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1 The 2 × 2 Model of Perfectionism and Negative Experiences in Youth Sport

2 Mallinson-Howard, S. H.<sup>a</sup>, Hill, A. P.<sup>a</sup>, & Hall, H. K.<sup>a</sup>

3 <sup>a</sup> School of Sport, York St John University, UK

7 Author note:

8 Sarah H. Mallinson-Howard, School of Sport, York St John University, Lord Mayor's Walk,  
9 York, YO31 7EX, UK; Andrew P. Hill, School of Sport, York St. John University, Lord  
10 Mayor's Walk, York, YO31 7EX, UK; Howard K. Hall, School of Sport, York St. John  
11 University, Lord Mayor's Walk, York, YO31 7EX, UK.

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19 Correspondence concerning this article should be addressed to Sarah H. Mallinson-Howard,  
20 School of Sport, York St John University, Lord Mayor's Walk, York, YO31 7EX, UK.

21 E-mail: [s.mallinson-howard@yorksj.ac.uk](mailto:s.mallinson-howard@yorksj.ac.uk)

22 Tel: (+44)1904 876154

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**Abstract**

**Objectives:** Research has found that the four subtypes of perfectionism from the  $2 \times 2$  model of perfectionism (i.e., Non-perfectionism, Pure PSP, Pure ECP, and Mixed perfectionism) are associated with different youth sport experiences. Extending this research, the current study examined the  $2 \times 2$  model in regard to undesirable outcomes indicative of negative experiences in youth sport: negative (and positive) affect, anxiety, antisocial (and prosocial) behavior, and intentions to dropout of sport.

**Design:** A cross-sectional design was employed.

**Method:** Two hundred and twenty-two youth sports participants (65 males, 157 females,  $M$  age = 13.51 years,  $SD$  = 1.53 years, range = 11 – 18 years) were recruited from a variety of school- and community-based sports and completed a multi-section questionnaire.

**Results:** Regression analyses revealed that, for the most part, Pure ECP was associated with the most negative experiences (higher negative affect, anxiety, and intentions to dropout and lower positive affect) and Pure PSP was, typically, associated with the least negative experiences (lower negative affect, anxiety, antisocial behavior, and intentions to dropout and higher positive affect) in youth sport. One notable exception was antisocial behavior towards teammates and competitors for which Mixed perfectionism was most problematic.

**Conclusion:** The findings suggest that the four subtypes of perfectionism can be distinguished based on their association with both negative and positive experiences in youth sport.

*Keywords: personality; affect; anxiety; moral behavior; dropout; adolescents*

## PERFECTIONISM AND NEGATIVE SPORT EXPERIENCES

45           The benefits of sport participation during childhood and adolescence are well  
46 documented. In addition to promoting better physical health, sport experiences in childhood  
47 and adolescence can foster psychological well-being (e.g., positive affect, higher self-worth,  
48 and constructive social behaviors; Crane & Temple, 2015). However, for some young people,  
49 sport experiences do not contribute to desirable outcomes. Instead, their experiences are more  
50 negative and include negative affect, anxiety, and the adoption of undesirable social  
51 behaviors (Fraser-Thomas, Côté, & Deakin, 2008). These negative experiences are also partly  
52 accountable for dropout from youth sports and deny young people the benefits of lifelong  
53 participation in sport (Crane & Temple, 2015). As such, examining the predictors of youth  
54 sport experiences, and negative experiences, in particular, is important so to maximize the  
55 benefits of youth sport participation (Roberts, 2012).

### 56 **Multidimensional Perfectionism and the 2 × 2 Model of Perfectionism**

57           Perfectionism has emerged in research as important in regard to the thoughts, feelings,  
58 and actions of youth sport participants. Broadly, perfectionism is a multidimensional  
59 personality characteristic that involves a combination of striving for exceedingly high  
60 standards of performance and a preoccupation with harsh critical evaluations (Frost, Marten,  
61 Lahart, & Rosenblate, 1990). In accord, two broad dimensions of perfectionism can be  
62 differentiated; personal standards perfectionism (PSP) (also referred to as perfectionistic  
63 strivings or PS) and evaluative concerns perfectionism (ECP) (also referred to as  
64 perfectionistic concerns or PC). PSP involves “a self-oriented tendency to set highly  
65 demanding standards and to strive for their attainment” (Gaudreau & Antl, 2008, p. 357).  
66 Conversely, ECP “entails a socially prescribed tendency to evaluate oneself harshly, to doubt  
67 one’s capacity to bring about desired outcomes, and to perceive that others require perfection  
68 from oneself” (Gaudreau & Antl, 2008, p. 357).

69           Most research examining perfectionism in sport has focused on the separate or

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70 independent effects of PSP and ECP (see Hill, Mallinson-Howard, & Jowett, 2018). There  
71 has however been a recent shift towards focusing on the interactive effects of the two broad  
72 dimensions of perfectionism in the form of a  $2 \times 2$  model. The  $2 \times 2$  model of perfectionism  
73 comprises four subtypes of perfectionism (Gaudreau & Thompson, 2010). The first subtype is  
74 “Non-perfectionism” (low PSP/low ECP) and is characterized by little personal orientation  
75 toward striving for perfectionistic standards or concern with pressures from the social  
76 environment to pursue perfectionistic standards. The second subtype is “Pure PSP” (high  
77 PSP/low ECP) and is characterized by having personally imposed perfectionistic standards.  
78 The third subtype is “Pure ECP” (low PSP/high ECP) and is characterized by pursuing  
79 perfectionistic standards derived from social-environmental pressures. The fourth subtype is  
80 “Mixed perfectionism” (high PSP/high ECP) and is characterized by perceived pressure from  
81 significant others to strive for perfectionistic standards and personal adherence to such  
82 standards.

83         The four subtypes of perfectionism are proposed to be associated with different  
84 outcomes. This idea is captured in four hypotheses that are based on underlying differences  
85 between the subtypes regarding internalization, motivation regulation, and person-  
86 environment congruence (see Gaudreau, 2016). Hypothesis 1 offers three competing  
87 assertions that Pure PSP will either be associated with better (H1a), poorer (H1b), or no  
88 different (H1c) outcomes compared to Non-perfectionism. Hypothesis 2 (H2) asserts that  
89 Non-perfectionism will be associated with better outcomes compared to Pure ECP.  
90 Hypothesis 3 (H3) asserts that Mixed perfectionism will be associated with better outcomes  
91 compared to Pure ECP. Finally, hypothesis 4 (H4) asserts that Pure PSP will be associated  
92 with better outcomes compared to Mixed perfectionism.

93         In a recent review, Hill and Madigan (2017) summarized the findings of nine studies  
94 that have tested the  $2 \times 2$  model of perfectionism in sport and dance. The measured outcomes

95 in the review included indicators of positive sport experiences (e.g., enjoyment, physical self-  
96 worth, and adaptive friendship qualities) and indicators of negative sport experiences (e.g.,  
97 negative affect, social physique anxiety, and peer conflict). Hill and Madigan (2017) found  
98 that H1a was supported more often than H1b (81% of the time), H2 and H4 were supported  
99 the most often (91 % of the time), and H3 was supported least often (77% of the time). Based  
100 on this review, early indication is that research generally supports the tenets of the  $2 \times 2$   
101 model and that it may be useful in explaining differences in the experiences of athletes. As  
102 such, it is adopted here when seeking to examine the negative experiences of youth sport  
103 participants.

