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9 Psycho-behaviourally Based Features of Effective Talent Development in Rugby Union:

10 A Coach's Perspective

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Abstract

24 Talent development (TD) is widely recognised as a non-linear and dynamic process, with
25 psychology a key determinant of long-term success in sport. However, given the role that
26 positive characteristics play in the TD process, there is a relative dearth of research
27 examining the psychological characteristics that may derail development. A retrospective
28 qualitative investigation was conducted with academy coaches and directors within rugby
29 union ($n = 15$), representing nine different elite English rugby union academies, in order to
30 identify both positive and negative issues that influenced TD. Comprehensive support was
31 found for existing positive constructs as facilitators of effective development. A range of
32 inappropriately applied 'positive' characteristics were identified as having a negative impact
33 on development. Potential clinical issues were also recognised by coaches as talent derailers.
34 It is proposed that by incorporating these potentially negative factors into existing formative
35 assessment tools, a more effective development process can be achieved.

36

Keywords: psychology, derailers, dual-effect, clinical, formative assessment

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Introduction

39 Recent literature within talent identification and development (TID) has shown a shift
40 away from physiological profiling and identification based on one-off performance
41 ‘snapshots’, towards an acceptance of development as a non-linear, dynamic and complex
42 process (Abbott, Button, Pepping, & Collins, 2005; Abbott & Collins, 2004; Phillips, Davids,
43 Renshaw, & Portus, 2010; Simonton, 1999). Central to this change in emphasis is the
44 acknowledgement of the role of psychology as a key determinant in the realisation of
45 potential and long-term success in sport. Constructs such as psychological characteristics of
46 developing excellence (PCDEs; MacNamara, Button, & Collins, 2010a, 2010b), growth
47 mindset (Dweck, 2006), grit (Duckworth, Petersen, Matthews, & Kelly, 2007) and self-
48 regulation (Toering, Elferink-Gemser, Jordet, & Visscher, 2009) have all been deemed
49 pivotal in enabling athletes to negotiate the pathway to excellence in a range of performance
50 domains, essentially providing the skills individuals need in order to negotiate key
51 developmental opportunities and challenges (MacNamara et al., 2010a, 2010b; van Yperen,
52 2009).

53 However, given the facilitative role that these constructs and positive characteristics
54 play in talent development (TD), it is perhaps curious as to the relative dearth of research
55 examining the psychological characteristics and constructs that may hinder or derail the TD
56 process. Such an approach has been used to good effect within the field of business
57 leadership and organisational psychology, whereby Hogan and colleagues identified a range
58 of ‘dark side’ characteristics and attributes that were likely to contribute to the derailment of
59 managerial talent (Hogan & Hogan, 2001; Hogan & Holland, 2003; Nelson & Hogan, 2009).
60 Rather than being purely an absence of positive qualities, these “dysfunctional dispositions”
61 (p.10, Nelson & Hogan, 2009) have been associated with poor social and occupational
62 performance (Hogan & Hogan, 2001), degrading whatever skills and competencies may be

63 initially present (Nelson & Hogan, 2009); as such, their impact needs to be mitigated.
64 Adopting such an approach to TD may be of great merit, as failure to achieve elite sporting
65 success may be as much a function of these 'dysfunctional dispositions' as it might the
66 absence of those positive psychological characteristics already shown to be determinants of
67 athletic success.

68 It may also be that an overabundance or inappropriate emphasis on positive
69 characteristics of development (for example, the psychological skills and characteristics
70 identified as positive features of the development process (e.g., Abbott et al., 2005; Collins &
71 MacNamara, 2012; Gould, Dieffenbach & Moffett, 2002)), may, in certain circumstances,
72 act to limit rather than enhance progress (MacNamara & Collins, 2014). As such, the scope
73 for the inappropriate and maladaptive application of seemingly adaptive constructs becomes
74 apparent and is worth considering. For example, taking the PCDE of commitment to excess,
75 "over-commitment" can be displayed as a series of attitudes, behaviours and emotions that
76 characterise a person working harder than formally required, often driven by a need for
77 approval and recognition (Hetland, Saksvik, Albertsen, Berntsen, & Henriksen, 2012). Such
78 an effort-reward imbalance (Siegrist, 2001) can be deemed a precursor to maladaptive
79 perfectionism (Flett & Hewitt, 2002, 2005); an issue associated with athlete burnout (Hetland
80 et al., 2012; Zhang, Gan & Cham, 2007).

81 The role of perfectionism in sport is complex, as many sports, especially at elite level,
82 require near-flawless performances to be deemed successful (Flett & Hewitt, 2005). Yet
83 despite some dimensions of perfectionism contributing to positive outcomes (Hill, Hall,
84 Appleton & Kozub, 2008; Slaney, Rice & Ashby, 2002), it is primarily recognised as a
85 negative factor that contributes to maladaptive behavioural outcomes (Flett & Hewitt, 2002),
86 leading to burnout (Gustafsson, Hassmén, & Hassmén, 2011; Raedeke, 1997) and ultimately
87 the derailment of talent.

