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### Article

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1 **UK Trainee Sport Psychologists' Perspectives on Developing Professional Judgement**  
2 **and Decision-Making Expertise during Training.**

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6

**Abstract**

7 The research team explored UK trainee sport psychologists' perspectives on developing  
8 professional judgment and decision-making (PJDM) expertise during their British  
9 Psychological Society (BPS) Qualification in Sport and Exercise Psychology (QSEP; Stage  
10 2). An assorted analysis approach was adopted to combine an existing longitudinal qualitative  
11 data set with the collection and analysis of a new qualitative data set. Participants (female,  $n$   
12 = 1; and male,  $n = 6$ ) were interviewed 4 times over a 3-year training period, at minimum  
13 yearly intervals. Interviews were transcribed verbatim, and reflexive thematic analysis  
14 applied to transcripts using the theoretical concepts of PJDM. Experience, analytical  
15 reasoning, and observation of other practitioners' practice was useful for developing PJDM  
16 expertise. PJDM expertise might be optimised through the use of knowledge elicitation  
17 principles. For example, supervisors could embed critical cues within the anecdotes they  
18 share to expand the experience base that trainees can draw from when making decisions.

19

**Keywords:** professional training, judgement, decision-making, cognition

20 **UK Trainee Sport Psychologists' Perspectives on Developing Professional Judgement**  
21 **and Decision-making Skills during Training.**

22 Professional judgement and decision-making (PJDM) is an important skill for applied sport  
23 psychology (ASP) practitioners, because decisions made by the practitioner hold an  
24 influential role in the selection, design, and implementation of successful interventions  
25 (Martindale & Collins, 2005, 2010, 2012). For example, when assessing client needs, early  
26 decisions made by a practitioner on the nature of the goal (e.g., working to improve  
27 performance or well-being) will influence the type of relationship that a practitioner will elect  
28 to establish with a client (Martindale & Collins, 2005; Poczwardowski, Sherman, & Ravizza,  
29 2004). Inevitably, these decisions influence how the practitioner applies sport psychology  
30 knowledge.

31 Although early decisions on the needs of the client are fundamental, there is a  
32 requirement within ASP practice for practitioners to continue to be adaptable to the dynamic  
33 and ill-structured environments in which they operate. In other words, ASP is largely a series  
34 of judgments and decisions (Martindale & Collins, 2012), and practitioners are required to  
35 make these judgements and decisions at multiple levels of practice (e.g., programme,  
36 intervention, and session) by responding to the changing needs of a client throughout the  
37 consulting process. For practitioners, professional educators, and supervisors these decision-  
38 making skills, along with the professional adaptability that is required to make them, should  
39 be a clear goal of professional training and development.

40 Previous training and development research in ASP has examined individual trainee  
41 accounts (e.g., McCormick, 2014), supervision (e.g., Andersen, Van Raalte, & Brewer,  
42 1994), reflective practice (e.g., Knowles, Gilbourne, Tomlinson, & Anderson, 2007), and  
43 current learning experiences (e.g., McEwan & Tod, 2015). To understand how trainee sport

44 psychologists (TSPs) develop service-delivery competence (SDC), researchers (e.g., Hutter,  
45 Oldenhof-Veldman, Pijpers, & Oudejans, 2016; McEwan & Tod, 2015; Tod, Marchant, &  
46 Andersen, 2007) have identified the learning experiences that are useful for elements of  
47 professional development. For example, peer mentoring has been identified as an alternative  
48 form of guidance (e.g., in addition to supervision) whereby feedback could be sought on  
49 client cases. Research on TSP professional development continues to be useful for  
50 illuminating the helpful practices that TSPs can engage with throughout the professional  
51 training period. Nevertheless, to advance on these insights, there is scope to examine how  
52 these practices may contribute to the cognitive development of TSPs. For example, if peer  
53 mentoring offers guidance to a TSP, it may be beneficial for professional educators to  
54 understand what role peer guidance might play during the decision-making process (e.g., to  
55 what extent do TSPs draw on this peer guidance during their own client consultations? Do  
56 TSPs understand why it may be appropriate to apply this peer guidance in one client case,  
57 and not another? Does peer guidance help TSPs shape their mental representations of ASP  
58 practice? Or do TSPs rigidly copy and paste this peer guidance into their own repertoire of  
59 practice techniques without a critical and nuanced understanding of its application?).

