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A preliminary investigation

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Psychological Models in Sport Psychology: A Preliminary Investigation

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26 Abstract

27 Applied psychology is characterised by a variety of theoretical models, informing distinct
28 approaches to classification, explanation, and intervention in service-delivery. Such
29 theoretical or psychological models include behavioural, biological, cognitive, humanistic,
30 psychodynamic, and social paradigms, with exposure to these models and attitude formation
31 occurring within the structured university-based stage of sport psychology development. It
32 is, therefore, important for the sport psychological domain to investigate developing attitudes,
33 given these models inform subsequent professional practice and decision making.

34 Accordingly, the present study explored the attitudes of Stage-1 sport psychology students
35 through a modified form of the Maudsley Attitude Questionnaire (34 males, $M_{age} = 24.71$
36 years, $SD = 7.23$ and 42 females, $M_{age} = 24.76$ years, $SD = 6.20$). The questionnaire was
37 designed to assess attitudes across eight psychological models (e.g., biological, cognitive)
38 and four sport psychology issues (pre-performance anxiety, a lack of confidence, depression,
39 and eating disorders). Analyses of variance demonstrated significant main, model, and
40 interaction effects. No one psychological model was endorsed by all respondents, with
41 model endorsement varying significantly as a function of the issue presented. Principal Axis
42 Factoring revealed a large contribution attributable to cognitive-behavioural and 'eclectic'
43 (mixed elements of social constructionism, biological, and psychodynamic) models. In
44 contrast, the spiritual model represented low levels of participant endorsement and
45 application. Investigation of Stage-1 students can promote an evidence-based understanding
46 on currently developing attitudes and inform the development of sport psychology education,
47 supervision of training routes, and subsequent professional delivery.

48

49 *Keywords:* attitudes, issues, paradigms, training, service-delivery

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51 Psychological Models in Sport Psychology: A Preliminary Investigation
52 Applied psychology is characterised by a variety of theoretical models, including
53 behavioural, biological, cognitive, humanistic, psychodynamic, and psychosocial strands,
54 which describe and explain human behaviour and the nature of behaviour change
55 (Poczwadowski, Sherman, & Ravizza, 2004). These models of psychology held by health
56 care professionals are implicit in their attitudes and inform theory and practice (Reid,
57 Moberly, Salter, & Broome, 2017). For example, whether the classification, explanation, and
58 intervention should be directed at abnormal behaviours (behavioural); biological
59 abnormalities (biological), maladaptive thoughts and beliefs (cognitive); present growth
60 (humanistic); unconscious factors (psychodynamic); or social circumstances and conditions
61 (psychosocial strands). For a more detailed discussion, we refer the reader to Poczwadowski
62 et al. (2004). These models inform distinct approaches to service-delivery, however,
63 different psychological models adopted by health-care professions may also contribute to the
64 frustration and lack of cohesion felt by professionals and multi-disciplinary teams (Colombo,
65 Bendelow, Fulford, & Williams, 2003; Reid et al., 2017).

66 As a consequence, Harland et al. (2009) developed the Maudsley Attitude
67 Questionnaire (MAQ) to capture attitudes consistent with these psychological models in
68 concepts of mental illness. With a sample of trainee psychiatrists, Harland et al. (2009)
69 investigated the extent to which attitudes reflected endorsement of psychological models
70 varied between diagnostic category. For example, the biological model was most strongly
71 endorsed for schizophrenia and least endorsed for antisocial personality disorder, with the
72 biological model most strongly endorsed overall by the trainee psychiatrists. Following on
73 from this, Reid et al. (2017) administered an adapted version of the MAQ to trainee clinical
74 psychologists. The social realist and social constructionist models were the most strongly
75 endorsed, suggesting the immediate social circumstances of the individual as well as the

76 wider social context were perceived to be the most important factors in conceptualising
77 mental disorders. Additionally, the three main therapeutic models (cognitive, behavioural, &
78 psychodynamic) were valued equally by the trainee clinical psychologists. Furthermore,
79 when comparing to the original Harland et al. (2009) study, attitudes of the trainee clinical
80 psychologists and psychiatrists continued to sit at opposite ends of the biological/
81 psychosocial spectrum. As a result of these differing findings, Reid et al. (2017) highlighted
82 a need for researchers to implement the MAQ in different psychological domains, for the
83 purpose of allowing more reliable and informative comparisons to be made.