### 104 **Indicators of Negative (and Positive) Experiences in Youth Sport**

105 The value of youth sport and the experiences of young athletes can be studied using  
106 various theoretical approaches. This includes adopting theoretical approaches that emphasize  
107 competence (e.g., achievement goal theory; Nicholls, 1984), psychological need fulfillment  
108 (self-determination theory; Ryan & Deci, 2000), and emotional experiences (sport  
109 commitment model; Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993). While these  
110 approaches differ in their assumptions and the psychological processes that are thought to  
111 precede outcomes of sport participation, there is considerable overlap in the way youth sport  
112 experiences are construed. In some cases, internalized values, and in most cases emotional  
113 experiences, well-/ill-being, and socially desirable behaviors are considered the main  
114 indicators of positive or negative experiences. In addition, within all these approaches, the  
115 prominence of indicators of positive experiences, and absence of indicators of negative  
116 experiences, signal if sport is a vehicle for positive youth development.

117 At the broadest level, the emotional experiences of youth sport participants are  
118 captured through negative and positive affect. Negative affect reflects general unpleasant  
119 feelings whereas positive affect reflects general pleasant feelings (Diener et al., 2010). As

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120 these two broad dimensions are indicative of overall affective balance, both are considered  
121 important for understanding an individual's emotional experience (Diener et al., 2010). In  
122 construing youth sport experiences, negative experiences are reflected in the presence of  
123 negative affect and the absence of positive affect and positive experiences are reflected in the  
124 opposite (e.g., Adie, Duda, & Ntoumanis, 2010). In support of this approach, negative affect  
125 is associated with undesirable outcomes in sport such as athlete burnout (e.g., Goodger,  
126 Gorely, Lavallee, & Harwood, 2007) and positive affect is associated with continued sport  
127 involvement (see Crocker, Hoar, McDonough, Kowalski, & Niefer, 2004).

128         Another popular outcome used to capture more specific emotional experiences in  
129 youth sport is anxiety. Sport anxiety is common amongst youth sport participants and  
130 manifests in situations where the adequacy of a young person's performance is evaluated  
131 (Smith, Smoll, Cumming, & Grossbard, 2006). It has both cognitive and somatic  
132 components, which is evident in dimensions of concentration disruption and worry as well as  
133 perceptions of physiological arousal (Smith et al., 2006). Consistent with the notion that,  
134 when conceptualized in this manner, anxiety is largely undesirable, the three dimensions of  
135 anxiety have been associated with lower enjoyment of sport, avoidance of sport, and  
136 withdrawal from sport (see Crocker et al., 2004). Most concerning, worry has been  
137 implicated in impairment of the health of young people in sport (e.g., disordered eating,  
138 injury, and sleep disturbance; Crocker et al., 2004).

139         Beyond affect and emotions, moral behavior has become of increasing interest where  
140 the experiences of youth sport participants are concerned (e.g., Bruner, Boardley, & Côté,  
141 2014). This is partly explained by the notion that youth sport can be considered a means to  
142 socialize desirable values and behaviors among its participants. Two forms of moral behavior  
143 have most often been examined; antisocial behavior and prosocial behavior (Bruner et al.,  
144 2014). Antisocial behavior is intended to harm or disadvantage others in sport (e.g.,

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145 teammates or opponents) whereas prosocial behavior is intended to help or benefit others  
146 (Kavussanu, 2012). Whether focused on opponents or teammates, antisocial and prosocial  
147 behaviors are said to be best examined concurrently if a more complete understanding of  
148 moral behavior is to be gained (Kavussanu, Seal, & Phillips, 2006). With the potential to  
149 cause or alleviate others' distress or pain, moral behavior is a key factor in ascertaining  
150 whether young people's experience of sport is a positive and enriching one or not  
151 (Kavussanu, 2012).

152 A final important outcome relevant to more negative experiences in youth sport is  
153 dropout (Fraser-Thomas et al., 2008). In youth sport research, dropout is either captured  
154 through actual rates of dropout or intentions to dropout, with intentions being considered a  
155 close predictor of actual dropout behavior (Sarrazin, Vallerand, Guillet, Pelletier, & Cury,  
156 2002). There are various reasons why intentions to dropout of youth sport are important. For  
157 example, if not participating in sport, young people are more likely to be engaging in  
158 sedentary behavior (see Herman, Sabiston, Mathieu, Tremblay, & Paradis, 2014) and some  
159 forms of sedentary behavior (e.g., television watching) have been linked with obesity and  
160 chronic disease (Tremblay et al., 2011). In addition, while sport can be both a negative and  
161 positive experience, it is clear from research that when it is a positive experience, sport  
162 affords young people a sense of confidence, satisfaction, and belonging with others (see  
163 Crane & Temple, 2015). Thus, while sport offers a potential avenue to promote physical  
164 health and psychosocial development, this is obviously only the case while young people are  
165 still actively participating.

### 166 **The 2 × 2 Model of Perfectionism: Affect, Anxiety, Moral Behavior, and Dropout**

167 Of the nine studies to have examined the 2 × 2 model in sport and dance to date, three  
168 have examined negative and positive affect (Crocker, Gaudreau, Mosewich, & Kljajic, 2014;  
169 Cumming & Duda, 2012; Gaudreau & Verner-Filion, 2012). Across these three studies, the

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170 findings for negative affect are consistent with Non-perfectionism being associated with  
171 better outcomes than Pure ECP (H2), Pure PSP being associated with better outcomes than  
172 Mixed perfectionism (H4), and all of the other hypotheses unsupported (H1a/H1b and H3).  
173 The findings for positive affect are more inconsistent with H1a and H3 supported on two  
174 occasions but unsupported on one occasion, H2 supported on one occasion but unsupported  
175 on two occasions, and H4 unsupported on all three occasions. It is unclear why there are  
176 differences between studies in regard to positive affect but given that H4 has previously  
177 received the most consistent empirical support in other studies, the lack of support for this  
178 hypothesis is noteworthy. The current study provides an opportunity to reexamine the  $2 \times 2$   
179 model in regard to affect and, in particular, whether Pure PSP is associated with higher  
180 positive affect compared to Mixed perfectionism (H4) or not in youth sport participants.

181         The  $2 \times 2$  model of perfectionism has yet to be examined in relation to  
182 multidimensional sport anxiety. Instead, research has mainly considered the independent  
183 effects of PSP and ECP (Carr & Wyon, 2003; Carter & Weissbrod, 2011; Thienot, Jackson,  
184 Dimmock, Grove, Bernier, & Fournier, 2014). For concentration disruption and somatic  
185 anxiety, PSP has shown no significant associations but ECP has shown consistent positive  
186 associations. For worry, both PSP and ECP have shown positive associations. This creates an  
187 interesting set of findings in context of the  $2 \times 2$  model in that the model may not function as  
188 expected for dimensions of anxiety (viz. H2 and H4 supported and H1 and H3 unsupported;  
189 see Gaudreau, 2012). Theoretically, however, there is little reason to suspect the model would  
190 not function as expected. Pure ECP and Mixed perfectionism involve pressures and concerns  
191 that are likely to disrupt focus, and induce worry and physiological arousal; whereas Pure  
192 PSP typically does not (Gaudreau & Verner-Filion, 2012). Thus, Pure ECP should be  
193 associated with higher levels, Pure PSP lower levels, and Mixed perfectionism somewhere in-  
194 between. The current study, then, provides the first opportunity to examine the  $2 \times 2$  model in

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195 regard to dimensions of anxiety in youth sport participants.

