology of Sport and Exercise, 14*(5), 640–649.
- Gutierrez-Zotes, J. A., Bayon, C., Montserrat, C., Valero, J., Labad, A., Cloninger, C. R., et al. (2004). Baremación y datos normativos en una muestra de población general [Temperament and Character Inventory Revised (TCI-R). Standardization and normative data in a general population sample]. *Actas Españolas de Psiquiatría, 32*, 8–15.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (New York, NY: Guilford).
- Jaeschke, A. M. C., Sachs, M. L., & Dieffenbach, K. D. (2016). Ultramarathon runners' perceptions of mental toughness: A qualitative inquiry. *The Sport Psychologist, 30*(3), 242–255.
- 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), 62–72.
- Kim, M. S., Duda, J. L., Tomaas, I., & Balaguer, I. (2003). Examination of the psychometric properties of the Spanish version of the approach to coping in sport questionnaire. *Revista de Psicología del Deporte, 12*, 197–212.
- Laborde, S., & Allen, M. S. (2016). Personality-trait-like individual differences: Much more than noise in the background for sport and exercise psychology. In M. Raab, P. Wylleman, R. Seiler, A. M. Elbe, & A. Hatzigeorgiadis (Eds.), *Sport and exercise psychology research: From theory to practice*. Amsterdam: Elsevier.
- Laborde, S., Guillen, F., Dosseville, F., & Allen, M. S. (2015). Chronotype, sport participation, and positive personality-trait-like individual differences. *Chronobiology International, 32*, 942–951.
- Laborde, S., Guillen, F., & Mosley, E. (2016). Positive personality-trait-like individual differences in athletes from individual and team sports and in non-athletes. *Psychology of Sport and Exercise, 26*, 9–13.
- Larkin, P., O'Connor, D., & Williams, A. M. (2016). Does grit influence sport-specific engagement and perceptual-cognitive expertise in elite youth soccer? *Journal of Applied Sport Psychology, 28*(2), 129–138.
- McCrae, R. R., & Costa, P. T. (2008). The five-factor theory of personality. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 159–181). New York, NY: Guilford Press.
- Mills, A., Butt, J., Maynard, I., & Harwood, C. (2012). Identifying factors perceived to influence the development of elite youth football academy players. *Journal of Sports Sciences, 30*(15), 1593–1604.
- Moles, T. A., Auerbach, A. D., & Petrie, T. A. (2017). Grit happens: Moderating effects on motivational feedback and sport performance. *Journal of Applied Sport Psychology, 1–16*. <http://dx.doi.org/10.1080/10413200.2017.1306729>.
- Nicholls, A. R., Morley, D., & Perry, J. L. (2016). The model of motivational dynamics in sport: Resistance to peer influence, behavioral engagement and disaffection, dispositional coping, and resilience. *Frontiers in Psychology, 6*, 2010.
- Nicholls, A. R., Taylor, N. J., Carroll, S., & Perry, J. L. (2016). The development of a new sport-specific classification of coping and a meta-analysis of the relationship between different coping strategies and moderators on sporting outcomes. *Frontiers in Psychology, 7*, 1674.
- Nicholls, A. R., & Perry, J. L. (2016). Perceptions of coach–athlete relationship are more important to coaches than athletes in predicting dyadic coping and stress appraisals: An actor–partner independence mediation model. *Frontiers in Psychology, 7*, 447.
- Nicholls, A. R., & Polman, R. C. (2007). Coping in sport: A systematic review. *Journal of Sports Sciences, 25*(1), 11–31.
- Nicholls, A. R., Polman, R. C., Levy, A. R., & Backhouse, S. H. (2008). Mental toughness, optimism, pessimism, and coping among athletes. *Personality and Individual Differences, 44*, 1182–1192.
- Olusoga, P., Butt, J., Hays, K., & Maynard, I. (2009). Stress in elite sports coaching: Identifying stressors. *Journal of Applied Sport Psychology, 21*, 442–459.
- Olusoga, P., Butt, J., Maynard, I., & Hays, K. (2010). Stress and coping: A study of world class coaches. *Journal of Applied Sport Psychology, 22*, 274–293.
- Olusoga, P., Maynard, I., Hays, K., & Butt, J. (2012). Coaching under pressure: A study of olympic coaches. *Journal of Sports Sciences, 30*(3), 229–239.

- Otero, J. M., Luengo, A., Romero, E., Gomez, J. A., & Castro, C. (1998). *Psicología de personalidad. Manual de prácticas*. Barcelona: Ariel Practicum.
- Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality, 36*(6), 556–563.
- Ptacek, J. T., Smith, R. E., & Zanas, J. (1992). Gender, appraisal, and coping: A longitudinal analysis. *Journal of Personality, 60*(4), 747–770.
- Roberts, R., & Woodman, T. (2015). Contemporary personality perspectives in sport psychology. In S. D. Mellalieu, & S. Hanton (Eds.), *Contemporary advances in sport psychology: A review* (pp. 1–27). New York, NY: Routledge.
- Roberts, R., & Woodman, T. (2017). Personality and performance: Moving beyond the big 5. *Current Opinion in Psychology, 16*, 104–108.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219–247.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life orientation test. *Journal of Personality and Social Psychology, 67*(6), 1063–1078.
- Secades, X. G., Molinero, O., Salguero, A., Barquín, R. R., de la Vega, R., & Márquez, S. (2016). Relationship between resilience and coping strategies in competitive sport. *Perceptual and Motor Skills, 122*(1), 336–349.
- Smith, R. E., & Christensen, D. S. (1995). Psychological skills as predictors of performance and survival in professional baseball. *Journal of Sport & Exercise Psychology, 17*(4), 399–415.
- Snyder, C. R. (2002). Hope theory: Rainbows in the mind. *Psychological Inquiry, 13*, 249–275.
- Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., et al. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology, 60*(4), 570–585.
- Solberg Nes, L., & Segerstrom, S. C. (2006). Dispositional optimism and coping: A meta-analytic review. *Personality and Social Psychology Review, 10*, 235–251.
- Valadez Jimenez, A., Flores Galaz, M. M., de los Fayos Ruiz, E. J. G., Solís Briceno, O. B., & Reynaga Estrada, P. (2016). Coping styles in coaches: A study on men and women from yucatan. *RETOS-Neuvas Tendencias en Educacion Fisica, Deporte y Recreacion, 30*, 198–202.
- Weinberg, R., Butt, J., & Culp, B. (2011). Coaches' views of mental toughness and how it is built. *International Journal of Sport and Exercise Psychology, 9*(2), 156–172.
- Weissensteiner, J. R., Abernethy, B., Farrow, D., & Gross, J. (2011). Distinguishing psychological characteristics of expert cricket batsmen. *Journal of Science and Medicine in Sport, 15*, 79–74.
- Woodman, T., Davis, P. A., Hardy, L., Callow, N., Glasscock, I., & Yuill-Proctor, J. (2009). Emotions and sport performance: An exploration of happiness, hope, and anger. *Journal of Sport and Exercise Psychology, 31*(2), 169–188.