84 Within the sporting domain, exposure to these psychological models often occurs
85 within the structured university-based stage of development. For example, the Association
86 for Applied Sport Psychology (AASP), Division 47 of the American Psychological
87 Association (APA), the Australian Psychological Society (APS), the British Association of
88 Sport and Exercise Sciences (BASES), and the British Psychological Society (BPS) all
89 require the completion of undergraduate and masters or doctoral degrees before embarking on
90 supervised training routes. It is during these educational years, that both the timing and
91 duration of exposure to psychological models contributes significantly to attitude formation
92 (Reid et al., 2017). In a similar vein to psychiatrists and clinical psychologists, Stage-1 sport
93 psychology students (individuals engaged in the final university educational stage of their
94 sport psychology development in the UK) are taught how differing models inform
95 classification, explanation, and intervention. Specifically, in the sport psychology context,
96 this contributes to an understanding of what the athlete is experiencing and the specific
97 techniques that can be applied in practice (Winter & Collins, 2015a).

98 The psychological model most frequently reported, both in terms of the evidence-base
99 and as employed by sport psychology practitioners, is the combination of the cognitive and
100 behavioural paradigms (Fortin-Guichard, Boudreault, Gagnon, & Trottier, 2018; Ravizza,

126 At the time of the study, there were 18 BPS accredited sport psychology Masters'
127 degrees running within higher education institutions in the UK. Following institutional
128 ethical approval, the programme director responsible for each of these accredited degrees was
129 initially contacted, informed of the proposed study, and invited to allow their students to
130 participate. Primary contact with the directors was essential for recruitment of the intended
131 participants, i.e., individuals engaged in the final university educational stage of their sport
132 psychology development (BPS Stage-1).

133 Subsequently, 76 individuals currently enrolled on a BPS accredited Master's degree
134 were recruited to participate in the study, following the completion of informed consent. The
135 sample comprised 34 males (age: $M = 24.71$ years, $SD = 7.23$ years) and 42 females (age: M
136 $= 24.76$ years, $SD = 6.20$ years). Collectively, participants reported the following
137 nationalities: British (76.3%), European (11.7%), American (3.9%), Canadian (2.7%), Irish
138 (2.7%), South African (1.3%) and Brazilian (1.3%).

139 **Measures**

140 We used an adapted version of the Maudsley Attitudes Questionnaire (MAQ)
141 designed to elicit psychiatrists' attitudes towards mental illness (Harland et al., 2009). The
142 MAQ consists of the major conceptual models available to those working in psychological
143 domains: biological, cognitive, behavioural, psychodynamic, social realist, social
144 constructivist, nihilist, and spiritualist. Aligned with common conceptual models in the sport
145 psychology literature, we replaced the 'nihilist' with the 'humanistic' approach due to its
146 prominence within our applied field (e.g., Friesen & Orlick, 2010; Katz & Hemmings, 2009;
147 Keegan, 2010; Poczwardowski et al., 2004).

148 Part 1 of the MAQ included items pertaining to demographic and educational
149 characteristics, adapted for the present study through minor adjustments to ensure relevance
150 (e.g., 'psychiatry' was changed to 'sport psychology'). Part 2 of the questionnaire comprised

151 four questions to capture the essence of each psychological model broadly in terms of
152 aetiology, classification, research, and treatment (see Table 1). This resulted in a 32-item
153 questionnaire, with the questions assorted randomly. Participants in the present study were
154 required to complete the MAQ in relation to two common sport psychology issues; pre-
155 performance anxiety and lack of confidence, and two mental health issues reported within the
156 sporting population: depression and eating disorders. All four issues were purposefully
157 selected due to their abundance of contemporary literature (e.g., Rice et al., 2016; Woodman
158 & Hardy, 2003) and featured curriculum content within the sport psychology educational
159 programmes. Respondents indicated the extent to which they agreed/disagreed with each
160 statement regarding the diagnostic category for each issue on a five-point Likert scale (1 =
161 '*strongly disagree*', 5 = '*strongly agree*'). Thus, part 2 of the MAQ consisted of 128 attitude
162 items in total.

