

Running head: PERFECTIONISM AND SPORT ENGAGEMENT

Perfectionism and sport-specific engagement in elite youth soccer players

Keywords: athletes; personality; adolescent; sport; participation

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Abstract

It is acknowledged that the time invested in sport-specific activities contributes to higher levels of performance. However, there is limited understanding of the potential impact of personality traits, such as perfectionism, on engagement in sport-specific activities. In the current study, we examine whether elite youth soccer players who demonstrate higher and lower levels of perfectionistic strivings tendencies can be differentiated based on their sport-specific engagement. The Sport Multidimensional Perfectionism Scale 2 and an adapted Player History Questionnaire were completed by 419 elite youth male soccer players competing at the Australian age-related national youth championships (Under 13, $n=133$; Under 14, $n=166$; Under 15, $n=120$). A quartile split approach was used to separate higher ($n=100$) and lower ($n=107$) perfectionistic strivings groups. Findings revealed the higher perfectionistic strivings group accumulated more time in sport-specific activities, including coach-led practice, individual practice, peer-led play and indirect involvement in soccer when compared to individuals with lower perfectionistic strivings tendencies. Descriptive analysis indicates this equates to approximately 159 hours a year (i.e., 17 hours coach-led practice; 22 hours individual practice; 60 hours of peer-led play; and 60 hours of indirect involvement) more than the lower perfectionistic strivings group. In summary, the results suggest players with varying levels of perfectionistic strivings may be differentiated based on their engagement in soccer-specific activity in a sample of elite youth players in Australia, and suggests that perfectionistic striving may have an adaptive influence on sport-specific engagement.

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Introduction

23 Sporting excellence is emphasised by a commitment to practice (Ericsson, 2006; Ward,
24 Hodges, Starkes, & Williams, 2007). There is an extensive body of literature indicating the
25 time engaged in sport-specific activities can have a positive influence on skill learning and
26 performance (Ford, Ward, Hodges, & Williams, 2009; Ford & Williams, 2012; Roca,
27 Williams, & Ford, 2012; Ward et al., 2007). Moreover, scientists believe that athletes at an
28 elite level exhibit perfectionistic qualities to achieve success in their chosen domain (Gould,
29 Dieffenbach, & Moffett, 2002; Stoeber, Uphill, & Hotham, 2009). Yet, there remains limited
30 understanding of the impact of personality traits, such as perfectionism, on the amount of
31 time an individual invests in sport-specific activities in the pursuit of expertise. In the current
32 study, we explore the potential influence of perfectionism on engagement in sport-specific
33 activities within an elite youth soccer context.

34 There is consensus in the literature that perfectionism is a multidimensional personality
35 trait (Flett & Hewitt, 2002; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991)
36 and a defining characteristic is the tendency to set high personal performance standards
37 (Burns, 1980; Frost et al., 1990; Hewitt & Flett, 1991). The personal standards dimension has
38 been conceptualised in contemporary research, with researchers identifying the perfectionistic
39 dimension of perfectionistic strivings (Enns & Cox, 2002; Stoeber, 2012; Stoeber & Otto,
40 2006). Perfectionistic strivings is defined as aspects of perfectionism associated with a self-
41 oriented strive for perfection, a commitment to exceptionally high personal standards. It
42 encompasses facets of perfectionism that are typically considered normal, adaptive and
43 healthy (Stoeber & Otto, 2006; Stoll, Lau, Stoeber, 2008). To understand the influence of
44 perfectionism on individuals, researchers have explored the relationship between
45 perfectionistic strivings and performance. Findings have indicated perfectionistic strivings is
46 associated with higher performance in academic (Bieling, Israeli, Smith, & Anthony, 2003;

47 Stoeber & Kersting, 2007; Stoeber & Rambow, 2007) and musical settings (Stoeber &
48 Eismann, 2007). The findings may provide evidence to suggest perfectionistic strivings are
49 adaptive characteristics associated with performance. While research in academic and music
50 contexts demonstrate the potential positive characteristics of perfectionism, it has been
51 suggested that, sport is an ideal environment to explore perfectionism due to achievement
52 being more transparent and more easily measurable (Flett & Hewitt, 2002; Hall, 2006; Hall,
53 Hill & Appleton, 2012).