88 As an integral component of grit, passion has also been demonstrated to have both
89 adaptive and maladaptive consequences. Vallerand et al. (2003) proposed a dualistic model
90 of passion; harmonious passion being a motivational force resulting in autonomous and
91 willing engagement of activities, whilst obsessive passion – despite being a strong
92 motivational force – controls the individual and drives them towards the activity (Gustafsson
93 et al., 2011). Athletes harmoniously-passionately involved in their sport are more likely to
94 experience positive affect than those who are involved obsessively-passionately (Vallerand et
95 al., 2003, 2006). Negative affect has been shown to be a predictor and symptom of burnout
96 in elite athletes (Lemyre, Treasure, & Roberts, 2006), whilst athletes scoring high on
97 obsessive passion may be more susceptible to burnout than their more harmoniously
98 obsessive counterparts (Gustafsson et al., 2011).

99 As well as these ‘dual effect’ issues, MacNamara and Collins (2014) also identified a
100 range of characteristics that negatively impact on an individual’s progression in sport and on
101 their psychosocial adjustment. These may manifest as behavioural disorders that can
102 undermine sporting performance (Singer & Janelle, 1999) and impact upon the ability to
103 respond to developmental challenges. For example, individuals with high levels of fear of
104 failure have been shown to adopt avoidance strategies such as self-handicapping (Rhodewalt
105 & Vohs, 2007; Elliot & Church, 2003) whereby obstacles to performance are created or
106 claimed in a bid to downplay any perceived lack of ability. Similarly, extreme shyness (cf.
107 Baker & Horton, 2004) and social anxiety often result in avoidance strategies and inability to
108 seek social support (Zeidner & Matthews, 2007).

109 As another potential area for talent derailment, clinical mental health issues such as
110 depression and anxiety have also been demonstrated to have a potentially negative effect
111 upon development through the employment of avoidance strategies (Grant et al., 2013).
112 Athletes are increasingly seen as being no less susceptible to mental illness than general

113 populations (Markser, 2011), and this is reflected in the current high profile of mental illness
114 within elite sport. This is particularly pertinent for TD, as half of all lifetime cases of mental
115 illnesses are recognised to begin by the age of 14, and three quarters by the age of 24 (Kessler
116 et al., 2005; MacNamara & Collins, in press); thus coinciding with the age range of most
117 talent development programmes. As such, the investigation of clinical mental health issues
118 as a potential derailment should prove a fruitful line of enquiry.

119 In an attempt to provide a formative assessment tool, MacNamara and Collins (2011)
120 developed the PCDE Questionnaire (PCDEQ); a psychometric tool that provides a basis from
121 which to formatively assess and apply positive intervention strategies within a TD setting.
122 However, in its current form the PCDEQ fails to address 'dark side' characteristics. In order
123 to improve the efficacy of this process, a comprehensive assessment of characteristics
124 associated with effective talent development is required that discerns and caters for both the
125 positive *and* negative factors. As such, the purpose of this study was twofold; firstly to
126 provide support for the role of PCDEs as facilitative of effective development and secondly
127 to identify maladaptive psychological characteristics and behaviours that may limit the
128 capability of developing to achieve long term elite-level success, with the long term objective
129 of incorporating all these factors into a more 'complete' version of the PCDEQ.

130 **Method**

131 **Participants**

132 This study set out to investigate the range of psychological characteristics and
133 associated behaviours that impact upon the TD process through a series of cross-sectional,
134 retrospective qualitative interviews. Despite the acknowledged limitations relating to
135 truthfulness and self-report bias (Amis, 2005; Patton, 2002), this method has been widely
136 adopted in sport psychology literature (e.g., Gould et al., 2002), as a way of identifying
137 phenomena and ordering the social world (Atkinson & Delamont, 2005). A purposive,

138 criterion-based sampling approach was adopted, whereby potential participants were
139 identified based upon their coaching qualifications, experience, and role, in a bid to glean a
140 high level of information-rich data. The sport of rugby union was selected for several key
141 reasons: as a team sport, the number of athletes that pass through the system potentially offer
142 a greater resource from which to draw from; the academy structure within the sport facilitates
143 extensive contact between coach and athlete on a regular, often daily basis; and as a high-
144 profile achievement domain, rugby union academies have produced a succession of world
145 class elite level players. Based on this reasoning, the academies of all 12 clubs within the
146 Aviva Premiership (England's top-flight competition) were invited to take part in the study,
147 with three clubs unable to due to prior commitments.

148 Semi-structured interviews were conducted with academy directors and head coaches
149 ($n = 15$), all of whom played an active day-to-day role in the coaching and management of
150 aspiring elite rugby union players. Academy directors and coaches were sampled in a bid to
151 draw upon their unique insights and understanding of the TD process in rugby union. The
152 ages of the coaches ranged from 26 to 63 years ($M = 38.9$ years, $SD = 11.1$ years), all with
153 between 3 and 32 years elite level coaching experience ($M = 13.1$ years, $SD = 9.2$ years). As
154 a male professional sport, all participants in this study, along with the athletes they discussed,
155 were also male.