163 Harland et al. (2009) reported an observed median validation rating of 100% (range
164 84.4 – 100%) for the MAQ and a 95% confidence interval (CI) for mean construct validity
165 between 92.3% and 98.1%. Furthermore, the MAQ has been found to have adequate
166 construct validity with psychiatrists (Harland et al., 2009), and the principal component
167 analysis (PCA) conducted by Read et al. (2017) implied that the eight models reflected in the
168 MAQ were seen as distinct by trainee clinical psychologists.

169 To confirm the status and validity of the adapted MAQ within sport psychology, we
170 employed a similar approach to Harland et al. (2009), albeit using a group of six experienced
171 and chartered practitioners rather than a sub-sample of trainees. These individuals were
172 presented with a randomised list of the 32-items and were asked to place them in the
173 appropriate category. Scored as correct or not correct, this offered a measure of construct
174 validity. These participants scored a median validation of 100% (range 90-100%); positively

175 comparable with the results from Harland et al. and supporting the validity of the adapted
176 MAQ for use in sport psychology.

177 **Procedure**

178 We conducted a preliminary pilot study (Gratton & Jones, 2003) on 13 respondent
179 trainee sport psychologists to ensure that the questions and format of the questionnaire pack
180 were clear and understandable by the targeted respondents. Using a cognitive interviewing
181 process, respondents perceived the MAQ to be positioned within a clinically based
182 psychological approach, due to the language used throughout, e.g., frequent use of the word
183 ‘disorder’. The authors subsequently amended ‘disorder’ to ‘issue’ throughout part 2 of the
184 questionnaire.

185 Questionnaire packs (including participant information sheets and consent forms)
186 were either posted or sent electronically to the responding programme directors to
187 disseminate to their respective Masters’ students. Participants were advised the information
188 they gave would be treated in strict confidence and used only for the purposes of the current
189 research. Following completion of the first part of the MAQ, all participants followed a
190 standardised procedure. They were asked to consider a number of statements regarding a
191 variety of psychological models and evaluate their relevance to the four exemplar issues, by
192 circling the appropriate number from the five-point Likert scale. Participants were instructed
193 that the statements were not meant to be mutually exclusive and that there were no correct
194 answers.

195 **Data Analysis**

196 In accordance with Harland et al. (2009) guidelines, responses for the four items
197 derived from each model were summed to form an overall attitude score. This was based on
198 the demonstrated premise that the four items (aetiology, classification, research, and
199 treatment) within each model (biological, behavioural, cognitive, psychodynamic, social

225 the MAQ related to a humanistic model of lack of confidence: “The issue should be treated
226 by creating a therapeutic relationship that is warm and accepting, and that emphasises growth
227 and self-actualisation” (mean Likert value = 4.39), and a cognitive model for confidence and
228 depression: “The issue should be treated by challenging and restructuring maladaptive
229 thoughts and beliefs” (mean value = 4.26 for both items). Conversely, the three statements
230 receiving the lowest endorsement were entirely related to the spiritual model: “The issue is
231 better understood through religious or spiritual insights” to anxiety (1.29), confidence (1.33)
232 and eating disorders (1.38), with two other spiritual approach items (questions 21d and 25d)
233 equal third (also 1.38).

234 **Aggregate Scores Across Model and Issue**

235 For all the other analyses, individual question responses were aggregated to form total
236 attitude scores (range 4–20) for each model and issue. This generated 32-items representing
237 participants’ views across model and issue. Means and standard deviations for these data are
238 presented in Table 2. To more clearly illustrate the endorsement of each model by issue,
239 Figure 1 illustrates standardised mean scores around the neutral response (Likert scale of 3
240 changed to a mean value of 0) to present participant views on the model-issue interaction.

241 The figure shows a large spread of perceptions across issue for the biological model,
242 almost identical views for the cognitive, behavioural, humanistic (all positive) and spiritual
243 (negative) approaches, and somewhat varied differences across the other model-issue data.
244 Reflecting the picture provided, the 4 x 8 (Issue x Model) repeated measures ANOVA
245 demonstrated significant main (Issue: $F(3,128) = 40.4, p < .001, \eta_p^2 = .356$), Model ($F(7, 249)$
246 $= 107.6, p < .001, \eta_p^2 = .596$) and interaction (Issue x Model ($F(21, 685) = 37.2, p < .001, \eta_p^2 =$
247 $.338$)) effects. Greenhouse-Geisser adjustments to df were used throughout.