196         Like with anxiety, research has yet to consider the 2 × 2 model of perfectionism in  
197 relation to moral behavior or intentions to dropout of youth sport. Indeed, research has yet to  
198 examine these variables in concert in sport at all. Despite an absence of research, there are  
199 theoretical reasons to suspect that subtypes of perfectionism from the 2 × 2 model would be  
200 related to moral behavior. Flett and Hewitt (2016) have recently described the notion of “dark  
201 striving” whereby perfectionism may encourage socially unacceptable behaviors in order to  
202 be more successful. ECP, in particular, is thought to be imbued with potentially harmful  
203 features that may encourage athletes to turn to antisocial behaviors to gain a competitive edge  
204 (e.g., narcissism; see Smith et al., 2016). However, PSP may also involve hyper-  
205 competitiveness and encourage underhand tactics to gratify a need to succeed (Flett &  
206 Hewitt, 2016). If this is the case, it serves as a further intriguing point of departure from the  
207 tenets of the 2 × 2 model in that one would expect Mixed perfectionism (high PSP/high ECP)  
208 to be associated with more problematic moral behavior than Pure ECP (low PSP/high ECP)  
209 (i.e., H3 would be contradicted).

210         On the relationship between perfectionism and dropout, it has been suggested by  
211 others that perfectionism may be a key psychosocial determinant of dropout (Fraser-Thomas  
212 et al., 2008). Previous research has supported this possibility in that subtypes of perfectionism  
213 from the 2 × 2 model correspond with quite different views of youth sport involvement and  
214 consequences aligned with dropout. For example, Mallinson, Hill, Hall, and Gotwals (2014)  
215 found that for youth sports participants, Pure PSP was associated with more enjoyment, more  
216 confidence, and better quality friendships with their sport peers. By contrast, Pure ECP was  
217 associated with less enjoyment, less confidence, and more challenging friendships with their  
218 sport peers. Mixed perfectionism was associated with experiences that were largely poorer  
219 than Pure PSP but better than Pure ECP. If we consider that ongoing participation in youth

220 sport is often contingent on experiencing enjoyment, self-worth, and being social (Scanlan et  
221 al., 1993), it would be unsurprising to find that these opposing experiences provide the basis  
222 for different likelihoods for dropout in a manner consistent with the four hypotheses of the 2  
223 × 2 model.

## 224 **The Present Study**

225         The purpose of the current study was to test the 2 × 2 model in youth sport with a  
226 particular focus on undesirable outcomes indicative of negative experiences in youth sport. In  
227 line with the 2 × 2 model (Gaudreau, 2016), Pure PSP was hypothesized to be associated with  
228 a less negative sport experience (lower negative affect, anxiety, antisocial behavior, and  
229 intentions to dropout and higher positive affect and prosocial behavior) compared to Non-  
230 perfectionism (H1a). Pure ECP was hypothesized to be associated with a more negative sport  
231 experience (higher negative affect, anxiety, antisocial behavior, and intentions to dropout and  
232 lower positive affect and prosocial behavior) compared to Non-perfectionism (H2). Mixed  
233 perfectionism was hypothesized to be associated with a less negative sport experience  
234 compared to Pure ECP (H3) and a more negative sport experience compared to Pure PSP  
235 (H4).

## 236 **Method**

### 237 **Participants**

238         Following institutional ethical approval, 222 youth sports participants (65 males, 157  
239 females,  $M$  age = 13.51 years,  $SD$  = 1.53 years, range = 11 – 18 years) were recruited from a  
240 variety of school- and community-based sports. Participants were involved in their sports at  
241 recreational ( $n$  = 38), club ( $n$  = 105), district/county ( $n$  = 62), regional ( $n$  = 11) and national  
242 level ( $n$  = 4). There were two non-respondents in terms of sport participation level. On  
243 average, the sample had participated in their sport for 3.33 years ( $SD$  = 2.42) and trained and  
244 played for 5.09 hours per week ( $SD$  = 5.08). The sample reported on a nine-point Likert scale

245 that their participation in sport was very important ( $M = 7.27$ ,  $SD = 1.64$ ) in comparison to  
246 the other activities in their lives (1 = *not at all important* to 9 = *extremely important*).

### 247 **Procedure**

248 Contact was initially made with gatekeepers (e.g., director of sport or head coach) of  
249 school- and community-based sport clubs in the North of England. Through this contact,  
250 details of the study and potential involvement were discussed. For those clubs willing to be  
251 involved, an information sheet was then distributed to sport participants and their  
252 parents/guardians. Parental/guardian consent and child assent were sought for those sport  
253 participants wishing to take part. Participants were invited to complete a one-off multi-  
254 section questionnaire at a time convenient for the club (e.g., before or after a training  
255 session).

### 256 **Instruments**

257 **Multidimensional perfectionism.** PSP and ECP were measured at the domain level  
258 using the Sport-MPS-2 (Gotwals & Dunn, 2009). The measure has six subscales. Four of the  
259 subscales are intrapersonal and include personal standards (7-items, e.g., 'I have extremely  
260 high goals for myself in my sport'), concern over mistakes (8- items, e.g., 'If I fail in  
261 competition, I feel like a failure in person'), doubts about actions (6-items, e.g., 'Prior to  
262 competition, I rarely feel satisfied with my training'), and a need for organization (6-items,  
263 e.g., 'I have and follow a pre-competitive routine'). Two of the subscales are interpersonal  
264 and include perceived coach pressure (6-items, e.g., 'My coach sets very high standards for  
265 me in competition') and perceived parental pressure (9-items, e.g., 'My parents expect  
266 excellence from me in my sport'). The stem of the instrument asks participants to indicate  
267 how much they agree or disagree with a number of statements that identify how athletes view  
268 certain aspects of their competitive experiences in sport. Items are measured on a 5-point  
269 Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Gotwals, Dunn, Causgrove Dunn,

270 and Gamache (2010) have produced supportive evidence regarding the validity and reliability  
271 of the Sport-MPS-2. Consistent with the recommendations of Stoeber and Madigan (2016),  
272 personal standards was used as an indicator of PSP and concern over mistakes as an indicator  
273 of ECP.

#### 274 **Indicators of Experiences in Youth Sport**

275 **Negative and positive affect.** Broad pleasant and unpleasant feelings toward sport  
276 participation were assessed using the Scale of Positive and Negative Experience (SPANE;  
277 Diener et al., 2010). The SPANE includes six items that reflect general positive feelings (e.g.,  
278 good, happy, joyful) and six items that reflect general negative feelings (e.g., bad, sad,  
279 angry). The stem of the scale was amended to help participants focus their responses on sport  
280 (i.e., ‘Please think about what you have been doing and experiencing in your sport during the  
281 past four weeks. Then report how much you experienced each of the following feelings’).  
282 Responses are measured on a 5-point Likert scale (1 = *very rarely or never* to 5 = *very often*  
283 *or always*). Diener et al. (2010) have produced supportive evidence regarding the validity and  
284 reliability of the SPANE.

