



Positive personality-trait-like individual differences in athletes from individual- and team sports and in non-athletes



Sylvain Laborde ^{a, b, *}, Félix Guillén ^c, Emma Mosley ^d

^a German Sport University Cologne, Germany

^b Université de Caen Basse-Normandie, France

^c University of Las Palmas de Gran Canaria, Spain

^d Bournemouth University, United Kingdom

ARTICLE INFO

Article history:

Received 14 January 2016

Received in revised form

18 May 2016

Accepted 19 May 2016

Available online 20 May 2016

Keywords:

Personality

Trait

Stable differences

Type of sport

ABSTRACT

The aim of this study was twofold: first, to replicate the positive association between sport participation and positive personality-trait-like individual differences (PTLID), and second to investigate whether athletes from individual and team sports would differ regarding positive PTLID. Participants of this study – 600 non-athletes and 600 athletes (280 practicing individual sports, 320 team sports) – completed a battery of questionnaires designed to assess five characteristics grouped under the umbrella term of positive PTLID, including: perseverance, positivity, resilience, self-esteem, and self-efficacy. A first MANOVA revealed that athletes scored systematically higher than non-athletes on positive PTLID. A second MANOVA showed that athletes from individual sports scored higher on positive PTLID than athletes from team sports. This could be explained by the individual responsibility that comes from performing alone and the need to possess greater enduring personal dispositions to succeed.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

The relationship between personality and sport participation is likely bidirectional (Allen & Laborde, 2014; Allen, Vella, & Laborde, 2015b). Meaning that on the one hand, sport participation may influence personality development, and on the other hand, personality development may influence involvement in physical activity and sport. Personality has different layers of understanding and dispositional traits, which are the focus of this paper, represent one layer of information regarding psychological individuality (Coulter, Mallett, Singer, & Gucciardi, 2015; McAdams & Pals, 2006). Previously the focus on personality traits findings has been on the main conceptualization of personality traits, the big five (John, Naumann, & Soto, 2008) and by extension the five-factor theory of personality (McCrae & Costa, 2008), as showed in several reviews (Allen, Greenlees, & Jones, 2013; Allen et al., 2015b). This work has provided important initial insight, however recent work in personality and individual differences tries to investigate other conceptualizations, such as personality-trait-like individual differences

(PTLID) (Laborde & Allen, in press; Laborde, Breuer-Weissborn, & Dosseville, 2013; Mosley & Laborde, 2015), on which is based this study. PTLID capture a broader view of personality traits, acknowledging individual differences not belonging to the big five, but closely related to personality trait theories. Personality being here defined as “psychological qualities that contribute to an individual’s enduring and distinctive patterns of feeling, thinking and behaving” (Pervin & Cervone, 2010, p. 8). Understanding how personality traits differ according to sport-specific environmental demands would help to better comprehend how sports participation may be integrated to the first layer of personality theory according to the whole person perspective (Coulter et al., 2015). A focus on dispositional traits was used based on the links observed between personality traits, sport participation, and type of sport. In this paper, we focused particularly on positive PTLID, reflecting individual dispositions that affect positively feelings, thoughts, and behaviours, thereby contributing to an overall positive individual functioning (Seligman & Csikszentmihalyi, 2000). Following this conceptualization, the dispositional traits we group in this study under the umbrella term of positive PTLID are perseverance, positivity, resilience, self-esteem, and self-efficacy. This selection does not exhaustively represent positive PTLID, but offers an overview of important dispositional traits contributing to overall positive

* Corresponding author. DSHS (Deutsche Sporthochschule), Institute of Psychology, Am. Sportpark Müngersdorf 6, 50933 Cologne, Germany.

E-mail address: Sylvain.laborde@yahoo.fr (S. Laborde).

function, as defined by Seligman and Csikszentmihalyi (2000), similar to the approach used for example by Silvia, Jackson, and Sopko (2014). Hence, we investigate in this paper 1) whether athletes and non-athletes differ on positive PTLID, and 2) whether athletes from individual and team sports differ on positive PTLID.