248 Unpacking the significant main effects demonstrates that opinions across participants
249 were mixed. Follow up Tukey Tests on the main effect of issue showed significant

250 differences between pre-performance anxiety/confidence (marginal means of 10.87/11.04
251 respectively) and depression/eating disorder (11.93/11.85); simplistically perhaps, between
252 sociopsychological and biopsychological challenges. Follow ups to the main effects of
253 model showed these as being due to significant differences between the extremes; namely,
254 cognitive, behavioural, and humanistic on the one hand (14.7, 13.9, and 13.3 respectively),
255 and social constructionist and spiritual on the other (9.6 and 6.4). The interaction indicates
256 that model endorsement varied significantly as a function of the issue presented. This
257 complex picture is most clearly interpreted by reference to Figure 1.

258 **Clarifying the Models Used by Participants**

259 As the final stage of analysis, we wished to clarify the psychological models used by
260 participants when considering the four issues presented. Following the advice of Preacher
261 and MacCallum (2003), we used Principal Axis Factoring with Promax rotation in preference
262 to the PCA approach employed by Harland et al. (2009). This generated the pattern matrix
263 shown in Table 3. We used a combination of the scree plot and eigen values (>1) to cut the
264 solution to eight factors. It is relevant, however, to note the large contribution attributable to
265 the first three factors, and our subsequent considerations will focus on these.

266 As can be seen, Factor 1 related to a ‘cognitive-behavioural model’ offering further
267 clarity to the picture shown in Figure 1 and in the ANOVA results reported above. Factor 2
268 was less clear, and was termed ‘eclectic’, noting the mixed elements of social
269 constructionism, biological, and psychodynamics apparent. In contrast, Factor 3 seemed
270 clearly related to ‘spiritual’, suggesting a uniqueness in contrast to the low levels of
271 participant endorsement or application. Finally, despite high levels of endorsement,
272 ‘humanistic’ did not appear until the sixth iteration and then not making a large contribution
273 to the variance.

274 **Discussion**

275 The present study aimed to characterise the profile of psychological model adoption
276 by Stage-1 students when conceptualising issues within applied sport psychology. Firstly, as
277 hypothesised, there was an overall endorsement of the cognitive-behavioural model as the
278 ‘dominant’ approach in these Stage-1 students. Thus, indicating the sport psychology and
279 mental health issues would be dealt with by allocating appropriate techniques to focus on
280 both changes in problem behaviour and transforming maladaptive cognitions to those that are
281 readily adaptable (McArdle & Moore, 2012). As expected, this finding contrasts from the
282 pattern of endorsement for Harland et al.’s (2009) trainee psychiatrists and Reid et al.’s
283 (2017) clinical psychologists for whom the biological and psychosocial models were most
284 strongly endorsed, respectively.

285 From an applied sport psychology perspective, the cognitive-behavioural model has
286 frequently been cited as the dominant approach within this field (e.g., McArdle & Moore,
287 2012; Winter & Collins, 2015a). In support of this, Fortin-Guichard et al. (2018) critically
288 reviewed the scientific literature on sport psychologists’ experiences and reported the
289 cognitive-behavioural approach to be the most widely used in practice, regardless of level of
290 experience. Therefore, it seems Stage-1 students are favouring this approach, which is
291 mirrored from the experienced practitioners within the sport psychology literature. This may
292 be no coincidence, given many of the sport psychology training routes (e.g., APA, AASP,
293 APS, BASES, BPS) are supervisor-led by these experienced practitioners. Secondly, many
294 of the experienced practitioners hold dual academic positions within higher education
295 institutions (Winter & Collins, 2015a) and hence deliver on the sport psychology
296 programmes. In relation to these first two points, Reid et al. (2017) highlighted how the
297 timing and duration of exposure to psychological models are likely to contribute significantly
298 to attitude formation. It would therefore be timely, for those responsible for delivering the
299 sport psychology programmes, to reflect how much exposure students are receiving on each

300 of the psychological models presented. Thirdly, cognitive and behavioural approaches are
301 arguably the more intensively researched models (e.g., Hofmann, Asnaani, Vonk, Sawyer, &
302 Fang, 2012), which might indicate that the Stage-1 sport psychology students were more
303 inclined to express strong opinions when able to draw upon a substantial evidence base
304 (Dozois et al., 2014; Gardner & Moore, 2006; Winter & Collins, 2015b).