54 Several researchers have attempted to understand whether perfectionistic striving, or a
55 healthy pursuit of excellence, is adaptive for sports performance (Stoeber, Uphill, & Hotham,
56 2009; Stoll, Lau, & Stoeber, 2008). Stoll and colleagues (2008) studied perfectionism and
57 performance on a new basketball training task of undergraduate student athletes.
58 Perfectionistic strivings were calculated prior to the completion of a series of four trials
59 whereby participants were required to score baskets from a non-standard position. Findings
60 indicated perfectionistic strivings were associated with higher levels of performance across
61 the trials. In support of this, Stoeber and colleagues (2009) conducted two further studies
62 investigating the relationship between perfectionism and competitive performance in
63 triathletes. The results of both investigations demonstrated that perfectionistic strivings
64 predicted the competitive performance of the triathletes.

65 While researchers have demonstrated the positive relationship between perfectionistic
66 strivings and performance (Bieling, Israeli, Smith, & Anthony, 2003; Stoeber & Kersting,
67 2007; Stoeber & Eismann, 2007; Stoeber & Rambow, 2007; Stoeber, Uphill, & Hotham,
68 2009; Stoll, Lau, & Stoeber, 2008), there is limited discussion of how perfectionistic strivings
69 may contribute to higher performance levels. Therefore, Stoeber, Chesterman, and Tarn
70 (2010) explored whether time invested on a task can explain the relationship between
71 perfectionistic strivings and performance. University students completed a simple letter-

72 detection activity whereby the time to complete the task and performance was calculated.
73 Findings indicated perfectionistic strivings correlated positively with time and performance
74 on the task, and time on the task fully mediated the relationship between perfectionistic
75 strivings and performance. This finding may suggest that time invested may explain how
76 perfectionistic strivings lead to higher performance levels, and supports previous evidence
77 that suggest individuals high in perfectionistic strivings spend more time practicing and
78 studying (Bieling et al., 2003; Stoeber & Eismann, 2007).

79 While there is an emerging body of literature outlining the association between striving
80 for perfectionism and performance in domains such as academia and music (Bieling, Israeli,
81 Smith, & Anthony, 2003; Brown et al., 1999; Stoeber et al., 2010; Stoeber & Eismann, 2007),
82 there remains limited knowledge of how perfectionistic striving may influence the time
83 invested in sport-specific activities in high-performance sport. The absence of research in the
84 sports domain is surprising given that a positive link has been shown between the time
85 invested in sport-specific activities and skilled performance (Ford et al., 2009; Roca et al.,
86 2012; Ward et al., 2007) as well being able to discriminate between youth players who
87 progress or not to professional soccer (Ford & Williams, 2012). It would be reasonable to
88 presume individuals high in perfectionism would invest more time in sport-specific activities
89 compared to individuals lower in perfectionistic tendencies. Therefore, in this study we
90 undertake an exploratory study to examine whether groups higher and lower in perfectionistic
91 strivings may be differentiated based on the time accumulated in sport-specific activities
92 using an elite sample of junior soccer players in Australia. We predict, based on previous
93 findings in non-sport contexts (Bieling et al., 2003; Brown et al., 1999; Stoeber et al., 2010;
94 Stoeber & Eismann, 2007), that players with higher perfectionistic tendencies will have
95 invested greater amounts of time in sport-specific activities during their development.

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Method**98 Participants**

99 A total of 419 elite youth male soccer players volunteered to participate. All
100 participants were involved in national youth development programs in Australia and had been
101 selected to compete at the age-related national youth soccer championships for their
102 associated state representative team (Under 13, $n = 133$, $M_{age} = 12.84$, $SE_{age} = 0.03$; Under 14,
103 $n = 166$, $M_{age} = 13.89$, $SE_{age} = 0.02$; Under 15, $n = 120$, $M_{age} = 14.80$, $SE_{age} = 0.04$). Ethical
104 approval was gained from the lead institution's research ethics board and written parental
105 consent was obtained for all participants prior to data collection.