Current evidence would point towards a positive association between positive PTLID and sport participation. The first study using a similar approach to combine positive individual differences and to investigate whether they differed between athletes and non-athletes did so under the umbrella term of “mental toughness” (Guillen & Laborde, 2014). This study, based on structural equation modeling and latent mean differences, showed that athletes scored higher than non-athletes on mental toughness, mental toughness being here conceived as higher order dimension for hope, optimism, perseverance, and resilience. Given progress in mental toughness conceptualization (Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015), it seemed more appropriate in subsequent research to switch the term mental toughness to PTLID (Laborde, Guillen, Dosseville, & Allen, 2015). Recent developments in mental toughness conceptualization (Gucciardi et al., 2015) showed that 1) it is better conceptualized as a unidimensional concept instead of a multidimensional concept, 2) it more likely represents a state-like concept instead of a trait, and 3) the assessment of mental toughness with a single instrument (i.e., mental toughness inventory) proved to have a higher predictive value regarding performance than an indirect approach measuring several individual facets (Gucciardi et al., 2015). Laborde et al. (2015) grouped six PTLID under the umbrella term of positive PTLID, namely self-efficacy, hope, optimism, perseverance, resilience, and trait emotional intelligence. Using structural equation modeling and latent mean differences, they found out that sport participation was positively associated with positive PTLID. Taken together, these findings would point toward a positive association between sport participation and positive PTLID. This positive association could be explained by the following reasons: We know from previous meta-analyses and reviews that acute physical activity enhances positive activated affects and triggers energetic behaviours (e.g., Liao, Shonkoff, & Dunton, 2015; Reed & Ones, 2006). These benefits transfer to chronic physical activity which in turn builds resilience by inducing positive psychological and physiological benefits (Silverman & Deuster, 2014). The additional blunted stress reactivity protects against the negative consequences of stressful events and is linked to overall increased positive mood and well-being (Silverman & Deuster, 2014). Moreover, an added benefit of chronic physical activity is that it has a positive effect on brain and cognition (Audiffren & André, 2015; Hillman, Erickson, & Kramer, 2008). Taken together, the chronic effects of physical activity may enhance positively feelings, thoughts, and behaviours. This subsequently aligns with the core stable elements of personality according to Pervin and Cervone (2010), hence constituting a theoretical link between physical activity and personality. If a general link seems to be possible to establish between positive PTLID and sport participation, we now review the existing evidence for each individual trait we consider in this study.

The five positive PTLID we include in this study, namely perseverance, positivity, resilience, self-esteem, and self-efficacy, were all found to be important characteristics accompanying sport participation. Perseverance has been conceptualized as persistence by Cloninger, Praybeck, Svrakic, and Wetzel (1994), and refers more specifically to the propensity of being eager to work hard when facing challenges, in spite of fatigue or frustration. It has already been found to be associated positively to sport participation (Guillen & Laborde, 2014). Positivity refers to the tendency to view life and experiences with a positive outlook (Caprara et al., 2012). In sport, it has been shown to contribute to athletes well-being

(Ferguson, Kowalski, Mack, & Sabiston, 2014), but to our knowledge it has not directly been linked to sport participation. Resilience, when considered as a dispositional trait (for a discussion on whether resilience should be better considered as a trait or a process, see Sarkar & Fletcher, 2013), can be defined as a constellation of characteristics that enable individuals to adapt to the circumstances they encounter (Connor & Davidson, 2003). It has been found to be positively associated to sport participation (Guillen & Laborde, 2014). Self-esteem refers to relatively stable feelings of overall self-worth (Rosenberg, 1965). Self-esteem has been found to be positively associated with sport participation (Bjelica & Jovanović, 2014; Eime, Young, Harvey, Charity, & Payne, 2013; Kipp, 2016). Self-efficacy refers to an individual's belief in his or her capabilities to organize and execute courses of action that are required to produce given attainments (Bandura, 1997). Sport participation has been found to be positively related to general self-efficacy (Inoue, Wegner, Jordan, & Funk, 2015; Laborde et al., 2015) and to emotional self-efficacy (Eime et al., 2013). If the studies we reviewed point towards a positive association between sport participation and positive PTLID, the type of sport was not investigated in those studies, which could mask differences given the different requirements of different type of sports.