305 Only the biological and humanistic models came close to challenging the cognitive-
306 behavioural status, but in somewhat different ways. For example, the humanistic model
307 received high levels of endorsement for all the issues, refuting the second hypothesis of
308 model endorsement to vary with diagnostic category. An important contribution of the
309 humanistic model is the person-centered and nondirective approach in the therapeutic process
310 (Rogers, 1992). Humanistic therapists aim at promoting personal growth and self-
311 actualisation of their clients (Orlick, 1989; Ravizza, 2002). Through following the client's
312 direction and promoting client responsibility, current goals and creating new meanings in life
313 are explored (Fifer, Henschen, Gould, & Ravizza, 2008; Poczwardowski et al., 2014).
314 However, despite the high levels of participant endorsement, it is worth noting that the
315 humanistic model did not appear until the sixth iteration and then not making a large
316 contribution to the variance (please see table 3).

317 In further contrast to the humanistic model, and supporting our second hypothesis, the
318 biological model received greater endorsement for the 'bio-clinical' issues of depression and
319 eating disorders but not universally across all four issues. The biological model represented
320 in the MAQ by statements such as: "The appropriate study of the issue involves discovery of
321 biological markers and the effects of biological interventions" is similar to Blaney's (1975)
322 medical model in conceptualising mental issues as organic illnesses. As such, mental issue
323 symptoms are manifestations of underlying organic dysfunction; a mentally ill person cannot
324 be held responsible for his/her actions, and diagnosis provides the best way to understand

325 psychiatric symptoms (Reid et al., 2017). Within applied sport psychology, Poczwardowski
326 et al. (2014) discussed how the medical model stresses the importance of psychological
327 intervention to treat various behavioural, emotional, and cognitive maladaptive reactions to
328 the stressors of the training process, athletic performance, and personal life (e.g., depression
329 or eating disorders). The endorsement of the biological model for clinical issues is aligned to
330 the sample of trainee psychiatrists from the original Harland et al. (2009) study, as opposed to
331 the trainee clinical psychologists, for whom psychosocial models were most strongly
332 endorsed (Reid et al., 2017). However, Heyman and Andersen (1998) highlighted how the
333 biological model of practice seemed to lose its dominance in sport psychology to models
334 emphasising, by their philosophical underpinnings, growth and development.

335 In this regard, variation was evident within participants, with all models receiving
336 high levels of endorsement from some individuals. Specifically, an ‘eclectic’ factor, noting
337 the mixed elements of social constructionism, biological, and psychodynamic models was
338 apparent from the Principal Axis Factoring analysis. Due to the nature of this analysis, future
339 researchers would need to explore this further, as different psychological models were
340 blended to form a factor which may not have been aligned or theoretically coherent. Indeed,
341 Poczwardowski et al. (2014) suggest that an eclectic sport psychology practitioner (assuming
342 appropriate credentials) should be viewed as a creative synthesis of a number of perspectives
343 with an underlying coherent and rigorous theoretical logic to it. Practitioners adopting an
344 eclectic approach are therefore flexible and rely on a combination of different theoretical
345 models, methods, and techniques originated in various schools of thought (Young, 1992).
346 Despite receiving criticism from purists representing one psychological model, the
347 counselling and psychotherapy literature has suggested that eclecticism is another legitimate
348 approach for the various practicing psychological domains (Norcross, 1986). This flexible
349 approach has been effectively adopted to address the diverse psychological aspects of athletic

350 performance, the various client needs (i.e., one approach being more suitable for one client
351 than another), and the multitude of diverse contexts that sport psychologists work in (e.g.,
352 Cropley, Miles, Hanton, & Niven, 2007; Sharp, Hodge, & Danish, 2014; Symes, 2014;
353 Winter & Collins, 2016).