285 **Multidimensional sport anxiety.** The Sport Anxiety Scale-2 (SAS-2; Smith et al.,  
286 2006) was used to measure anxiety in sport. It is designed for use with children and contains  
287 three five-item subscales that relate to concentration disruption (e.g., “it is hard for me to  
288 focus on what I am supposed to do”), worry (e.g., “I worry that I will not play well”), and  
289 somatic anxiety (e.g., “my body feels tense”). Items are preceded by the phrase ‘Before or  
290 while I compete in sports’. Responses are measured on a 4-point Likert scale (1 = *not at all* to  
291 4 = *very much*). Smith et al. (2006) have produced supportive evidence regarding the validity  
292 and reliability of the SAS-2.

293 **Antisocial and prosocial behavior.** Moral behavior was assessed using the Prosocial  
294 and Antisocial Behavior in Sport Scale (PABSS; Kavussanu & Boardley, 2009). The scale

295 contains 20 items and four subscales. These capture prosocial behavior toward teammates (4-  
 296 items; e.g. “encouraged a teammate”), prosocial behavior toward opponents (3-items, e.g.,  
 297 “helped an injured opponent”), antisocial behavior toward teammates (5-items, e.g.,  
 298 “criticized a teammate”), and antisocial behavior toward opponents (8-items, “tried to injure  
 299 an opponent”). Responses are measured on a 5-point Likert scale (1 = *never* to 5 = *very*  
 300 *often*). Kavussanu and Boardley (2009) have provided evidence for subscale reliability.

301 **Intentions to dropout.** Intentions to dropout were measured using four items similar  
 302 to those employed in youth soccer (Quested et al., 2013). Two items were designed to elicit  
 303 participants’ intentions to dropout of their sport next season (e.g., “I am thinking of quitting  
 304 my sport”). Two items were designed to elicit participants’ intentions to continue with their  
 305 sport next season (e.g., “I plan to play my sport next season”). Items are measured on a 5-  
 306 point scale (1 = *strongly disagree* to 5 = *strongly agree*). An overall intention to dropout  
 307 score is obtained by reverse coding the intentions to continue items and combining with the  
 308 intentions to dropout items.

## 309 Results

### 310 Preliminary Analyses

311 A missing value analysis indicated that there were 148 complete cases and 74  
 312 incomplete cases. The Little’s MCAR test (Little, 1988) was non-significant:  $\chi^2_{(198)} = 209.01$ ,  
 313  $p = .28$ , indicating that the data were missing completely at random. Assessment of univariate  
 314 normality revealed 11 univariate outliers (standardized z-scores larger than 3.29,  $p < .001$ ,  
 315 two-tailed).<sup>1</sup> There were two multivariate outliers, Mahalanobis distance:  $\chi^2_{(12)} = 32.91$ ,  $p <$   
 316  $.001$ . Thus, full information maximum likelihood with robust estimators (MLR) was used in

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<sup>1</sup> The univariate outliers comprised individuals scoring at the lowest extremity of the Likert scale for positive affect ( $n = 1$ ) and prosocial behaviour toward teammates ( $n = 2$ ) and the highest extremity of the Likert scale for concentration disruption ( $n = 1$ ), antisocial behaviour toward teammates ( $n = 3$ ), antisocial behaviour toward opponents ( $n = 1$ ), and intentions to dropout ( $n = 3$ ).

317 MPlus version 8.1 to handle any missing data and deviations in normality (Aguinis,  
318 Gottfredson, & Joo, 2013; Enders, 2010; Muthén and Muthén, 1998-2018). Internal reliability  
319 was sufficient for all subscales (see Table 1).

### 320 **Descriptive Statistics and Bivariate Correlation Coefficients**

321 Descriptive statistics for all predictor and criterion variables are displayed in Table 1.  
322 Bivariate correlation coefficients demonstrated that PSP had small significant positive  
323 correlations with worry and somatic anxiety. It also had medium positive correlations with  
324 negative affect, antisocial behavior toward teammates, and antisocial behavior toward  
325 opponents. PSP was not significantly associated with positive affect, concentration  
326 disruption, prosocial behavior toward teammates, prosocial behavior toward opponents, and  
327 intentions to dropout. ECP had small significant positive correlations with concentration  
328 disruption, worry, and somatic anxiety. It had medium positive correlations with antisocial  
329 behavior toward teammates and antisocial behavior toward opponents. It also had a large  
330 positive correlation with negative affect and a small negative correlation with positive affect.  
331 ECP was not significantly associated with prosocial behavior toward teammates, prosocial  
332 behavior toward opponents, and intentions to dropout.

### 333 **Test of the Hypotheses of the 2 × 2 Model of Perfectionism**

334 Consistent with the recommendations of Gaudreau and colleagues (Gaudreau, 2012;  
335 Gaudreau & Thompson, 2010; Kljajic, Gaudreau, & Franche, 2017), a series of regression  
336 analyses were conducted for each of the criterion variables using MPlus version 8.1 (Muthén  
337 and Muthén, 1998-2018). In the first regression model, PSP and ECP were centered and  
338 entered as the predictor variables. In the second regression model, the interactive term (i.e.,  
339 the product of centered PSP and ECP) was also added. A significant interactive term signaled  
340 a significant increase in additional variance explained above the main effects (Hayes 2013).  
341 To decompose a significant interaction effect, simple slopes and predicted values (see Figure

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1) were created based on equations outlined in Aiken and West (1991) and Cohen, Cohen, West, and Aiken (2003). The first simple slope of PSP at low ECP (-1SD) was used to compare whether Pure PSP was associated with a less negative sport experience compared to Non-perfectionism (H1a). The second simple slope of PSP at high ECP (+1SD) was used to compare whether Mixed perfectionism was associated with a less negative sport experience compared to Pure ECP (H3). The third simple slope of ECP at low PSP (-1SD) was used to compare whether Non-perfectionism was associated with a less negative sport experience compared to Pure ECP (H2). The fourth simple slope of ECP at high PSP (+1SD) was used to compare whether Pure PSP was associated with a less negative sport experience compared to Mixed perfectionism (H4). Where a non-significant interaction effect was identified, uncentered PSP and ECP were entered in a third regression. The heuristic provided by Gaudreau (2012) was used to interpret main effects and predicted values in terms of the model's hypotheses (see Figure 1). Standardised effect sizes (Cohen's *d*) were also calculated for the four combinations of perfectionism subtypes and are displayed in context of the hypotheses of the  $2 \times 2$  model in Table 2.