156 **Procedure**

157 Ethical approval was obtained from the authors' institutional ethics committee prior to
158 the commencement of the study, with informed consent obtained from all participants and
159 confidentiality assured. A semi-structured interview guide was developed, designed to
160 explore the different psychological aspects that may facilitate or derail talent development
161 processes, along with follow-up probes and prompts to elicit data in specific areas of interest.
162 Reflecting the findings within the literature, the interviews comprised of three distinct

163 sections: positive (e.g., “How do these behaviours and characteristics differ from other
164 athletes who have not gone on to be successful at elite level?”), dual-effect (e.g., “Can you
165 describe examples of when athletes have taken positive characteristics to excess, or perhaps
166 applied them inappropriately?”) and negative characteristics and behaviours (e.g., “What do
167 you think are the psychological or behavioural factors that stop an athlete making the most of
168 their ability?”). These a priori constructs were adopted in order to help guide the analysis
169 process by providing a provisional understanding from which themes can emerge; thus
170 adopting an abductive approach as opposed to purely inductive or deductive one (cf. Ali &
171 Birley, 1999; Atkinson & Delamont, 2005; Patton, 2002). Deductive analysis was also
172 carried out to test support for the utilisation of PCDEs, using the framework generated by
173 MacNamara and colleagues in their initial study (cf. MacNamara et al., 2010a). Interviews
174 lasted between 67 and 93 minutes ($M = 79.5$ minutes, $SD = 8.2$ minutes), preceded by an
175 introduction and briefing, and were conducted at the participants’ respective talent
176 development environments. The interviews were conducted by the primary researcher, who
177 had previous experience in interviewing, qualitative methods, and talent development.

178 **Data Analysis**

179 Interviews were transcribed verbatim and returned for participant checking along with
180 the researcher’s interpretations to establish credibility (Amis, 2005), with one transcript being
181 returned with minor alterations to aid clarity of the original meaning. Following the
182 recommendations of Côté, Salmela, Baria, & Russell (1993), a standard content analysis was
183 undertaken, with meaning units created from raw data segments; these meaning units were
184 then grouped into emergent categories. This process was repeated in order to generate
185 higher-order themes until theoretical saturation was reached, whereby all new meaning units
186 analysed fit into the existing coding structure (Patton, 2002; Strauss & Corbin, 1998). In
187 recognition of the researcher’s role as the primary data collection tool and therefore the scope

188 for potential bias (Amis, 2005), an independent researcher experienced in both qualitative
189 analysis and talent development was invited to critically analyse the emergent categories to
190 ensure they reflected the participants' quotations, thus aiding credibility, confirmability, and
191 dependability. Where this resulted in disagreement between the researchers, interpretations
192 were put forward until an agreed explanation was found. This process resulted in the
193 amendment of three category labels that were felt to better represent their subsequent
194 meaning units (e.g., "limiting effects of perfectionism" became "managing perfectionistic
195 tendencies"), thus suggesting a high degree on congruence. A deductive analysis was also
196 undertaken on the data segments, with the specific purpose of establishing further support for
197 the application PCDEs in TD, utilising the framework established by MacNamara and
198 colleagues (MacNamara et al., 2010a).

199 **Results**

200 The purpose of this study was to identify the range of psychological characteristics
201 that impacted positively on TID, those that had potentially both a positive and negative effect,
202 and those that were deemed to be detrimental to development. As such, and reflecting the
203 structure of the interview guide, this section is presented in three stages: positive
204 psychological characteristics, dual-effect characteristics and negative psychological
205 characteristics. An overview of the emergent themes is presented in Table 1, with the themes
206 italicised within the text to aid clarity.

207 **Positive Psychological Characteristics**

208 Support for the application of a range of PCDEs by developing athletes who have
209 since gone on to achieve success was pervasive throughout the data and across all
210 participants. For example, *commitment* was described as being demonstrated in a wide variety
211 of ways, including *discipline* (e.g., "...they [successful athletes] have been massively
212 disciplined." (Coach 14)), *doing the extras* (e.g., "I would say it does come down to those

213 who are prepared to do the extra are generally the ones who do succeed, and that's across the
214 board." (Coach 10)), *motivation and drive* (e.g., "I think the ones that really stand out are the
215 ones who you can see completely pushing themselves to their limits even when there's no
216 coaches or teammates around watching." (Coach 8)), a *positive work ethic*, and the athlete's
217 ability to *sacrifice*. It was also recognised more generally in terms of overall commitment.