Regarding the type of sport practiced and its relationship with positive PTLID, we draw here on a major dichotomy in sports, team and individual sports. The main distinction at the psychological level between individual and team sports relies on the concept of responsibility (Mroczkowska, 1997). The personal responsibility for the outcome (positive or negative) is lower in team sports in comparison to individual sports. Indeed, the social processes in a team and distribution of roles enhance the dispersion of responsibility for the outcome. In team sports, the final result relies on the whole team, while in individual sports the athlete is solely responsible for the result. From this description we would suggest that the personality of athletes from individual sports could play a major role in the competitive output. This may be due to the omission of support from teammates to reach his/her objective. Therefore it seems that there are differences that need to be considered within personality and type of sport. So far, this issue has been directly investigated in mental toughness and emotional intelligence, and there is also indirect evidence with positive PTLID. Considering research in mental toughness, no differences were found regarding the type of sport using a mental toughness inventory (Nicholls, Polman, Levy, & Backhouse, 2009). However, caution has to be taken regarding those results given the inventory used presents both psychometric and theoretical concerns (Gucciardi, Hanton, & Mallett, 2012, 2013). On the same line, the type of sport did not emerge as a significant predictor in the study of Guillen and Laborde (2014), where mental toughness was considered as a higher-order dimension of four positive PTLID. Regarding a trait that has been considered as a positive PTLID (Laborde et al., 2015), emotional intelligence, no difference emerged between individual and team sport athletes (Kajbafnezhad, Ahadi, Heidarie, Askari, & Enayati, 2011; Laborde, Dosseville, Guillén, & Chávez, 2014). However, some evidence would favor a positive relationship between positive PTLID and individual athletes. In Laborde et al. (2015), the type of sport was not taken into account, however a positive relationship was found between morningness (the tendency to go early to bed and to get up earlier in the morning) with positive PTLID. We also know that athletes from individual sports have a higher tendency for morningness than athletes from team sports (Lastella, Roach, Halson, & Sargent, 2015). Taken together, empirical findings are currently inconclusive regarding the association of positive PTLID and type of sport. Theoretically, given the higher responsibility of athletes from individual sports on outcome in comparison to athletes from team

sports (Mroczkowska, 1997), and given the contribution of positive PTLID to performance (e.g., resilience; Fletcher & Sarkar, 2012), we may expect positive PTLID to be more pronounced in individual athletes in comparison to team athletes. However, as it was not yet directly empirically proven, the second aim of this study is to address this issue.

In summary, we wanted in this study to investigate differences on positive PTLID (i.e., perseverance, positivity, resilience, self-esteem, and self-efficacy) between 1) athletes and non-athletes, and 2) athletes from individual and team sports. We firstly hypothesized that athletes would score higher than non-athletes on all positive PTLID, given the contribution of sport participation to positive individual functioning. For our second research question, we would expect athletes from individual sports to score higher on all positive PTLID than athletes from team sports, given the higher contribution to the outcome of athletes from individual sports.

2. Material and methods

2.1. Participants

A total of 1200 Spanish participants were recruited to take part to this study. There was a total of 600 non-athletes: 300 males and 300 females (*Mage* = 21.94 years, age range: 18–25). The non-athletes who were chosen for this study had never been involved in any form of sports training or competition. There was a total of 600 athletes: 300 males and 300 females (*Mage* = 21.45 years, age range = 18–25). These athletes were selected from 34 disciplines: 11 team sports (320 athletes) and 23 individual sports (280 athletes). They were involved in sport practice for a mean of 9.1 years (*SD* = 4.77), and practiced on average 9.7 h per week (*SD* = 5.44). Team sports included basketball, beach-volley, indoor soccer field hockey, soccer, handball, roller hockey, volleyball, synchronized swimming, rugby, and water-polo. Individual sports included archery, athletics, badminton, boxing, canary wrestling, cycling, fencing, judo, jump swimming, golf, gymnastics, karate, padel, rhythmic gymnastics, sailing, surf, swimming, table tennis, taekwondo, tennis, triathlon, weight-lifting, and windsurfing. All of these athletes were currently involved in sporting competition exclusively in their discipline and were not involved in the practice of other sports.

2.2. Instruments

In order to ensure a fair comparison between athletes and non-athletes, we avoided using instruments that were sports specific. For this reason, we chose to assess five positive PTLID with instruments validated for a general population: positivity, perseverance, resilience, self-efficacy, and self-esteem.