106 Instruments

107 To measure differences in perfectionistic striving, the Sport-MPS-2 Personal Standards
108 scale was used (Stoeber, 2011, 2012). Participants rate the degree to which they agree with
109 each of the seven items (e.g., 'If I do not set the highest standards for myself, I am likely to
110 end up a second-rate player') on a 5-point Likert scale (1 = strongly disagree; 5 = strongly
111 agree), with the item scores averaged across the scale, with higher values representing higher
112 levels of perfectionistic striving. The validity and reliability of the Sport-MPS-2 Personal
113 Standards scale has been established including factorial structure and internal consistency (α
114 ≥ 0.74) (Dunn, Dunn et al., 2006). For the current study, the internal consistency was within
115 the acceptable range ($\alpha = 0.746$).

116 An adapted version of the Participation History Questionnaire (PHQ: Ward et al., 2007)
117 was used to gather data relating to the soccer-related activities which players had undertaken
118 from the current season back to eight years of age. The questionnaire elicited information
119 relating to the number of hours participants engaged in soccer-related activities at a specific
120 age. Specifically, participants were asked questions relating to their recollection of the
121 number of hours per week and the number of months per year engaged in five soccer-related

122 activities, including match-play (i.e., competitive soccer matches); coach-led practice (i.e.,
123 soccer practice with a coach); individual practice (i.e., soccer activity by oneself); peer-led
124 play (i.e., soccer activities with peers, including small-sided games); and indirect
125 involvement (i.e., soccer activities not physical in nature, such as playing soccer computer
126 games and watching soccer games) (Ford et al., 2009; Ford & Williams, 2012; Larkin,
127 O'Connor, & Williams, 2015; Ward et al., 2007). Concurrent validity and test-retest
128 reliability of the PHQ has previously been reported (Ford, Low, McRobert, & Williams,
129 2010).

130 **Procedure**

131 Participants from each team competing at the national youth championships sat together
132 in a quiet room ($n = 14-16$). Participants first completed the Sport-MPS-2 with the
133 completion time ranging from 5 to 10 minutes. The adapted PHQ was then administered, with
134 participants taking approximately one hour to complete. During this time, the lead author and
135 a research assistant were available to answer questions and provide further explanation and
136 support to the participants.

137 **Data Analysis**

138 Following completion of the Sport-MPS-2 and the adapted PHQ, data were entered into
139 a Microsoft excel spread sheet and then transferred to Statistical Package for the Social
140 Sciences (SPSS) version 20 (IBM Corp., Released 2011) for statistical analysis. To identify
141 perfectionistic strivings, the average personal standards sub-scale score was used for analysis.
142 For the adapted PHQ, to ensure consistency with previous findings (Ford et al., 2009; Ford &
143 Williams, 2012; Ward et al., 2007), soccer-related activities were grouped into five activity
144 types, match-play, coach-led practice, individual practice and peer-led play. The accumulated
145 hours of engagement in soccer-related activities was calculated by multiplying the reported
146 hours per week by weeks per year, minus the number of weeks participants reported as

147 injured. For example, if a player reported participating in an activity for 2 hours per week for
148 40 weeks of the year, but was injured for 5 weeks, the accumulated total hours for that
149 activity would be 70 hours. In addition to the accumulated total, the average number of
150 months the activity was engaged in during the year was recorded. Also, to provide a
151 standardised measure, the time invested in sport-specific activity was calculated relative to
152 the hours invested per month, with the total accumulated time in the activity divided by the
153 months of active engagement.

154 To understand the potential influence of perfectionistic striving within an elite group of
155 players, a quartile split approach was used. This method split the group based on the
156 perfectionistic striving score, with the top 25% forming a higher perfectionistic striving
157 group, and the bottom 25% forming a lower perfectionistic striving group. As per previous
158 research (e.g., Ma, Mare, & Gurd, 2014; Rasclé, Coulomb, & Pfister, 1998; Williams, Ward,
159 Bell-Walker, & Ford, 2012), the sub-groups were separated based on objective markers (i.e.,
160 perfectionistic striving score) and were statistically different from each other. Therefore, the
161 top 25%, higher perfectionistic striving group ($n = 100$), had a mean age of 14.15 years ($SE =$
162 0.09), and the bottom 25%, lower perfectionistic striving group ($n = 107$), had a mean age of
163 13.83 years ($SE = 0.08$).