218 For example, coach 9 described how:

219 They've got to commit to developing themselves, because – we mentioned it earlier –
220 you can be a passenger and you can do okay or you can take control and ask how can I
221 do more, how can I be better, where can I find improvement? (Coach 9)

222 *Planning and self-organisation* (e.g., arriving early and prepared for training sessions) were
223 also deemed important in order to manage workloads and maximise developmental
224 opportunity, whilst *quality practice* and *focus and distraction control* were identified by
225 coaches as key characteristics that positively influenced developmental efficacy, as
226 highlighted by coach 11:

227 [Name of player]'s short term goals, he was very focussed on them. He knew exactly
228 what he wanted to achieve in a particular session. If that meant he stayed out there for
229 two hours, then he'd stay there for two hours, because he would keep going until he got
230 it right. (Coach 11)

231 *Resilience* was also highlighted as both a key requirement and a differentiator between those
232 who go on to achieve success and those that don't. It was seen as enabling individuals to cope
233 with the challenging demands of the talent development environment and facilitating
234 *perseverance* despite initial failures:

235 And that resilience is a massive thing and it shows itself within a training session
236 when they just want to go again, and again, or in selection and they're not picked, but
237 they'll still be there, they'll still be keen and enthusiastic. (Coach 9)

238 *Realistic performance evaluation* and high levels of *self-awareness* were perceived to be
239 fundamental to effective development, as an accurate self-assessment of the athlete's own
240 ability was seen as forming the basis of effective *goal setting* strategies. As part of formal
241 review processes, coaches described the successful athletes as having a very small differential
242 between their own perception of their ability and the coaches' view (e.g., "Their differential
243 tends to be quite small and they tend to be often harder on themselves and probably put
244 themselves down a little bit when they're marking themselves and scoring themselves in
245 different areas." (Coach 8)). The coaches also noted that those successful athletes were often
246 harsh in their assessments, but that this did not impact on their *confidence and self-belief*
247 (e.g., "I think it doesn't seem to necessarily affect their overriding belief that they've still got
248 something that other people haven't." (Coach 5)).

249 In line with the existing literature, *self-regulation* was viewed as a key strategy
250 employed by successful athletes. Successful athletes reportedly demonstrated *independence*
251 *and ownership* of their own development, taking responsibility for important decisions:

252 We sat in interviews with these players and parents, and parents are driving a lot of the
253 education side of it and the comfort side of it, because that's what they feel
254 comfortable with, and the really good lads at some point will take ownership of it and
255 say, actually, this is what I want to do, I understand the pitfalls, but this is what I want
256 to do. (Coach 1)

257 These athletes were also *proactive* in terms of seeking out and engaging in further
258 developmental opportunities and were regularly seen *asking questions* in order to further their
259 own knowledge, as highlighted by the example "You see a cycle of people who just keep
260 asking questions, and those hard working ones, they'll always ask questions once they
261 understand something, and then push you for how can I have improvement" (Coach 9). Such
262 *self-regulation* was also evident in the way many of the PCDEs were deployed. Coach 6

263 highlights the difference in an applied setting between possessing certain characteristics and
264 deploying them effectively:

265 [Name of player] was a good example, I guess... when it came to reviewing his
266 performances you had sit him down and make him do it. It's not that he couldn't, he
267 was actually quite good at analysing his own game, he just didn't like to do it unless
268 he had to, whereas some of the other kids, especially the better ones, they were
269 probably more eager to do it. (Coach 6)

270 Qualities associated with a *growth mindset* were widely recognised by the coaches in
271 those athletes who then went on to achieve success, with *learning from mistakes*, *engaging*
272 *with challenge* and *reacting positively to setbacks* such as de-selection all consistently
273 demonstrated, as exemplified in the following scenario:

274 [Name of player] he's on loan at a National 2 club, which he's not happy about. He
275 thinks he should be playing Premiership, but his coping strategy is to look at what he
276 can do better and put more effort in to it. When he's on the pitch and National 2, it's to
277 put more work in than anyone else and be the best player on the field. (Coach 15)

278 As a fundamental component of *grit*, *passion*, *energy and enthusiasm* was widely
279 acknowledged by the coaches as a quality of those athletes who go on to achieve success,
280 with its potential to positively influence the opinion of coaches.

281 So as I say, [Name of player] arrives at every first team session with energy and
282 enthusiasm, the work rate, the right attitude, positivity and the coaches see that, so they
283 immediately go he's a good kid, he's working hard – all those things. (Coach 15)

284 The remaining component – *perseverance* – was demonstrated throughout as both
285 *commitment* and *resilience* behaviours, and was therefore classified as such within the
286 analysis process. Other positive psychological characteristics reportedly exhibited by those
287 athletes who then went on to achieve success included a high level of *developmental*

288 *awareness* (i.e., knowing what is required in order to develop as a player), *consistency* in
289 their positive behaviours and associating with the environment's *cultural identity*.

290 **Dual-Effect Psychological Characteristics**

291 *Obsessive passion* was identified as having a negative impact upon development
292 and/or performance, whereby athletes displayed excessive behaviours seemingly driven by a
293 need to improve, such as *over-analysing* techniques.