2.2.1. Positivity

The Positivity Scale (Caprara et al., 2012) was designed as a short instrument to directly assess positivity. Items assess a positive view of one's self, one's life, and one's future, as well as one's confidence in others (e.g., "I have great faith in the future"). The 8 items were formatted with 5-point Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree). Reliability in this study was of .72.

2.2.2. Perseverance

Perseverance was assessed as one of the dimensions of the Temperament and Character Inventory-Revised (Cloninger et al., 1994). The persistence subscale consists of four dimensions (eagerness of effort, work hardened, ambitious, perfectionist) and consisted of 35 items, which the participant has to answer with a Likert-scale from 1 = "strongly disagree" to 5 = "strongly agree". A

sample item includes "I am often so determined that I continue working long after other people have given up". Reliability in this study was of .91.

2.2.3. Resilience

Resilience was measured with the Ego Resilience 89 Scale (Block & Kremen, 1996). The scale measures the capacity of individuals to effectively adjust to frustrating or stressful encounters. This scale consists of 14 items ("I enjoy dealing with new and unusual situations."), each responded to on a 4-point Likert scale, ranging from 1 (does not apply at all) to 4 (applies very strongly). Reliability in this study was of .80.

2.2.4. Self-efficacy

We assessed self-efficacy using the General Self-Efficacy Scale (Baessler & Schwarzer, 1996). The scale was created to assess a general sense of perceived self-efficacy with the aim to predict coping with daily hassles as well as adaptation after experiencing a variety of stressful life events. The scale is unidimensional. The 10 items (e.g., "I can find a way to get what I want even if someone opposes me") are answered on a 4-points Likert scale ranging from 1 (disagreement) to 4 (agreement). Reliability in this study was of .82.

2.2.5. Self-esteem

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) is a unidimensional instrument elaborated from a phenomenological conception of self-esteem. It captures participants' global perception of their own worth by means of a 10-item scale, 5 positively worded items and 5 negatively worded items (e.g., "On the whole, I am satisfied with myself"). All items are answered using a 4-point Likert scale format ranging from strongly disagree (1) to strongly agree (4). Reliability in this study was of .84.

2.3. Procedures

Athletes and non-athletes were presented with a brief description of the study and were then given the opportunity to participate. Consent was obtained from all participants prior to commencing the study. Participants were asked to complete a paper version of the battery of psychological assessments in a single 30-min session. These assessments were comprised of the following: a demographic questionnaire, which included questions concerning the sport they practiced and their current training volume (time per week in min); and questionnaires to assess self-efficacy, positivity, resilience, self-esteem, and perseverance. Non-athletes were administered this battery of assessments during the course of their daily activities. Athletes were administered this battery of assessments just prior to or immediately following a training session. Our researches attested to the confidentiality of the information gathered and the study received the approval of the Ethics Committee of the local university.

2.4. Data analysis

Firstly we checked for normal distribution and outliers. The data was normally distributed. We then ran two MANOVAs, the first with sport participation (athletes vs non-athletes) as an independent variable, the second with type of sport (individual sport vs. team sport) as an independent variable. For both MANOVAs we set the five PTLID as dependent variables, namely positivity, perseverance, resilience, self-efficacy, and self-esteem.

3. Results

Descriptive statistics are presented in Table 1.

3.1. Differences between athletes and non-athletes

The MANOVA revealed a main effect of sport participation, $F(1, 1194) = 25.84$, Wilks's lambda = .90, $p < .001$, partial $\eta^2 = .10$. A significant difference was found for each of the five PTLID, always in the direction of athletes scoring higher than non-athletes: for perseverance: $F(1, 1198) = 91.83$, $p < .001$, partial $\eta^2 = .07$; for positivity: $F(1, 1198) = 83.57$, $p < .001$, partial $\eta^2 = .07$; for resilience, $F(1, 1198) = 46.29$, $p < .001$, partial $\eta^2 = .04$; for self-efficacy, $F(1, 1198) = 34.01$, $p < .001$, partial $\eta^2 = .03$; for self-esteem, $F(1, 1198) = 81.16$, $p < .001$, partial $\eta^2 = .06$. Adding gender as a covariate did not change the results.