60         The term macrocognition has been used when referring to the cognitive functions and  
61 processes that characterize how an individual may think in naturalistic settings (e.g., outside a  
62 laboratory setting, where conditions are dynamic; Crandall, Klein, & Hoffman, 2006).  
63 Traditionally, macrocognition research is focused on the study of the cognitive functions and  
64 processes that affect individuals who are faced with difficult scenarios, in time-pressured  
65 situations (e.g., firefighters or nurses; Klein, Calderwood, & Clinton-Cirocco, 2010; Patterson  
66 et al., 2016). The delivery of ASP services also has time-critical features. For example, in  
67 presenting a PJDM case study of a practitioner working with an elite judo player, Martindale  
68 and Collins (2012) demonstrated that although a practitioner will often have time to make

69 decisions analytically during the program and intervention level of practice (e.g., decisions  
70 about the direction of support provided), practitioners will also be required to respond almost  
71 immediately to the changing needs of a client, on a session-by-session level. Although it is  
72 clear the macrocognitive function of decision-making holds a fundamental role in ASP  
73 practice, what remains less clear, is how ASP practitioners develop the cognitive skills  
74 required to make these decisions in ill-structured and time-pressured client situations, along  
75 with the contextual sensitivity to recognize how and when to adapt their ASP knowledge  
76 during the decision-making process (Crandall et al., 2006).

77         To gain understanding of how decision-making expertise is acquired, researchers in  
78 other helping profession domains (e.g., nursing) have drawn comparisons between expert and  
79 novice practitioners. For example, in a review of the perceptual-cognitive skills required to  
80 make effective decisions, Klein and Hoffman (1993) noted that experts can perceive things  
81 that a novice may fail to identify. In other words, there are many things that an expert can  
82 perceive that remain invisible to others (e.g., an expert ASP practitioner may focus on the  
83 non-verbal cues of a client by observing how she interacts with others, whereas a novice  
84 might find this difficult due to inward attention, or dedication to pre-defined routines).  
85 Experience allows the expert to perceive when something is missing or when expectations  
86 have been violated. This cognitive expertise - whereby an individual can notice cues or  
87 recognize patterns, and can make perceptual discriminations - is one of the key cognitive  
88 elements that distinguishes experts from novices (Patterson et al., 2016). Thus, cognitive  
89 skills allow the practitioner to make sense of situations, to plan, to re-plan, and to make rapid  
90 decisions in time-pressured situations.

91         Drawing from empirical findings on expert and novice differences in learning  
92 strategies, Phillips, Klein, and Sieck (2004) present six goals that may be helpful for  
93 developing the cognitive skills required for effective decision-making: (a) enhance perceptual

94 skills (e.g., be able to detect typicality and variability in client cases), (b) enrich mental  
95 models about the domain (e.g., know how their ‘tools’ work and recognize the limitations of  
96 them), (c) construct a large and varied repertoire of patterns (e.g., develop situation  
97 awareness to recognize relevant cues from clients), (d) provide a larger set of routines (e.g., a  
98 range of skills and techniques that can be implemented with clients), (e) provide a larger  
99 experience base of instances (e.g., a range of client experiences from which a TSP may draw  
100 upon), and (f) encourage an attitude of responsibility for one’s own learning (e.g., a desire to  
101 engage in professional development opportunities). Phillips et al. (2004) suggest that a  
102 scenario-based instructional approach that addresses these six goals in training, may be  
103 beneficial for facilitating the development of decision-making expertise within a specific  
104 domain, such as ASP. For example, the use of case studies, where the practitioner is  
105 encouraged to review decisions made and draw lessons learned, might be helpful for  
106 expanding the vicarious experience base and enriching the mental models from which they  
107 may draw. Exploring how ASP practitioners develop the cognitive skills required for  
108 effective decision-making may help to advance knowledge on how effectively current  
109 practice addresses these six goals. The aim of this study, therefore, was explore how TSPs  
110 develop decision-making expertise during their professional training qualification.

111

## Method

### Research Design

112 This study used an assorted analysis approach that combined an existing qualitative data set  
113 (from previous doctoral studies) alongside the collection and analysis of a new qualitative  
114 data set (the first author’s for current doctoral study; see Heaton, 2008 for more detail on  
115 assorted analysis). The existing dataset used in this study was longitudinal, and involved 3  
116 semi-structured interviews, exploring UK trainee sport psychologists’ development during  
117 professional training. The aim of the existing dataset was to explore perceived change and  
118

119 development as a result of learning during professional training. Participants engaged in  
120 semi-structured interviews to explore broad parameters of their development as TSPs, and  
121 discussions around the decision-making process that participants engaged with began to  
122 emerge. The current study aimed to add a ‘new conceptual focus’ (Heaton, 2008), by re-  
123 examining the existing dataset to distil new reflections on PJDM development. Through  
124 informal data sharing, the existing data set described above was made available by the second  
125 author and will now be referred to as data set A. For clarity, the steps associated with the  
126 assorted analysis approach used in this study are illustrated in Figure 1.

### 127 **Participants**

128         Following university ethical approval, all 11 UK trainee sport psychologist  
129 participants from data set A were contacted in relation to the re-analysis of their interview  
130 data for the new research objectives. Participants were informed of the purpose, risks and  
131 safeguards of this study. Seven (female,  $n = 1$ ; and male,  $n = 6$ ) of the 11 participants granted  
132 permission for their data to be re-analysed, and agreed to a follow-up interview with the  
133 principal author. Four of the 11 participants did not respond. All participants were enrolled on  
134 the British Psychological Society Qualification in Sport and Exercise Psychology (QSEP;  
135 Stage 2) at the time of the collection of data set A, and were either awaiting qualification or  
136 were eligible for registration as a Sport and Exercise Psychologist, recognised by the Health  
137 and Care Professions Council (HCPC) at the time of the follow-up interview.