**Negative affect.** In the first regression model, centered PSP and ECP accounted for 28% of the variance in negative feelings toward sport participation:  $F(2,217) = 41.57, p < .001$ . PSP was a non-significant predictor:  $\beta = -.05, t = -0.56, p = .58$ . ECP was a significant positive predictor:  $\beta = .56, t = 6.44, p < .001$ . In the second regression model, the interactive term between centered PSP and ECP was a significant predictor:  $\Delta R^2 = .01, \beta = .11, t = 2.14, p < .05$ . Simple slopes analysis demonstrated that the first simple slope of PSP at low ECP (-1 SD) was non-significant ( $\beta = -.11, t = -1.41, p = .16$ ). The second simple slope of PSP at high ECP (+1 SD) was non-significant ( $\beta = .07, t = .80, p = .42$ ). The third simple slope of ECP at low PSP (-1 SD) was significant ( $\beta = .33, t = 3.72, p < .001$ ). The fourth simple slope

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366 of ECP at high PSP (+1 SD) was significant ( $\beta = .51, t = 6.19, p < .001$ ). Based on the simple  
367 slopes analysis, support was provided for H2 and H4 but not H1 or H3.

368 **Positive affect.** In the first regression model, centered PSP and ECP accounted for  
369 16% of the variance in positive feelings toward sport participation:  $F(2,217) = 19.90, p <$   
370  $.001$ . PSP was a significant positive predictor:  $\beta = .43, t = 5.85, p < .001$ . ECP was a  
371 significant negative predictor:  $\beta = -.55, t = -7.33, p < .001$ . In the second regression model,  
372 the interactive term between centered PSP and ECP was not a significant predictor:  $\Delta R^2 =$   
373  $.00, \beta = -.04, t = -.56, p = .58$ . In the third regression model, findings for uncentered PSP and  
374 ECP replicated the first regression model. Based on Gaudreau's heuristic (2012), where PSP  
375 is a significant positive predictor and ECP a significant negative predictor, H1a, H2, H3, and  
376 H4 are supported.

377 **Concentration disruption.** In the first regression model, centered PSP and ECP  
378 accounted for 9% of the variance in concentration disruption:  $F(2,218) = 10.26, p < .001$ .  
379 PSP was a significant negative predictor:  $\beta = -.31, t = -3.80, p < .001$ . ECP was a significant  
380 positive predictor:  $\beta = .41, t = 5.06, p < .001$ . In the second model, the interactive term  
381 between centered PSP and ECP was a significant predictor:  $\Delta R^2 = .03, \beta = -.19, t = -3.28, p <$   
382  $.01$ . Simple slopes analysis demonstrated that the first simple slope of PSP at low ECP (-1  
383 SD) was non-significant ( $\beta = -.10, t = -1.95, p = .05$ ). The second simple slope of PSP at high  
384 ECP (+1 SD) was significant ( $\beta = -.32, t = -4.92, p < .001$ ). The third simple slope of ECP at  
385 low PSP (-1 SD) was significant ( $\beta = .38, t = 5.65, p < .001$ ). The fourth simple slope of ECP  
386 at high PSP (+1 SD) was significant ( $\beta = .16, t = 2.67, p < .01$ ). Based on the simple slopes  
387 analysis, support was provided for H2, H3, and H4 but not H1.

388 **Worry.** In the first regression model, centered PSP and ECP accounted for 7% of the  
389 variance in worry:  $F(2,218) = 8.07, p < .001$ . PSP was a non-significant predictor:  $\beta = .05, t =$   
390  $.53, p = .59$ . ECP was a significant positive predictor:  $\beta = .23, t = 2.07, p < .05$ . In the second

391 regression model, the interactive term between centered PSP and ECP was not a significant  
392 predictor:  $\Delta R^2 = .01$ ,  $\beta = -.11$ ,  $t = -1.48$ ,  $p = .14$ . In the third regression model, findings for  
393 uncentered PSP and ECP replicated the first regression model. Based on Gaudreau's (2012)  
394 heuristic, where PSP is a non-significant predictor and only ECP is a significant positive  
395 predictor, H2 and H4 are supported but H1 and H3 are unsupported.

396 **Somatic anxiety** In the first regression model, centered PSP and ECP accounted for  
397 5% of the variance in somatic anxiety:  $F(2,218) = 5.86$ ,  $p < .01$ . PSP was a non-significant  
398 predictor:  $\beta = -.02$ ,  $t = -.19$ ,  $p = .85$ . ECP was a significant positive predictor:  $\beta = .24$ ,  $t =$   
399  $2.46$ ,  $p < .05$ . In the second model, the interactive term between centered PSP and ECP was a  
400 significant predictor:  $\Delta R^2 = .02$ ,  $\beta = -.15$ ,  $t = -2.78$ ,  $p < .01$ . Simple slopes analysis  
401 demonstrated that the first simple slope of PSP at low ECP (-1 SD) was non-significant ( $\beta =$   
402  $.08$ ,  $t = 1.02$ ,  $p = .31$ ). The second simple slope of PSP at high ECP (+1 SD) was non-  
403 significant ( $\beta = -.15$ ,  $t = -1.72$ ,  $p = .09$ ). The third simple slope of ECP at low PSP (-1 SD)  
404 was significant ( $\beta = .31$ ,  $t = 3.32$ ,  $p < .01$ ). The fourth simple slope of ECP at high PSP (+1  
405 SD) was non-significant ( $\beta = .09$ ,  $t = 1.10$ ,  $p = .27$ ). Based on the simple slopes analysis,  
406 support was provided for H2 but not H1, H3, and H4.

407 **Antisocial behavior toward teammates.** In the first regression model, centered PSP  
408 and ECP accounted for 15% of the variance in antisocial behavior toward teammates:  
409  $F(2,216) = 19.06$ ,  $p < .001$ . PSP was a significant positive predictor:  $\beta = .22$ ,  $t = 2.34$ ,  $p < .05$ .  
410 ECP was a significant positive predictor:  $\beta = .20$ ,  $t = 2.03$ ,  $p < .05$ . In the second regression  
411 model, the interactive term between centered PSP and ECP was a significant predictor:  $\Delta R^2 =$   
412  $.06$ ,  $\beta = .25$ ,  $t = 3.84$ ,  $p < .001$ . Simple slopes analysis demonstrated that the first simple slope  
413 of PSP at low ECP (-1 SD) was non-significant ( $\beta = .02$ ,  $t = .24$ ,  $p = .81$ ). The second simple  
414 slope of PSP at high ECP (+1 SD) was significant ( $\beta = .52$ ,  $t = 3.68$ ,  $p < .001$ ). The third  
415 simple slope of ECP at low PSP (-1 SD) was non-significant ( $\beta = -.10$ ,  $t = -.79$ ,  $p = .43$ ). The

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416 fourth simple slope of ECP at high PSP (+1 SD) was significant ( $\beta = .40, t = 3.16, p < .01$ ).  
417 Based on the simple slopes analysis, H1 and H2 were unsupported, H3 was contradicted (i.e.,  
418 the difference between the subtypes was in the opposite direction to predicted), and H4 was  
419 supported.