3.2. Differences between athletes from individual and team sports

The MANOVA revealed a main effect of sport participation, $F(1, 594) = 6.32$, Wilks's lambda = .95, $p < .001$, partial $\eta^2 = .05$. A significant difference was found for each of the five PTLID, always in the direction of athletes from individual sports scoring higher than athletes from team sports: for perseverance: $F(1, 598) = 10.99$, $p < .001$, partial $\eta^2 = .02$; for positivity: $F(1, 598) = 6.52$, $p = .011$, partial $\eta^2 = .01$; for resilience, $F(1, 598) = 7.16$, $p = .008$, partial $\eta^2 = .01$; for self-efficacy, $F(1, 598) = 16.61$, $p < .001$, partial $\eta^2 = .03$; for self-esteem, $F(1, 598) = 29.25$, $p < .001$, partial $\eta^2 = .05$. Adding gender as a covariate did not change the results.

4. Discussion

The aim of this paper was to investigate whether positive PTLID, namely perseverance, positivity, resilience, self-efficacy, and self-esteem, would differ between athletes and non-athletes, and then between athletes from individual and team sports.

The first finding, that athletes score systematically higher than non-athletes on positive PTLID, replicates previous general findings regarding positive PTLID considered as an umbrella term (Guillen & Laborde, 2014; Laborde et al., 2015). Furthermore, it confirms findings specific to the dispositional traits considered in this study, regarding perseverance (Guillen & Laborde, 2014), resilience (Guillen & Laborde, 2014), self-esteem (Bjelica & Jovanović, 2014; Eime et al., 2013; Kipp, 2016), and self-efficacy (Eime et al., 2013; Inoue et al., 2015; Laborde et al., 2015). It also extends findings on positivity, as it was not previously investigated together with sport participation. In combination, these findings are in line with findings obtained from longitudinal studies, indicating positive bidirectional relationships between physical activity and the socially desirable dimensions of the big five (Allen, Vella, & Laborde, 2015a; Allen et al., 2015b). The fact that we found medium effect sizes for perseverance, positivity, and self-esteem; and small effect

sizes for resilience and self-efficacy; may suggest either that perseverance, positivity, and self-esteem are more developed by sport participation, or that they are the most necessary characteristics to engage in sport participation. Further longitudinal studies should clarify the nature of these relationships.

Regarding our main finding, athletes from individual sports scored systematically higher on positive PTLID than athletes from team sports (with a small effect size). We discuss the findings considering positive PTLID in a general fashion, given no previous work investigated the relationship between the individual dispositional traits included in this study together with the type of sport. Our findings can be explained by the requirements of both individual and team sports. In individual sports the athlete is solely responsible for the competitive output (Mroczkowska, 1997), hence stable individual enduring dispositions may play a higher role regarding performance in individual sports in comparison to team sports. Our finding draws on the links established between PTLID, morningness, and athletes from individual sports (Laborde et al., 2015; Lastella et al., 2015). It differs however from results found with single PTLID, such as mental toughness (Guillen & Laborde, 2014; Nicholls et al., 2009), or emotional intelligence (Kajbafnezhad et al., 2011; Laborde et al., 2014). For the case of emotional intelligence, we could suggest that sport sciences students have been asked to participate, and therefore they were very likely involved in other type of sports than their main sport. Moreover, in the study of Guillen and Laborde (2014), where similar positive PTLID have been investigated under the umbrella term of mental toughness, type of sport was investigated but did not emerge as a significant predictor. This could potentially be because effects were masked by the two main significant predictors that emerged in this study, namely age and training duration. Overall our findings show that positive PTLID are associated positively with participation in individual sport, which requires further investigation concerning the causal mechanisms involved.