294 [Name of player] would start thinking about techniques and stuff. If he missed a kick,
295 he'd be thinking "well I fell off that to the right, my head was too far up" or
296 whatever.... he needs to concentrate on the whole process but he goes in to the details.
297 He'll focus so hard on getting that one bit right that he missed that he can forget
298 another bit. (Coach 11)

299 Similarly, *over-commitment* was described, with a recognition amongst coaches that, if left
300 unmanaged, it could be potentially detrimental to an athlete's development, with the athlete
301 partaking in well-meaning but misguided developmental activities, as demonstrated by
302 coaches 6 and 8:

303 If we set him some physical targets to hit, he'll hit them, however he's going to get
304 them and hit them, whereas for us, all we're doing is risking that he gets injured,
305 because if he's not doing it in the right way, he's that determined, he'll still get there
306 because that's his characteristics. (Coach 6)

307 I think [Name of player] is a good example again, the S&C guy had to keep a really
308 close rein on him because he just thought that more was better, and he would just do
309 more and more on his days off.... he just felt that the more he did, the better he'd get.
310 That's one of the downside to that type of intrinsic drive, you know? (Coach 8)

311 Echoing the sentiments of the previous dual-effect characteristics, the role of
312 *perfectionism* was seen as having potentially detrimental aspects to both development and

313 performance. *Managing perfectionism* in the environment was seen as fundamental to
314 maintaining its adaptive effects and minimising any maladaptive consequences, rather than
315 attempting to address the processes that drive perfectionistic tendencies. The potential
316 impact of *perfectionism* on development is illustrated by coach 15:

317 A guy [Name of player] who's played for England on the wing, now at [Name of club],
318 he's the first guy on the training field, he's the last guy off the training field, he'll pass
319 for two hours of his right, two hours off his left, rear foot passing – he'll just rep it out
320 and rep it out and rep it out. And actually the big thing he needs to work on is weight
321 gain, but you can't get him off his feet so it becomes very difficult to do that.... So I
322 think it is about getting to know the individual, and with [Name of player] we got it
323 wrong early on because we didn't know his personality well enough. We said okay, left
324 foot kicking, off you go. Then he's out there until it's dark, so we were like right, okay,
325 we've got to change this. So being aware of that is critical. (Coach 15)

326 **Negative Psychological Characteristics**

327 One of the primary issues raised as a negative characteristic was the employment of
328 *avoidance-based coping strategies* by those athletes who didn't go on to achieve elite level
329 success in rugby union. Many of these athletes were reported to use *avoidance* strategies to
330 avoid possible failure, with coach 8 highlighting the detrimental impact this can have on their
331 development and progression:

332 Their drive to avoid messing up is greater than their drive to say "I want to put myself
333 forward"... they end up getting released from environments because they're trying not
334 to fail because if they do something wrong it shows up, but then they're not putting
335 themselves forward to do things. (Coach 8)

336 In response to failures and unsuccessfully negotiating challenge, the less successful athletes
337 reportedly often sought to employ *external attribution* as a strategy to disassociate themselves

338 with the recent or potential failure, both on and off the field, as demonstrated in Coach 13's
339 example, "It's how they address that situation – "I'm injured, so my body fat's gone".

340 There's the little excuses there and it's how they address it", or that of Coach 9:

341 "How do you think it went?" "Well he left me [isolated on the pitch] so it was difficult
342 for me to..." There's not really an acceptance of yeah, it happens, how do I improve it,
343 let's move on. It's "He should have come up and pressed with me, but I thought I was
344 okay". (Coach 9)

345 Similarly, *impression management* and *affirmation seeking* were also employed by those less
346 successful athletes to detract from perceived failures and weaknesses, for example: "Some of
347 the lads think 'yeah, I'll score myself harshly, 'cos that's what the coach wants to see'"
348 (Coach 13).

349 *A lack of commitment* to their own development was observed by the coaches across
350 those who failed to progress, manifesting itself in a variety of ways such as *amotivation* and
351 *doing the minimum*:

352 If I've just got to do this rugby session this week, if I'm just doing the session – I won't
353 try and add to the session, I won't set myself the challenge to perform in front of these
354 coaches or train with the first team players – I'm just going to get through it. But I'll
355 develop because I'm getting through it. And there's that thought process and those
356 players don't quite make the transition. (Coach 9)

357 Similarly, *inconsistency* was cited as being detrimental to an athlete's development, with
358 coach 3 describing its impact on one athlete's fitness:

359 So you get to [Name of player] who came in and he was really fat and overweight but
360 worked really hard to start with, and then it was too hard to keep going so he gradually
361 went back to his start point, really. (Coach 3)

362 In line with behaviours representing a *lack of commitment, behavioural incongruence* was
363 recognised by coaches as prevalent in those athletes who didn't go on to achieve success,
364 essentially 'talking the talk' but not 'walking the walk', with some athletes demonstrating an
365 *inability to sacrifice*:

366 All of them come with the goal of I want to play for England or I want to play for the
367 Lions and there's not many of them that back that up with the behaviours that are
368 required.... I've seen guys who are willing to compete in an environment where there's
369 other people there, but they're not so willing to compete when it's just them. (Coach 8)

370 Throughout the interviews, coaches highlighted the apparent *lack of awareness*
371 amongst the less successful athletes. *A lack of self-awareness and poor performance*
372 *evaluation* were cited as having a detrimental impact on development, such as in the
373 following example cited by coach 15:

374 We've got a lad in our programme who's a talented kid but his perception of himself –
375 he works hard and he does all the things well – but his perception of himself is not in
376 line with actually where he is. His belief is that he should be playing for the first team,
377 he should be doing this, and managing him in a loan club environment is very
378 difficult. Managing him through his development becomes very difficult because he
379 sees the standard of rugby he's playing as beneath him. Whereas what he's doing is
380 not playing to that standard of rugby, so he's essentially beneath that. (Coach 15)