420       **Antisocial behavior toward opponents.** In the first regression model, centered PSP  
421 and ECP accounted for 22% of the variance in antisocial behavior toward opponents:  
422  $F(2,216) = 29.76, p < .001$ . PSP was a significant positive predictor:  $\beta = .28, t = 3.13, p < .01$ .  
423 ECP was a significant positive predictor:  $\beta = .23, t = 2.47, p < .05$ . In the second regression  
424 model, the interactive term between centered PSP and ECP was a significant predictor:  $\Delta R^2 =$   
425  $.06, \beta = .17, t = 2.28, p < .01$ . Simple slopes analysis demonstrated that the first simple slope  
426 of PSP at low ECP (-1 SD) was non-significant ( $\beta = .14, t = 1.43, p = .15$ ). The second  
427 simple slope of PSP at high ECP (+1 SD) was significant ( $\beta = .49, t = 3.99, p < .001$ ). The  
428 third simple slope of ECP at low PSP (-1 SD) was non-significant ( $\beta = .03, t = .35, p = .73$ ).  
429 The fourth simple slope of ECP at high PSP (+1 SD) was significant ( $\beta = .38, t = 3.15, p <$   
430  $.01$ ). Based on the simple slopes analysis, H1 and H2 were unsupported, H3 was  
431 contradicted, and H4 was supported.

432       **Prosocial behavior toward teammates.** In the first regression model, centered PSP  
433 and ECP accounted for a non-significant proportion of the variance in prosocial behavior  
434 toward teammates:  $R^2 = .02, F(2,216) = 2.54, p = .08$ . In the second regression model, the  
435 interactive term between centered PSP and ECP was not a significant predictor:  $\Delta R^2 = .01, \beta$   
436  $= .12, t = 1.84, p = .07$ . These models were not further interpreted.

437       **Prosocial behavior toward opponents.** In the first regression model, centered PSP  
438 and ECP accounted for a non-significant proportion of the variance in prosocial behavior  
439 toward opponents:  $R^2 = .01, F(2,216) = .54, p = .58$ . In the second regression model, the

440 interactive term between centered PSP and ECP was not a significant predictor:  $\Delta R^2 = .01$ ,  $\beta$   
441  $= .11$ ,  $t = 1.57$ ,  $p = .12$ . These models were not further interpreted.

442 **Intentions to dropout** In the first regression model, centered PSP and ECP accounted  
443 for 4% of the variance in intentions to dropout:  $F(2,216) = 4.50$ ,  $p < .05$ . PSP was a  
444 significant negative predictor:  $\beta = -.26$ ,  $t = -3.25$ ,  $p < .01$ . ECP was a significant positive  
445 predictor:  $\beta = .27$ ,  $t = 2.60$ ,  $p < .01$ . In the second regression model, the interactive term  
446 between centered PSP and ECP was not a significant predictor:  $\Delta R^2 = .00$ ,  $\beta = -.02$ ,  $t = -0.28$ ,  
447  $p = .78$ . In the third regression model, findings for uncentered PSP and ECP replicated the  
448 first regression model. Based on Gaudreau's heuristic (2012), where PSP is a significant  
449 positive predictor and ECP a significant negative predictor, H1a, H2, H3, and H4 are  
450 supported.

### 451 Discussion

452 The current study tested the four hypotheses of the  $2 \times 2$  model of perfectionism  
453 (H1a, H2, H3, and H4) using indicators of negative experiences in youth sport (affect,  
454 anxiety, moral behavior, and intentions to dropout). Table 2 provides a summary of the  
455 supported, unsupported, and contradicted hypotheses of the  $2 \times 2$  model. Pure PSP was  
456 associated with lower intentions to dropout and higher positive affect compared to Non-  
457 perfectionism (H1a supported). Pure ECP was associated with higher negative affect,  
458 dimensions of anxiety, and intentions to dropout, and lower positive affect, compared to Non-  
459 perfectionism (H2 supported). Mixed perfectionism was associated with lower concentration  
460 disruption and intentions to dropout, and higher positive affect, compared to Pure ECP (H3  
461 supported). Contrary to the hypotheses of the  $2 \times 2$  model, Mixed perfectionism was  
462 associated with higher antisocial behavior compared to Pure ECP (H3 contradicted). Pure  
463 PSP was associated with lower negative affect, cognitive dimensions of anxiety, antisocial  
464 behavior, and intentions to dropout, and higher positive affect, compared to Mixed

465 perfectionism (H4 supported).

#### 466 **Negative and Positive Affect**

467 Previous research that has examined negative affect in sport and dance has  
468 consistently shown Pure ECP is distinguishable from Non-perfectionism (H2), Pure PSP is  
469 distinguishable from Mixed perfectionism (H4), and other subtypes are not distinguishable  
470 from each other (Crocker et al., 2014; Cumming & Duda, 2012). Our findings replicate this  
471 research and indicate that negative affect in youth sport is mostly triggered by the presence of  
472 high ECP. In addition, our findings suggest that, relative to experiencing high ECP alone,  
473 high PSP may be insufficient to counterbalance the negative emotional effects of high ECP.  
474 This finding might be explained by suggestions that, unlike aiming for excellence,  
475 internalized perfectionistic goals put strain on personal resources and can induce negative  
476 emotionality (Gaudreau, 2019). In this regard, any benefits or buffering effects of high PSP  
477 may be limited to motivation related outcomes (e.g., working hard) and less evident in terms  
478 of how youth sport participants waylay any negative feelings arising from their sport  
479 participation.

480 As identified earlier, previous research examining positive affect has been more  
481 inconsistent and has so far found no evidence that Pure PSP is associated with higher levels  
482 of positive affect compared to Mixed perfectionism (i.e., H4 has consistently been  
483 unsupported; Crocker et al., 2014; Cumming & Duda, 2012; Gaudreau & Verner-Filion,  
484 2012). Our findings are particularly noteworthy, then, in that they provide the first evidence  
485 of a difference between Pure PSP and Mixed perfectionism, with Pure PSP conferring at least  
486 some benefit in terms of positive affect in youth sport. This finding is more illuminating  
487 when considered in context of negative affect, which coexists with positive affect to  
488 characterize the overall quality of youth sport participants' emotional experiences (Adie et al.,  
489 2010). Here, youth sport participants who pursue internalized perfectionistic standards

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490 without concern over harsh evaluations from significant others, had more desirable emotional  
491 experiences in which positive affect was prominent and negative affect was relatively absent.  
492 Given the inconsistent pattern of findings emerging across studies for positive affect,  
493 however, further examination of this relationship is warranted before confirming the  
494 comparative benefits of Pure PSP in this regard.

### 495 **Multidimensional Sport Anxiety**

496 The current study provided the first formal test of the  $2 \times 2$  model in relation to  
497 dimensions of anxiety in sport. Based on theory, we anticipated the four hypotheses of the  $2 \times$   
498 2 model would be supported across all three dimensions of anxiety (Gaudreau & Verner-  
499 Filion, 2012). This was not the case. Only Non-perfectionism and Pure ECP (H2) were  
500 consistently distinguishable from each other and the other subtypes were not (Pure PSP vs.  
501 Non-perfectionism, Mixed perfectionism vs. Pure ECP, and Pure PSP vs. Mixed  
502 perfectionism). Like with negative affect, these findings suggest that the presence of high  
503 ECP is largely responsible for youth sport participants' internalized concerns about their  
504 ability in sport and associated responses. Further, compared to high ECP alone, high PSP  
505 again appears insufficient to minimize or buffer some of the negative emotionality associated  
506 with high ECP.