164 To assess group (i.e., higher perfectionistic striving and lower perfectionistic striving)
165 differences for perfectionistic strivings and player history data, separate one-way Analysis of
166 Covariance (ANCOVA), controlling for age, were conducted. A significant alpha was set at
167 0.05, with effect sizes calculated by a partial eta-squared (η^2) and described as a small ($\eta^2 =$
168 $0.01 - 0.058$), medium ($\eta^2 = 0.059 - 0.137$) or a large ($\eta^2 \geq 0.138$) effect size (Cohen, 1992).

169 **Results**

170 The descriptive statistics (mean \pm standard error) for perfectionistic striving and total
171 sport-specific engagement when the cohort was separated by level of perfectionistic striving

172 (i.e., higher or lower) are presented in Table 1. A separate one-way ANCOVA demonstrated
173 a significant main effect for perfectionistic striving when controlling for age, with the higher
174 perfectionistic striving group ($M = 4.38$, $SE = 0.02$) recording a significantly greater
175 perfectionistic striving score compared to the lower perfectionistic striving group ($M = 3.02$,
176 $SE = 0.03$). Thus, the two groups were significantly different on our measure of
177 perfectionistic strivings.

178 In relation to the accumulated hours of soccer-specific activity, there were significant
179 between group differences for coach-led practice, individual practice, peer-led play and
180 indirect involvement when controlling for age (Table 1). When considering the average hours
181 per month invested in the sport-specific activities, the separate one-way ANCOVA indicated
182 the higher perfectionistic striving group invested more hours per month in coach-led practice
183 ($p = 0.042$, partial $\eta^2 = 0.021$), peer-led play ($p < 0.001$, partial $\eta^2 = 0.137$) and indirect
184 involvement ($p < 0.001$, partial $\eta^2 = 0.102$) when compared with the lower perfectionistic
185 strivings group. Furthermore, while not significant, the higher perfectionistic strivings group
186 recorded more hours per month in sport-specific individual practice ($M = 13.02$ hrs, $SE =$
187 0.79) and match-play ($M = 6.51$ hrs, $SE = 0.24$) when compared to the lower perfectionistic
188 striving group (Individual practice $M = 11.11$ hrs, $SE = 0.76$; match-play $M = 6.00$ hrs, $SE =$
189 0.20).

190 <<<INSERT TABLE 1 HERE>>>

191 Discussion

192 We examined whether two groups of elite youth soccer players who scored higher and
193 lower on a measure of perfectionism may be differentiated based on the amount of hours
194 accumulated in different soccer-specific activities during development. We predicted that
195 players with higher perfectionistic tendencies will have invested greater amounts of time in
196 sport-specific activities during their development.

197 It is apparent from the results that within an elite sample of youth soccer players in
198 Australia, players differ in their levels of perfectionistic strivings. It is difficult to generalise
199 our findings to societal perfectionism norms, because of the various different instruments that
200 measure perfectionism. Yet, in accordance with other reported findings (Stoeber et al., 2010;
201 Stoeber et al., 2009; Stoll et al., 2008; Gucciardi, Mahoney, Jalleh, Donovan, & Parkes,
202 2012), the current results suggest the higher perfectionistic striving group represent
203 individuals with high perfectionistic tendencies, while the players categorised in the low
204 perfectionistic striving group are low in perfectionistic tendencies relative to other sports. .
205 The results of the current study may provide initial evidence to suggest elite youth soccer
206 players differ in their levels of perfectionistic strivings.