381 Athletes also demonstrated a *lack of developmental awareness* of both their own
382 developmental pathway and in relation to other, more senior players, as demonstrated by
383 coaches 2 and 8:

384 In terms of strength and conditioning, we didn't need him to be where he wanted to be
385 at 15 years of age. There was always a long term plan to get him to where he needed to

386 get to, and he struggled with that massively, because he wanted to be fresh all the time
387 so that he could demonstrate his rugby ability. (Coach 2)

388 The one's that aren't quite at the same level, they're often not prepared to sacrifice
389 because they can't work out in their head the link between doing something now and
390 that delayed gratification again – they don't work out the link that doing something
391 now will pay them back in their physical term. (Coach 8)

392 It was reported that these athletes who didn't go on to achieve were often
393 unsuccessful at managing developmental transitions (unlike their more successful
394 counterparts), often *failing to overcome challenge* both within their sport and away from it.
395 Coaches cited *expectation and entitlement* and an *absence of developmental challenge* as
396 mechanisms for this failure, whereby early success had been achieved with little effort (e.g.,
397 physical precocity) or stakeholders (e.g., parents, schools, etc.) having “given them
398 everything” (Coach 4). This was further supported by coach 2:

399 He's had smoke blown up his arse for a hell of a lot of time because he is a talented
400 player, but every time you try and go “what about this?” you get the strop, the
401 derailment in every session. (Coach 2)

402 I could probably name five kids a year who come through who've been dominant in
403 their age groups and they get to a place where they have some ability but when it starts
404 getting tough and they can't run around it. (Coach 5)

405 A variety of *mental health issues* were identified has having a negative impact upon
406 development, such as *depression*:

407 ...A bit like the [Name of player] issue in terms of looking for a way out. Home life
408 issues which are causing issues here. We get quite complex home life situations which
409 can create a lot of stress for the players while they're here. It ends up with depression
410 and stuff like that. [Name of player] would be one of those, you'd say at various points

411 he goes in to a big sort of depression, and it's very hard to learn how to deal with him.

412 (Coach 1)

413 *Eating disorders* and in one extreme case, *suicidal tendencies* were also identified by the
414 coaches. Whilst acknowledging their existence and potential negative impact on
415 development, the coaches accepted that their knowledge of the subject was very limited,
416 often referring athletes to appropriate specialists, as described by coach 8:

417 We're working with a psychologist with it at the moment because [Name of player]'s
418 very emotionally unstable around games, particularly after games, being tearful and
419 crying after games, which has concerned me and I don't know what the root of that is.
420 I'm trying to work out at the moment the best way around helping him and finding out
421 what it is, working with our psychology guys trying to help him to do that better.

422 (Coach 8)

423 The *prevalence and awareness of mental health issues* was also discussed. Despite coaches
424 acknowledging the impact of mental health on developmental athletes, several of them raised
425 the question of its true extent within the sport due to a poor understanding and awareness, for
426 example: "I think you could probably, with a little bit more education towards the guys in
427 charge of the programme, identify those things far earlier." (Coach 15). Despite this, several
428 coaches noted an increased prevalence in mental health issues: "Whether it's here or whether
429 there's an underlying issue prior to coming in to here, there's definitely and increased
430 prevalence of those sort of mental health issues." (Coach 4)

431 **Discussion**

432 There was wide-ranging support across the data for the application of PCDEs by
433 successful developing athletes within rugby union TDEs, reflecting findings in existing
434 literature. These were identified by the coaches as being operationalised in a variety of ways
435 by different individuals at different times, again supporting previous findings (MacNamara et

436 al., 2010a, 2010b). For example, several coaches discussed high levels of commitment, focus
437 and attention to detail in developing athletes who successfully graduated from their respective
438 academies. However, coach 15 described an example of one player who did not display these
439 characteristics initially and as a result was released from the programme, but went on to
440 display them later on in his development:

441 [Name of player] at [name of club] is a guy that was in the academy, was exited
442 because he was poor on his nutritional detail, poor on various things so they said we're
443 not wasting any more time with you. Then they had to resign him for [fee] from [name
444 of club] when he finally got himself in gear. (Coach 15)

445 This demonstration of non-linear athlete development and resultant premature de-/non-
446 selection has been recognised in previous literature (cf. Abbott & Collins, 2004; Abbott et al.,
447 2005), and raises the issue of support networks such as feeder clubs to facilitate and capitalise
448 on this late development. However, this valid and necessary discussion is beyond the scope
449 of this paper. Of the PCDEs identified previously (MacNamara et al., 2010a), only imagery
450 was not reported in this study, suggesting that it was either not operationalised by the
451 developing athletes at this stage, or alternatively that it was not recognised by the coaches.
452 This is perhaps unsurprising, given the potential lack of overt and observable behaviours
453 associated with this primarily cognitive process. It is an issue which merits attention,
454 however; especially given the potential power of imagery related interventions and actions in
455 enhancing performance (Orlick & Partington, 1988; Taylor & Shaw, 2002).