507 Where youth sport participants seemingly experienced less deleterious effects for  
508 anxiety was with respect to pursuing perfectionistic standards alone (Pure PSP). Across all  
509 three dimensions of anxiety, Pure PSP was no different to Non-perfectionism (H1  
510 unsupported) and associated with less concentration disruption and worry than Mixed  
511 perfectionism (H4 supported). Based on these findings, it could be argued that levels of all  
512 dimensions of anxiety were low enough to indicate that Pure PSP is principally energizing for  
513 youth sport participants. However, it is noteworthy that making evaluations of one's sport  
514 ability based on perfectionistic standards that cannot be met will eventually exhaust personal

515 resources (Gaudreau, 2019). There is also evidence elsewhere that high personal standards  
516 predict increases in anxiety overtime for young people (Smith, Vidovic, Sherry, Stewart, &  
517 Saklofske, 2018). As such, any short-term benefits of pursuing perfectionistic goals (e.g.,  
518 increased concentration) would need to be compared to consequences over the long-term,  
519 especially, in comparison to pursuing excellence or more realistic goals.

520 **Moral Behavior**

521 We also provided the first test of the  $2 \times 2$  model for antisocial and prosocial  
522 behavior. In doing so, there are two key findings. First, we found evidence that the model has  
523 greater predictive ability for antisocial rather than prosocial behaviors. In other words,  
524 perfectionism appears more important to understanding the development of undesirable rather  
525 than desirable social behaviors in sport. Research outside of sport has indicated something  
526 similar with both PSP and ECP positively related to hostility and interpersonal conflict but  
527 unrelated to trust and agreeableness (e.g., Sherry, Mackinnon, & Gaudreau, 2016; Stoeber,  
528 2014; Stoeber, Noland, Mawenu, Henderson, & Kent, 2017). Similarly, research in sport has  
529 indicated that being preoccupied with personal perfection may not interfere with the positive  
530 aspects of peer relations (e.g., Ommundsen, Roberts, Lemyre, & Miller, 2005). However, in  
531 sport, research has only begun to examine how perfectionism influences interpersonal  
532 relationships and so more is required, particularly with respect to the mechanisms responsible  
533 for any problematic social behaviors.

534 Second, in a starker fashion, the role of PSP was more prominent than ECP in  
535 predicting greater antisocial behavior. Specifically, high PSP contributed to more antisocial  
536 behavior towards teammates and opponents when accompanied by high ECP (contradicting  
537 H3). This finding provides the first evidence in sport of dark striving, whereby perfectionism  
538 contributes to more problematic and socially unacceptable behaviors in aid of being  
539 successful (Flett & Hewitt, 2016). This finding also provides an important backdrop for any

540 benefits of promoting perfectionistic standards among youth sport participants. Specifically,  
541 on one hand, pursuing high personal standards may be energizing and contribute to some  
542 positive feelings, but it could come at a cost to the quality of moral and social development.

### 543 **Dropout from Youth Sport**

544         The final variable we examined was intentions to dropout of youth sport. We  
545 speculated that the different configurations of PSP and ECP provide the basis for different  
546 emotional and social experiences in youth sport and, in turn, likelihood of dropout. All the  
547 hypotheses of the  $2 \times 2$  model were supported (H1a, H2, H3, and H4). As such, personally  
548 endorsing perfectionistic standards seemingly provides the greatest commitment to sport  
549 participation and experiencing externally imposed perfectionistic standards provides the least  
550 commitment. These findings offer the clearest indication so far that perfectionism may play a  
551 role in whether youth sport participants are likely to remain engaged in sport or not.

552         The findings regarding intentions to dropout are also important because they serve as  
553 a valuable reminder of the motivational qualities of perfectionism, more broadly. That is,  
554 whilst perfectionism is believed to be a characteristic that energizes higher levels of  
555 motivation, there are also strong avoidance tendencies associated with perfectionism that may  
556 encourage youth sport participants to dropout (Stoeber, Damian, & Madigan, 2018). Self-  
557 handicapping, procrastination, and withdrawal are some of the more insidious avoidance  
558 tendencies that are associated with perfectionism outside of sport (e.g., Doebler, Schnick,  
559 Beck, & Astor-Stetson, 2000; Flett & Hewitt, 2006; Flett, Hewitt, Davis, & Sherry, 2004).  
560 These tendencies have not received due attention in sport. However, they are highly relevant  
561 to this domain and warrant consideration alongside the energizing aspects of perfectionism  
562 that are typically highlighted (e.g., Stoeber et al., 2018).

### 563 **Practical Implications**

564         The study has clear implications for practitioners in youth sport. The findings suggest

565 that some perfectionistic youth sport participants will be more anxious, display more  
566 antisocial behaviors, and be more likely to dropout than their peers. Managing young  
567 people's sense of external pressure to be perfect, in particular concern over making mistakes,  
568 appears especially important in these regards. One strategy to do so is to try to reduce  
569 perfectionism directly. Gustafsson and Lundqvist (2016) highlight the value in integrating  
570 cognitive-behavioral techniques to help change negative thoughts, beliefs, and attitudes about  
571 needing to be perfect. Further, Gaudreau (2019) indicates the potential merit of reframing  
572 goals in terms of being competent or excellent, rather than perfect. If practitioners are not  
573 familiar with such techniques or are not confident in using them, an indirect strategy that  
574 most practitioners will be able to employ is to purposively construct a coaching environment  
575 that is more supportive and less perfectionistic. Specifically, embedding social cues that  
576 encourage youth sport participants to focus on setting achievable goals, cooperation, and skill  
577 development could help to promote striving without excessive concerns (Nordin-Bates, Hill,  
578 Cumming, & Redding, 2014). Developing such environments may help moderate  
579 perfectionism and promote more positive emotions (e.g., enjoyment), discourage antisocial  
580 behaviors, and reduce dropout (e.g., Harwood, Keegan, Smith, & Raine, 2015).

### 581 **Limitations and Future Directions**

582         There are several limitations to this study that need consideration. First, the cross-  
583 sectional design means that direction and causality cannot be inferred from the relationships.  
584 Researchers may wish to employ longitudinal and experimental designs, respectively, to  
585 move towards such inferences. The findings were also based on youth sport participants' self-  
586 reports. In this study, this is important because of the potential for social-desirability response  
587 bias in context of antisocial behavior (van de Pol, Kavussanu, & Claessens, 2018) and  
588 intentions to, not actual, dropout behavior was measured. One means to address this issue in  
589 future research would be to replicate the current study and include observer ratings of moral

590 behaviors (e.g., peer-reports) and more objective measures of dropout. Generalizability is  
591 also limited to populations similar to the one used in the current study. Adult and elite junior  
592 athletes, as opposed to school- and community-based sports participants, for example, may  
593 display somewhat different findings in regard to anxiety (e.g., Levinson et al., 2015;  
594 Lundqvist, Kenttä, & Raglin, 2011). Similarly, the manner in which PSP and ECP were  
595 constituted is a consideration. It should not be assumed that the current findings extend to  
596 other instruments or combinations of subscales of perfectionism, which may result in  
597 different hypotheses being supported.

### 598 **Conclusion**

599 The findings suggest that subtypes of perfectionism can be distinguished based on  
600 their association with negative experiences in youth sport. Pure ECP was typically associated  
601 with indicators of the most negative youth sport experiences and Pure PSP was typically  
602 associated with indicators of the least negative youth sport experiences. One notable  
603 exception was antisocial behavior towards teammates and opponents for which a Mixed  
604 perfectionism subtype was most problematic.