207 Our findings make a significant contribution to the current knowledge by providing
208 evidence to suggest perfectionistic striving may have an adaptive influence on sport-specific
209 engagement, specifically, coach-led practice, individual practice, peer-led play and indirect
210 soccer involvement. Our findings support previous perfectionism literature which indicates
211 individuals high in perfectionistic strivings invest more time studying (Bieling et al., 2003;
212 Brown et al., 1999) and practicing music (Stoeber & Eismann, 2007) when compared to
213 individuals lower in perfectionistic strivings. It is therefore believed perfectionistic strivings
214 have an important role in the motivation and effort which may contribute to individuals
215 higher in perfectionism investing more time in the pursuit of higher levels of achievement in
216 their chosen domain (Stoeber & Eismann, 2007). While not assessed in the current study, in
217 future researchers should consider the potential link between perfectionistic striving,
218 motivation, effort and sport-specific engagement on achievement in sports.

219 The trend in our data suggests that the higher perfectionistic strivings group invest more
220 time in soccer-specific activities compared to the lower perfectionistic striving group. While
221 there is no difference in the number of months individual practice and peer-led play is

222 engaged in during the year, the descriptive data indicate the higher perfectionistic strivings
223 group accumulates a couple more hours per month in each activity, which equates to
224 approximately 99 hours a year (i.e., 17 hours coach-led practice; 22 hours individual practice
225 and 60 hours of peer-led play) more than the lower perfectionistic strivings group. This latter
226 finding is of interest as previously researchers have shown that the time invested in
227 deliberate play and deliberate practice, such as peer-led play may improve sport-specific
228 perceptual-cognitive skills (Roca et al., 2012; Williams et al., 2012) and higher levels of
229 achievement in the sport (Ericsson, 2004; 2006; Ford et al., 2009; Ford & Williams, 2012)
230 compared to individuals who accumulate less time in these activities.

231 In a similar manner to the physical engagement in soccer-specific activities, the results
232 indicate that the higher perfectionistic strivings group invest more time indirectly involved in
233 soccer than the lower perfectionistic strivings group. On average this equates to
234 approximately an additional 60 hours per year spent engaged in non-physical activities, such
235 as playing soccer computer games and watching soccer games. While there is limited
236 empirical evidence to suggest that this indirect involvement has a beneficial effect on
237 performance in the sport, researchers have tentatively indicated greater amounts of
238 contextualised observational experience may have a positive influence on perceptual-
239 cognitive skill development (Pizzera & Raab, 2012).

240 Although in the current study we do not directly assess the performance level of the
241 individual players, the findings may indicate perfectionistic striving has a positive indirect
242 effect on performance. Previous findings have acknowledged players who invest more time
243 in sport-specific activities possess greater sport-specific skills (Ford et al., 2009; Roca et al.,
244 2012; Ward et al., 2007) and are more likely to progress to a professional level (Ford &
245 Williams, 2012). Therefore, it would appear logical to assume that individuals higher in
246 perfectionistic striving want to invest more time in their chosen domain with the potential

247 belief that increased sport-specific engagement may refine and improve skills. As there
248 currently are no direct links between perfectionism and elite youth soccer performance,
249 researchers should consider the exploration of the potential influence of perfectionism on the
250 performance of sport-specific skills.

251 While this is one of the first studies to explore perfectionism and practice history in a
252 sport based context, the findings should be considered with respect to several limitations.
253 First, while previous sports related data may indicate that greater amounts of time invested in
254 sport-specific activities contributes to skilled performance (Ford et al., 2012; Ford et al.,
255 2009; Ford & Williams, 2012; Ward et al., 2007), perfectionism based research has indicated
256 that high perfectionism level may also contribute to burnout in youth athletes (Appleton,
257 Hall, & Hill, 2009; Gould, Udry, Tuffey, & Loehr, 1996; Hill, Hall, Appleton, & Kozub,
258 2008; Lemyre, Hall, & Roberts, 2008). Therefore, while not an aim of this paper, it would be
259 suggested that future studies exploring practice history profiles should consider the potential
260 impact of burnout on individuals and whether individuals with the high perfectionistic
261 tendencies progress to the elite adult level or drop out prior to this stage of their career.
262 Second, the current study was limited by the lack of performance related data. While
263 researchers suggest increased engagement in sport-specific activities contributes to skilled
264 performance (Ford et al., 2012; Ford et al., 2009; Ford & Williams, 2012; Ward et al., 2007),
265 it is not possible to assume the higher perfectionistic strivings group would perform better on
266 technical or tactical skill assessments. Therefore, in future researchers should consider
267 incorporating performance based assessment matrices to fully comprehend the influence of
268 perfectionism on youth athletes. Third, the study may be limited by the recall accuracy of the
269 participants. While research has indicated the reliability and validity of the player history
270 questionnaire (Ford et al., 2010), it may be possible that the higher perfectionistic strivings
271 group, epitomised by exceedingly high personal standards, may be more accurate when