456 Self-regulated learning strategies are predictive of both superior athletic performance
457 and enhanced motivation (Zimmerman & Kitsantas, 1996; 2007), and were widely
458 recognised throughout the data in those athletes who then went on to achieve success. This
459 reflects Toering and colleagues' suggestion that self-regulation is important for youth athletes
460 in order to maximise both developmental opportunity and their own potential (Toering et al.,

461 2009; Toering et al., 2011). Self-promoted PCDEs such as goal setting, self-organisation,
462 planning and performance evaluation are in themselves recognised self-regulated learning
463 strategies (Zimmerman, 2006; Zimmerman & Kitstantas, 2007), thus highlighting the role of
464 self-regulation as the strategy of choice for the effective deployment of PCDEs. Reflecting
465 this, an absence of independence and ownership – qualities associated with effective self-
466 regulation – were reported in those athletes who were unsuccessful in achieving their long-
467 term goals, as was an absence of PCDEs, such as lack of commitment or an inability to cope
468 with pressure.

469 Qualities associated with the ‘growth mindset’ construct (Dweck, 2006) were a key
470 feature of reports describing those athletes who went on to achieve success. Similarly, ‘grit’
471 (Duckworth et al., 2007) was also prevalent. However, when examining the descriptions of
472 these effective behaviours, it becomes apparent that characteristics such as engaging with
473 challenge, learning from mistakes and reacting positively to setbacks are operationalised
474 through the deployment of PCDEs and self-regulatory processes. For example, self-regulated
475 learners have been shown to display persistence during learning (Zimmerman, 1990), realistic
476 performance evaluation is fundamental to learning from mistakes as part of a reflective
477 process and the self-motivational beliefs associated with passion and engaging with challenge
478 are linked to self-regulatory processes (Zimmerman, 2006).

479 A range of dual effect characteristics were recognised in both successful and
480 unsuccessful developing athletes. Coaches recognised the need for passion as a motivational
481 force within athletes to help drive their development, acting as a metaphorical ‘glue’ that
482 helps ‘stick’ the athlete to the developing process, thus enabling them to persevere with key
483 developmental activities that may not be themselves inherently enjoyable (Ericsson et al.,
484 1993). However, coaches also reported situations where this passion had been taken to
485 excess, i.e., obsessive passion (cf. Vallerand et al., 2003). This manifested itself as instances

486 where athletes focussed too much on a single aspect of their performance or development and
487 lost focus of their overarching aims – the ‘bigger picture’. Interestingly, despite its reported
488 associations with injury burnout in the literature (Akehurst & Oliver, 2013; Quested & Duda,
489 2011), this was something that the coaches felt wasn’t the case in their environments, with a
490 range of safeguards, support and interventions applied when deemed necessary. This
491 mediation of dual effect characteristics was also evident in cited cases of perfectionism,
492 whereby perfectionistic tendencies in individuals were managed in a bid to minimise any
493 potential maladaptive effects. Within perfectionism literature, there is a common consensus
494 that when the overlap between perfectionistic concerns and perfectionistic strivings is
495 controlled for, perfectionistic strivings show positive correlations with adaptive
496 characteristics, with the positive associations of perfectionistic striving often suppressed by the
497 negative association of perfectionistic concerns (Gotwals, Stoeber, Dunn, & Stoll, 2012; Hill,
498 Huelsman, & Araujo 2010; Stoeber, 2011). If, however, as suggested, the way to increase the
499 adaptive function of perfectionism is to reduce the level of perfectionistic concern rather than
500 increase the level of perfectionistic strivings (Stoeber & Janssen, 2011), yet both dimensions
501 of perfectionism are significantly correlated (Dunkley, Zuroff, & Blankstein, 2003; Stoeber &
502 Janssen, 2011), it follows that the net effect of perfectionism would remain relatively
503 unchanged. So from an applied perspective, there is perhaps merit to the coaches’ approach to
504 mediating the outcome of perfectionistic tendencies, rather than attempt to address the
505 processes behind them.

506 A range of characteristics that negatively impacted upon talent development were
507 reported in those athletes who didn’t go on to achieve success, with several of these reflecting
508 an absence of positive characteristics, such as a lack of commitment or lack of developmental
509 awareness. These less successful athletes employed avoidance-based strategies rather than the
510 self-regulated application of PCDEs as discussed earlier. Crucially, the efficacy of the TD

511 process could be said to be dependent upon the effectiveness of the interaction between the
512 athlete and the environment, and the consequence of employing many of these strategies was
513 that it led to either a failure to engage with developmental challenge and opportunity (e.g.,
514 avoidance), or in a reduced effectiveness of this interaction (e.g., self-handicapping).

515 Similarly, mental health issues were also identified as impacting upon developmental
516 processes, often resulting in time away from the environment for the athlete involved and a
517 reduced effectiveness of interaction with it when present. Coaches recognised the increased
518 prevalence of mental health issues in rugby union, but suggested a lack of awareness at both a
519 macro and micro level. Examples were cited whereby individuals were referred to
520 psychologists and doctors by the coach in order to receive support for potential mental health
521 issues. However, if, as was reported, these coaches (and potentially the system as a whole)
522 have a poor awareness of the issues and symptoms associated with mental health in young
523 people, then diagnosis and referral of developing athletes to the appropriate support will be
524 potentially sub-optimal. Further research on the awareness and impact of mental health issues
525 on developing athletes is therefore necessary.