Our study had some limitations. Given the cross-sectional nature of the data, causality cannot be inferred here, and further studies should look more closely to longitudinal patterns between personality and sport participation, like it was done between personality and physical activity (Allen et al., 2015b, 2015a). Regarding the age of our participants, the fact that the average age of our sample was 22 years old (age range = 18–25) limits the generalization of our findings. Further research should consider PTLID in younger and mature athletic populations as well as in non-athletes. In addition, categorizing sports as individual or team sports might not be as straightforward as it appears at first glance and one has to be cautious, for example cricket and baseball could be classified as individual sports played in a team context. Moreover, collecting additional details regarding sport participation would have enabled a finer understanding of the role of positive PTLID. For example, taking into account the level of expertise along with the nature, frequency, and intensity of sport participation. In addition, we highlight that our choice of positive PTLID was not exhaustive, given no established list of positive PTLID exists, and further research should aim to integrate other candidates such as hope. Finally, although the focus of this paper was on positive PTLID, looking at the relationship between sport participation and negative PTLID could also be very informative, such as distressed or Type-D personality (Borkoles et al., 2015) or neuroticism (Hulya Asci, Kelecsek, & Altinta, 2015; Yang, Jowett, & Chan, 2015).

5. Conclusion

Our study, based on a large cross-sectional sample, showed that athletes scored higher than non-athletes on positive PTLID, and among athletes those from individual sports scored higher than

Table 1
Descriptive statistics.

	Non-athletes		Athletes (global)		Athletes (team sports)		Athletes (individual sports)	
	M	SD	M	SD	M	SD	M	SD
Self-efficacy	30.28	4.40	32.49	3.95	31.99	3.76	33.06	4.10
Self-esteem	31.16	4.19	32.69	3.58	32.34	3.62	33.09	3.50
Positivity	31.92	5.17	33.58	4.66	33.11	4.76	34.12	4.49
Resilience	69.38	9.18	74.23	9.47	72.78	9.27	75.89	9.44
Perseverance	115.18	19.92	125.52	17.37	122.01	15.76	129.52	18.26

those from team sports. Although causality can't be inferred here, these findings are being helpful to pinpoint the associations between positive PTLID and sport participation, and the type of sport. This might influence the recommendations to engage into specific sports and also potentially to combine different types of sports to develop a rounded personality. If individual sports are linked positively to positive PTLID, team sports might also lead to positive psychological consequences, such as experiencing sharing group success and collective efficacy (Fuster-Parra, Garcia-Mas, Ponseti, & Leo, 2015).