272 recalling sports-activity engagement and completing the questionnaire. Finally, while the
273 results support previous research describing the association between perfectionism and
274 investment in domain specific activities (Bieling et al., 2003; Brown et al., 1999; Stoeber &
275 Eismann, 2007), there is still limited understanding whether perfectionism has a casual
276 impact on domain specific engagement or practice. Therefore, researchers should now
277 attempt to understand whether high level of perfectionism leads to increased engagement in
278 practice, or vice versa. By gaining a better understanding of this relationship it may be
279 possible to use measures of perfectionism within the talent identification processes.

280 In summary, our results indicate that players with higher levels of perfectionistic
281 strivings accumulate more time in direct and indirect involvement in their specific sport. The
282 findings demonstrate elite youth level soccer players higher in perfectionistic strivings may
283 invest more time per month in both physical (i.e., coach-led practice and peer-led play) and
284 non-physical (i.e., indirect involvement) sport-specific activities. Therefore, consistent with
285 the literature, it suggested that perfectionistic strivings is adaptive for engagement in soccer-
286 specific activities of elite youth level Australian soccer players.

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455 Table 1.

456 *Mean (\pm SE) for perfectionistic striving and sport-specific engagement (total hours; average hours per month; average months per year) when*
 457 *separated by level of perfectionistic striving.*

		Lower Perfectionistic Strivings		Higher Perfectionistic Striving		<i>F</i>	p-value	Effect Size	
		Mean	SE	Mean	SE				
	Age (years)	13.83	0.08	14.15	0.09	2.29	0.132	0.011	Small
	Perfectionistic Striving	3.02	0.03	4.38	0.02	1322.25	0.000	0.869	Large
Total Hours	Match-play (hrs)	299.42	14.10	361.10	20.37	1.45	0.230	0.007	Small
	Coach-led Practice (hrs)	914.59	39.40	1148.28*	56.15	6.60	0.010	0.033	Small
	Individual Practice (hrs)	704.78	54.27	909.85*	62.45	4.73	0.031	0.025	Small
	Peer-led Play (hrs)	802.85	54.48	1044.21*	65.67	5.80	0.017	0.032	Small
	Indirect Involvement (hrs)	2099.29	159.03	2981.46*	182.32	9.57	0.002	0.050	Small
Average Months per Year Engaged	Match-play (months/year)	8.01	0.18	8.13	0.15	0.04	0.837	0.000	Small
	Coach-led Practice (months/year)	8.64	0.16	8.76	0.15	0.20	0.655	0.001	Small
	Individual Practice (months/year)	10.63	0.20	10.95	0.20	1.05	0.308	0.005	Small
	Peer-led Play (months/year)	9.62	0.21	10.19	0.20	3.23	0.074	0.017	Small
	Indirect Involvement (months/year)	10.94	0.18	11.40	0.14	1.86	0.174	0.009	Small
Average Hours per Month Invested	Match-play (hrs/month)	6.00	0.20	6.51	0.24	0.36	0.547	0.002	Small
	Coach-led Practice (hrs/month)	17.09	0.60	19.05*	0.74	4.18	0.042	0.021	Small
	Individual Practice (hrs/month)	11.11	0.76	13.02	0.79	3.49	0.063	0.019	Small
	Peer-led Play (hrs/month)	14.76	0.77	20.61*	0.89	27.72	0.000	0.137	Medium
	Indirect Involvement (hrs/month)	25.28	1.64	37.78*	1.95	19.22	0.000	0.102	Medium

* indicates a significant difference at the 0.05 level

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