526 The role of motivation appears to underpin many of the characteristics and choices of
527 adopted strategies in successful athletes as well as their less successful counterparts, such as
528 its impact upon commitment levels (Ryan & Deci, 2000; Weiss, Weiss, & Amorose, 2010)
529 and the associated behaviours. Coping strategies such as avoidance, external attribution and
530 impression management are often associated with a fear of or a need to avoid failure (Elliot &
531 Church, 2003; Rhodewalt & Vohs, 2007; Schultheiss & Brunstein, 2007), and within a talent
532 development context, parents of aspiring elite athletes have been shown to contribute to the
533 development of fear of failure through their high expectations, controlling behaviours and
534 punitive measures (Sagar & Lavalley, 2010). It is therefore possible that other stakeholders
535 such as coaches, teachers and peers may also contribute to its development through similar

561 There are some limitations associated with this study owing to its retrospective
562 design, namely reliability, truthfulness and self-report bias (Amis, 2005; Patton, 2002), and as
563 such, future longitudinal research is recommended to support these findings. Alongside this,
564 we recommend further research in to the awareness and impact of mental health issues in
565 talent development processes, as well as similar exploratory research in to other talent
566 development domains (e.g., the performing arts, individual sports, other team sports etc.),
567 along with incorporating different perspectives (such as the athletes themselves and their
568 parents) in a bid to identify a comprehensive range of influencing factors.

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742 Table 1. Psychological Characteristics Influencing Talent Development

Umbrella Themes	Higher-Order Themes	Sub-Themes
Positive Psychological Characteristics (15)	Cognitive Ability (6)	
	Competitiveness (8)	
	Confidence & Self-Belief (9)	
	Consistency (9)	
	Courage (1)	
	Cultural Identity (5)	
	Developmental Awareness (10)	
	Driving Group Standards (2)	
	Effective Communication (5)	
	Emotional Intelligence (2)	
	Flexibility & Adaptability (2)	
	Game Understanding (5)	
	Grit (6)	Passion, Energy & Enthusiasm (6) Perseverance (1)
	Growth Mindset (15)	Accepting Criticism & Advice (4) Accepting Mistakes & Moving On (3) Engaging with Challenge (9) Learning From Mistakes (7) Reacting Positively to Setbacks (10)
	Honesty (2)	
Leadership (2)		
Manage Transitions Successfully (7)		
Maturity (non-physical) (6)		
PCDE – Commitment (15)	Discipline (5) Doing the Extras (3) Motivation & Drive (15) Positive Work Ethic (12) Sacrifice (4)	
PCDE – Coping with Pressure (6)		
PCDE – Focus & Distraction Control (5)		
PCDE – Goal Setting (3)		
PCDE – Planning & Self-Organisation (5)		
PCDE – Quality Practice (9)	Attention to Detail (7)	
PCDE – Realistic Performance Evaluation (6)		
PCDE – Resilience (7)		
PCDE – Self-Awareness (11)		
Process Orientated (4)		
Self-Regulation (12)	Asking Questions (7) Independence (5) Ownership of Development (4) Pro-active (7)	
Dual-Effect Psychological Characteristics (15)	Aggression (3)	
	Obsessive Passion (14)	Over-Analysis (9)
	Over-Commitment (2)	
	Over-Confidence (2)	
	Perfectionism (14)	Managing Perfectionistic Tendencies (5)
Pre-established Frameworks & Beliefs (4)		
Work-Life Balance (6)	Balanced Approach to Sport (4) Managing the Balance (2) Outside Interests (1) Sole Focus on Sport (3)	
Negative Psychological Characteristics (15)	Avoidance-based Coping Strategies (15)	Avoidance (11) External Attribution (7) Impression Management (2) Seeking Affirmation & Praise (3) Social Excesses (2)
	Complacency (4)	

Disorganised (1)	Absence of Challenge (4)
Expectation & Entitlement (7)	Absence of Coping Mechanisms (7)
Failure to Overcome Challenge (7)	
Inappropriate Goals (5)	
Lack of Awareness (15)	Lack of Developmental Awareness (10)
	Lack of Self-Awareness (11)
	Poor Performance Evaluation (6)
	Unrealistic Expectations (2)
Lack of Commitment (14)	Amotivation (7)
	Behavioural Incongruence (2)
	Doing the Minimum (4)
	Inability to Sacrifice (2)
	Inconsistency (6)
Loss of Focus / Easily Distracted (5)	Depression (8)
Mental Health (14)	Eating Disorders (1)
	Prevalence & Awareness (5)
	Suicide or Suicidal Tendencies (2)
Negative Attitude (5)	
Poor Communicators (1)	
Psychological Burnout (3)	
Self-Doubt (1)	
Self-Handicapping (4)	
Shyness (3)	

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744 *Note.* Number in brackets represents number of coaches who identified each

745 behaviour/characteristic.