354 Finally, it is worth noting the lack of endorsement for spiritual approaches,
355 represented in the MAQ by statements such as: “The issue is better understood through
356 religious or spiritual insights”. There is growing evidence in the sport psychology literature,
357 indicating the relevance of religious and spiritual values for a variety of elite athletes (e.g.,
358 Egli, Fisher, & Gentner, 2014; Sarkar, Hill, & Parker, 2014; Storch, Kolsky, Silvestri, &
359 Storch, 2001; Watson & Nesti, 2005). Nevertheless, the spiritual model stood out both
360 statistically and perceptually as something that was rarely considered; a similar finding to
361 both Harland et al. (2009) and Reid et al. (2017) with their clinical and psychiatric trainees.
362 However, the use of the adapted MAQ in different countries to the UK, may well generate a
363 rather different perspective. For example, a North American sample (APA, AASP) might be
364 expected to return higher scores for the spiritual dimension (e.g., Egli et al., 2014; Storch et
365 al., 2001).

366 All students undertaking a BPS accredited sport psychology Masters’ degree, running
367 within higher education institutions in the UK, were invited to partake in the current study.
368 Primary contact with the programme directors responsible for each of these accredited
369 degrees was essential for recruitment of the intended Stage-1 participants. Unfortunately,
370 some of the programme directors did not respond and thus did not give their students an
371 opportunity to participate. Nevertheless, the resulting sample were representative of the
372 population across the UK, in terms of age, gender, nationalities, and geographical spread of
373 MSc programmes. Use of a questionnaire and the process of informed consent would have

374 minimised procedural bias and concerns about anonymity and confidentiality, but it remains
375 possible that responses did not accurately reflect attitudes.

376 Another potential limitation is that the MAQ and the requirement for formal
377 deliberation on the part of respondents, may capture idealised rather than actual attitudes
378 present in sport psychology situations. Finally, we must repeat the warnings of Reid et al.
379 (2017) that more work is needed to establish the psychometric properties of the MAQ. As
380 with their study, we took several tacit assumptions on the internal validity of the constructs,
381 issues with cross loadings and other elements. Of course, it may be that the differences are
382 more reflective of genuine cross-disciplinary differences rather than issues with the
383 psychometric structure of the MAQ itself. Nonetheless, we would suggest that comparisons
384 across the three professions (psychiatrists, clinical psychologists, and sport practitioners) are
385 taken with caution, albeit that they hold some important practical implications, as stated in
386 the next paragraphs. As important considerations, researchers should endeavour to employ a
387 larger participant pool to ensure that the conditions of the different statistical procedures are
388 met or exceeded. We must acknowledge that our participant numbers are low, even though
389 they (serendipitously) match exactly with the numbers apparent in the originating study by
390 Harland et al. (2009).

391 These concerns notwithstanding, we would suggest that the adapted MAQ could be
392 used as a teaching tool, offering a stimulus for conversations within sport psychology trainee
393 groups (e.g., APA, AASP, APS, BASES, BPS) about the logic underpinning their case
394 conceptualisations (Martindale & Collins, 2010). Future comparative research using the
395 MAQ in samples from different training groups could also provide valuable insights into the
396 influences of different supervisors and educational institutes. The existence of significant
397 effects on the views and practices of trainee practitioners may provide a basis for determining
398 to what extent such differences are justified and/or should be addressed by the training

399 organizations. It may also be interesting to run the MAQ across different nationalities and
400 levels of experienced practitioners to allow informative comparisons to be made, or even at
401 different times, to observe the trends for change in this important underpinning.

402 Overall, the present study presents attitudes of Stage-1 students favouring the
403 cognitive-behavioural approach, with support also for the humanistic, biological, and eclectic
404 models. It is therefore apparent, emerging practitioners in this field are exposed to multiple
405 models that might inform their attitudes concerning both sport psychology and mental health
406 issues. In fact, this use of multiple models *may* place sport practitioners in a middle ground
407 between psychiatrists and clinicians; both disciplines within which the sports psychologist
408 will be increasingly working as the focus on mental health in sport increases (cf. Lebrun &
409 Collins, 2017). In this regard, it is worth reflecting on Read et al.'s comment that "our
410 findings suggest that the attitudes of psychologists and psychiatrists continue to sit at opposite
411 ends of a biological/psychosocial spectrum as was found by Morrison and colleagues in the
412 1970s. This is the case despite the increase in interdisciplinary training and working, the
413 evolution of the professions, and the re-conceptualisation of the medical model" (2017,
414 p.448). Supporting their comments, we hope that these findings will be useful to those
415 involved in the supervised training programmes and the underpinning educational
416 institutions, to inform the development of future sport psychology practitioners and their
417 work with other psychologically focused disciplines.

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423

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424

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