References

- Allen, M. S., Greenlees, I., & Jones, M. V. (2013). Personality in sport: a comprehensive review. *International Review of Sport and Exercise Psychology*, 6, 184–208.
- Allen, M. S., & Laborde, S. (2014). The role of personality in sport and physical activity. *Current Directions in Psychological Science*, 23, 460–465. <http://dx.doi.org/10.1177/0963721414550705>.
- Allen, M. S., Vella, S. A., & Laborde, S. (2015a). Health-related behaviour and personality trait development in adulthood. *Journal of Research in Personality*, 59, 104–110. <http://dx.doi.org/10.1016/j.jrp.2015.10.005>.
- Allen, M. S., Vella, S. A., & Laborde, S. (2015b). Sport participation, screen time, and personality trait development during childhood. *British Journal of Developmental Psychology*, 33, 375–390. <http://dx.doi.org/10.1111/bjdp.12102>.
- Audiffren, M., & André, N. (2015). The strength model of self-control revisited: linking acute and chronic effects of exercise on executive functions. *Journal of Sport and Health Science*, 4(1), 30–46. <http://dx.doi.org/10.1016/j.jshs.2014.09.002>.
- Baessler, J., & Schwarzer, R. (1996). Evaluación de la autoeficacia: Adaptación española de la escala de Autoeficacia General. *Ansiedad y Estrés*, 2, 1–8.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bjelica, D. L., & Jovanović, U. D. (2014). It's up to you: the influence of sports participation, academic performances and demo-behavioral characteristics on university students' life satisfaction. *Applied Research in Quality of Life*, 11(1), 163–179. <http://dx.doi.org/10.1007/s11482-014-9360-0>.
- 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. <http://dx.doi.org/10.1037/0022-3514.70.2.349>.
- Borkoles, E., Reynolds, N., Ski, C. F., Stojanovska, L., Thompson, D. R., & Polman, R. C. (2015). Relationship between Type-D personality, physical activity behaviour and climacteric symptoms. *BMC Womens Health*, 15, 18. <http://dx.doi.org/10.1186/s12905-015-0176-3>.
- Caprara, G. V., Alessandri, G., Eisenberg, N., Kupfer, A., Steca, P., Caprara, M. G., ... Abela, J. (2012). The positivity scale. *Psychological Assessment*, 24, 701–712. <http://dx.doi.org/10.1037/a0026681>.
- 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.
- Connor, K., & Davidson, J. (2003). Development of a new resilience scale: the Connor-Davidson resilience scale (CD-RISC). *Depression and Anxiety*, 18, 76–82. <http://dx.doi.org/10.1002/da.10113>.
- Coulter, T. J., Mallett, C. J., Singer, J. A., & Gucciardi, D. F. (2015). Personality in sport and exercise psychology: integrating a whole person perspective. *International Journal of Sport and Exercise Psychology*, 1–20. <http://dx.doi.org/10.1080/1612197x.2015.1016085>.
- Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. *The International Journal of Behavioral Nutrition and Physical Activity*, 10, 98. <http://dx.doi.org/10.1186/1479-5868-10-98>.
- Ferguson, L. J., Kowalski, K. C., Mack, D. E., & Sabiston, C. M. (2014). Self-compassion and eudaimonic well-being during emotionally difficult times in sport. *Journal of Happiness Studies*, 16(5), 1263–1280. <http://dx.doi.org/10.1007/s10902-014-9558-8>.
- Fletcher, D., & Sarkar, M. (2012). A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise*, 13, 669–678. <http://dx.doi.org/10.1016/j.psychsport.2012.04.007>.
- Fuster-Parra, P., Garcia-Mas, A., Ponseti, F. J., & Leo, F. M. (2015). Team performance and collective efficacy in the dynamic psychology of competitive team: a Bayesian network analysis. *Human Movement Science*, 40, 98–118. <http://dx.doi.org/10.1016/j.humov.2014.12.005>.
- Gucciardi, D. F., Hanton, S., Gordon, S., Mallett, C. J., & Temby, P. (2015). The concept of mental toughness: tests of dimensionality, nomological network, and traitness. *Journal of Personality*, 83, 26–44. <http://dx.doi.org/10.1111/jopy.12079>.
- Gucciardi, D. F., Hanton, S., & Mallett, C. J. (2012). Progressing measurement in mental toughness: a case example of the Mental Toughness Questionnaire 48. *Sport, Exercise, and Performance Psychology*, 1, 194–214. <http://dx.doi.org/10.1037/a0027190>.
- Gucciardi, D. F., Hanton, S., & Mallett, C. J. (2013). Progressing measurement in mental toughness: a response to clough, earle, perry, and crust. *Sport, Exercise, and Performance Psychology*, 2(3), 157–172. <http://dx.doi.org/10.1037/spy0000002>.
- Guillen, F., & Laborde, S. (2014). Higher-order structure of mental toughness and the analysis of latent mean differences between athletes from 34 disciplines and non-athletes. *Personality and Individual Differences*, 60, 30–35. <http://dx.doi.org/10.1016/j.paid.2013.11.019>.
- Hillman, C. H., Erickson, K. I., & Kramer, A. F. (2008). Be smart, exercise your heart: exercise effects on brain and cognition. *Nature Reviews Neuroscience*, 9, 58–65.
- Hulya Asci, F., Kelecek, S., & Altinta, S. A. (2015). The role of personality characteristics of athletes in coach-athlete relationships. *Perceptual and Motor Skills*, 121(2), 399–411. <http://dx.doi.org/10.2466/30.PMS.121c17x9>.