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783 Table 1. *Descriptive statistics and bivariate correlation coefficients between variables (N = 222).*

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Personal standards perfectionism	2.91	0.86	.86											
2. Evaluative concerns perfectionism	2.59	0.87	.69**	.84										
3. Negative affect	2.09	0.69	.33**	.52**	.77									
4. Positive affect	3.80	0.58	.08	-.24**	-.44**	.72								
5. Concentration disruption	1.54	0.53	-.04	.20**	.31**	-.23**	.82							
6. Worry	2.69	0.80	.20**	.24**	.30**	-.15*	.22**	.89						
7. Somatic anxiety	1.80	0.66	.16*	.23**	.26**	-.11	.42**	.49**	.84					
8. Antisocial behavior teammates	1.78	0.89	.36**	.35**	.18**	.02	-.05	-.11	-.04	.88				
9. Antisocial behavior opponents	1.62	0.90	.44**	.43**	.20**	-.08	-.05	-.11	.02	.74**	.93			
10. Prosocial behavior teammates	4.27	0.71	.05	-.07	.02	.20**	-.05	.17*	.10	-.16*	-.10	.82		
11. Prosocial behavior opponents	3.28	1.03	.07	.06	.07	-.03	.09	-.00	.09	.06	.10	.39**	.81	
12. Intentions to dropout	1.44	0.74	-.08	.10	.20**	-.34**	.25**	.07	.12	.14	.19**	-.20**	.04	.86

784 Note. \* $p < .05$ ; \*\* $p < .01$ ; internal reliability alpha coefficients are shown on the diagonal.

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785 Table 2. Summary of the supported, unsupported, and contradicted hypotheses of the 2 × 2 model of perfectionism and standardized effect sizes.

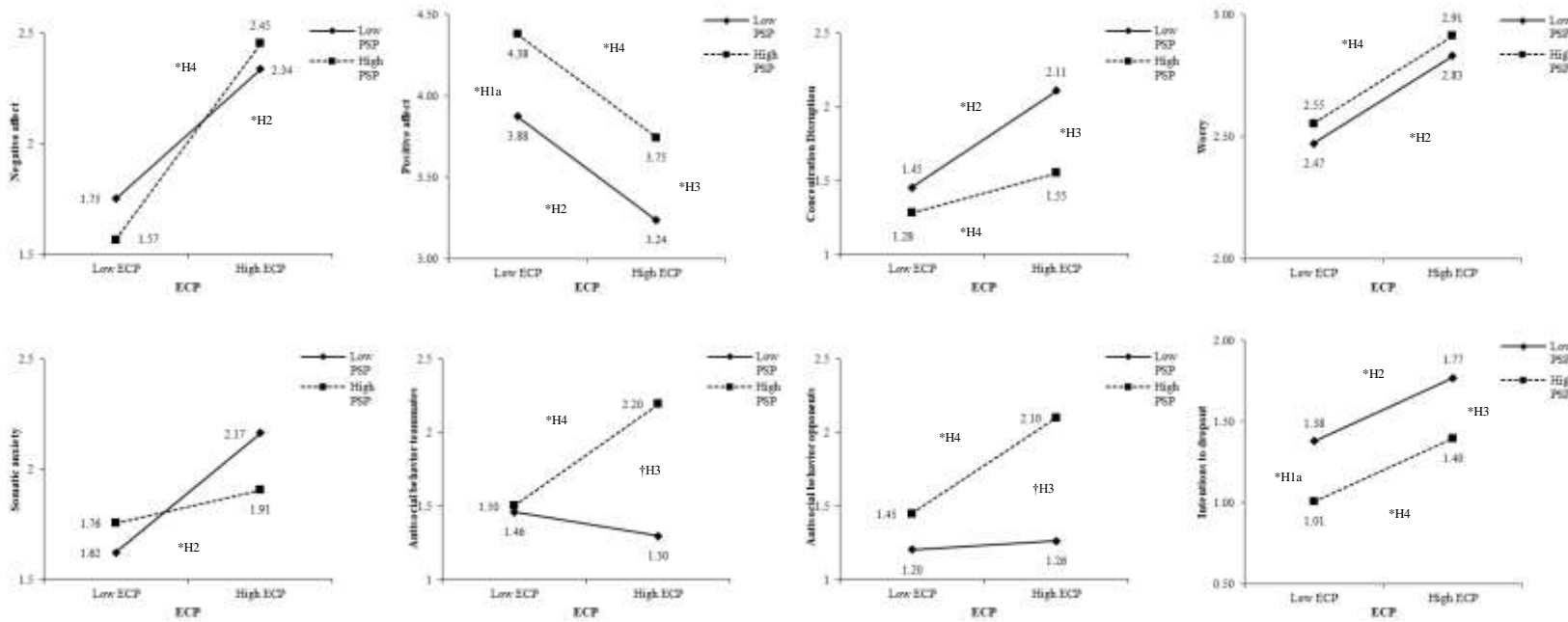
	Hypothesis 1 Pure PSP vs. Non-perfectionism ( <i>d</i> )	Hypothesis 2 Non-perfectionism vs. Pure ECP ( <i>d</i> )	Hypothesis 3 Mixed perfectionism vs. Pure ECP ( <i>d</i> )	Hypothesis 4 Pure PSP vs. Mixed perfectionism ( <i>d</i> )
Negative affect	ns. (-0.26)	* (-0.86)	ns. (0.16)	* (-1.28)
Positive affect	a* (0.86)	* (1.10)	* (0.88)	* (1.09)
Concentration disruption	ns. (-0.32)	* (-1.25)	* (-1.06)	* (-0.51)
Worry	ns. (0.10)	* (-0.45)	ns. (0.10)	* (-0.45)
Somatic anxiety	ns. (0.21)	* (-0.83)	ns. (-0.39)	ns. (-0.23)
Antisocial behavior teammates	ns. (0.04)	ns. (0.18)	† (1.01)	* (-0.79)
Antisocial behavior opponents	ns. (0.28)	ns. (-0.07)	† (0.93)	* (-0.72)
Intentions to dropout	a* (-0.50)	* (-0.53)	* (-0.50)	* (-0.53)

786 Note. *d* = Cohen's *d* calculated by dividing the difference in predicted values between two subtypes of perfectionism by the standard deviation of  
787 the criterion variable (see Gaudreau & Verner-Filion, 2012); a = H1a; \* denotes a significant difference between two subtypes in the predicted  
788 direction ( $p < .05$ ) and so the hypothesis is supported; ns. denotes a non-significant difference between two subtypes ( $p > .05$ ) and so the  
789 hypothesis is unsupported; † denotes a significant difference between two subtypes in the opposite direction to predicted ( $p < .05$ ) and so the  
790 hypothesis is contradicted. PSP = personal standards perfectionism; ECP = evaluative concerns perfectionism.

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791 Figure 1. Predicted values and supported, unsupported, and contradicted hypotheses across the four subtypes of perfectionism.

792



793

794 Note. \* denotes a significant difference between two subtypes in the predicted direction  $p < .05$ ; † denotes a significant difference between two  
 795 subtypes in the opposite direction to predicted  $p < .05$ ; PSP = personal standards perfectionism; ECP = evaluative concerns perfectionism.