- Inoue, Y., Wegner, C. E., Jordan, J. S., & Funk, D. C. (2015). Relationships between self-determined motivation and developmental outcomes in sport-based positive youth development. *Journal of Applied Sport Psychology*, 27(4), 371–383. <http://dx.doi.org/10.1080/10413200.2015.1010662>.
- John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative big five trait taxonomy: history, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 114–158). New York, NY: Guilford Press.
- Kajbafnezhad, H., Ahadi, H., Heidarie, A. R., Askari, P., & Enayati, M. (2011). Difference between team and individual sports with respect to psychological skills, overall emotional intelligence and athletic success motivation in Shiraz city athletes. *Journal of Physical Education & Sport*, 11, 249–254.
- Kipp, L. E. (2016). Psychosocial aspects of youth physical activity. *Pediatric Exercise Science*, 28(1), 28–31. <http://dx.doi.org/10.1123/pes.2016-0009>.
- Laborde, S., & Allen, M. (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, the Netherlands: Elsevier. in press.
- Laborde, S., Breuer-Weissborn, J., & Dosseville, F. (2013). Personality-trait-like individual differences in athletes. In C. Mohiyeddini (Ed.), *Advances in the psychology of sports and exercise* (pp. 25–60). New York, NY: Nova.
- Laborde, S., Dosseville, F., Guillén, F., & Chávez, E. (2014). Validity of the trait emotional intelligence questionnaire in sports and its links with performance satisfaction. *Psychology of Sport and Exercise*, 15, 481–490. <http://dx.doi.org/10.1016/j.psychsport.2014.05.001>.
- Laborde, S., Guillén, F., Dosseville, F., & Allen, M. S. (2015). Chronotype, sport participation, and positive personality-trait-like individual differences. *Chronobiology International*, 32, 942–951. <http://dx.doi.org/10.3109/07420528.2015.1055755>.
- Lastella, M., Roach, G. D., Halson, S. L., & Sargent, C. (2015). Sleep/wake behaviours of elite athletes from individual and team sports. *European Journal of Sport Sciences*, 15, 94–100. <http://dx.doi.org/10.1080/17461391.2014.932016>.
- Liao, Y., Shonkoff, E. T., & Dunton, G. F. (2015). The acute relationships between affect, physical feeling states, and physical activity in daily life: a review of current evidence. *Frontiers in Psychology*, 6, 1975. <http://dx.doi.org/10.3389/fpsyg.2015.01975>.
- McAdams, D. P., & Pals, J. L. (2006). A new big five: fundamental principles for an integrative science of personality. *American Psychologist*, 61(3), 204–217. <http://dx.doi.org/10.1037/0003-066X.61.3.204>.
- 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.
- Mosley, E., & Laborde, S. (2015). Performing under pressure: influence of personality-trait-like individual differences. In M. Raab, B. Lobinger, S. Hoffmann, A. Pizzera, & S. Laborde (Eds.), *Performance psychology: Perception, action, cognition, and emotion* (pp. 292–314). Amsterdam, the Netherlands: Elsevier.
- Mroczkowska, H. (1997). Attributive reduction of failure-borne losses in view of team cohesion – analogies and differences in individual versus team competition. *Biology of Sport*, 14(4), 325–332.
- Nicholls, A. R., Polman, R. C., Levy, A. R., & Backhouse, S. H. (2009). Mental toughness in sport: achievement level, gender, age, experience, and sport type differences. *Personality and Individual Differences*, 47, 73–75.
- Pervin, L. A., & Cervone, D. (2010). *Personality: Theory and research* (11th ed.). New York: Wiley.
- Reed, J., & Ones, D. S. (2006). The effect of acute aerobic exercise on positive activated affect: a meta-analysis. *Psychology of Sport and Exercise*, 7(5), 477–514. <http://dx.doi.org/10.1016/j.psychsport.2005.11.003>.
- Rosenberg, M. (1965). In N. Princeton (Ed.), *Society and the adolescent self-image*. Princeton University Press Ed.
- Sarkar, M., & Fletcher, D. (2013). How should we measure psychological resilience in sport performers? *Measurement in Physical Education and Exercise Science*, 17, 264–280. <http://dx.doi.org/10.1080/1091367X.2013.805141>.
- Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *American Psychologist*, 55, 5–14.
- Silverman, M. N., & Deuster, P. A. (2014). Biological mechanisms underlying the role of physical fitness in health and resilience. *Interface Focus*, 4(5), 20140040. <http://dx.doi.org/10.1098/rsfs.2014.0040>.
- Silvia, P. J., Jackson, B. A., & Sopko, R. S. (2014). Does baseline heart rate variability reflect stable positive emotionality? *Personality and Individual Differences*, 70, 183–187. <http://dx.doi.org/10.1016/j.paid.2014.07.003>.
- Yang, S. X., Jowett, S., & Chan, D. K. (2015). Effects of big-five personality traits on the quality of relationship and satisfaction in Chinese coach-athlete dyads. *Scandinavian Journal of Medicine & Science in Sports*, 25(4), 568–580. <http://dx.doi.org/10.1111/sms.12329>.