### 138 **Procedures**

139         To be grounded in the context of training and development within the domain, the  
140 principal author became a member of the national training and development network for sport  
141 psychologists. Initially, this provided her with opportunities to listen to the training and  
142 development experiences of professional educators, supervisors, qualified practitioners, and



143 trainees. Exposure to this environment provided the building blocks for the principal author  
144 to familiarise herself with the vocabulary used by participants. The principal author was able  
145 to build relationships with the participants through informal discussions about their training  
146 experiences. Building rapport with the participants prior to the follow-up interview helped  
147 create researcher-participant familiarity and led to a richer discussion at the time of the  
148 follow-up interview.

149         After the analysis of data set A (described below) and before the follow-up interview,  
150 the principal author captured the training journey described in data set A for each participant  
151 by providing a written overview of our interpretation of their transcripts. This overview was  
152 sent to each participant to facilitate reflexive elaboration (Sparkes & Smith, 2014). Although  
153 none of the participants elaborated or added to what they had shared at previous interviews,  
154 the overview did create a discussion point for the start of each follow-up conversation.

155         **Interview guide.** The follow-up semi-structured interview guide was developed to  
156 explore areas of training specific to the development of practitioner PJDM expertise. For  
157 example, to understand how participants began to recognise a typical course of action, they  
158 were asked to “*tell us about a significant experience that influenced a future client session.*”  
159 The interview guide was designed based on the PJDM literature and themes that were  
160 developed from data set A. For example, participants from data set A referred to their  
161 supervisor on multiple occasions when they discussed how and why they worked with clients  
162 in particular ways. To ensure the research team understood the influence of the supervisor on  
163 the development of practitioner PJDM expertise, participants were asked to “*tell us about the*  
164 *process of supervision during training.*” To probe further, participants were asked to  
165 “*describe a typical supervision meeting providing examples.*” The principal author piloted the  
166 interview guide with the second author and a UK TSP. Interviews were conducted at the

167 participants' convenience via Skype, telephone, or face-to-face. The interview guide is  
168 available from the principal author on request.

### 169 **Data Analysis**

170       Following the guidelines offered by Braun, Clarke, and Weate (2016), a reflexive  
171 thematic analysis (TA) was performed on data set A and B (generated from the follow-up  
172 interview) using a PJDM framework while drawing on the principles of abductive reasoning  
173 (e.g., while the principal author initially looked for evidence of development towards the six  
174 goals in training, she also made note of anything outside of the PJDM framework). TA  
175 allowed the principal author to search for patterns and develop themes which provided  
176 congruence with the aim of the study. The PJDM framework was initially designed based on  
177 the 6 goals of expertise offered by Phillips et al. (2004) and focused on how participants (1)  
178 enhanced their perceptual-cognitive skills, (2) enriched their mental models, (3) developed  
179 their repertoire of patterns, (4) developed a larger set of routines, (5) enhanced the  
180 meaningful experience base available to them, and (6) took responsibility for their own  
181 learning. The TA aimed to capture the ways in which participants might work towards  
182 achieving these goals in current training practice. For example, in data set A, participants  
183 recalled how they had begun to recognise how to help the client. To understand how  
184 participants developed perceptual-cognitive skills, the research team searched for training  
185 practices and processes that helped TSPs to recognise practice situations as typical and  
186 atypical.

187       All 28 transcripts (from dataset A & B combined) were transcribed verbatim, and read  
188 and re-read while listening to the audio recordings to check for accuracy. During data  
189 immersion, on-going discussions with the second author (who completed the semi-structured  
190 interviews in data set A) provided an opportunity to recover the contextual features from data

191 set A that were not directly available to the principal author. These talks also provided an  
192 opportunity to glean insight into the rapport the second author and the participants had  
193 created during the collection of data set A (Szabo & Strang, 1997). Understanding the  
194 relationships between the second author and the participants helped the principal author to  
195 build on that rapport by referring to previous examples at each of the follow-up interviews.  
196 Initial codes were developed to represent aspects of the data relating to the development of  
197 PJDM expertise. For example, whenever a participant referred to '*understanding how a*  
198 *consultation had developed into its current state*' the code '*seeing consequences*' was  
199 allocated. A thematic map was created to assign each code to potential themes within the data  
200 sets. Themes and sub-themes were defined to capture the essence of what each theme  
201 represented in relation to the development of PJDM expertise. For example, the theme  
202 '*learning and integrating new ideas*' was defined as how participants developed techniques  
203 that could be integrated into their own practice.

#### 204 **Research Credibility**

205         Guided by the work of Sparkes and Smith (2014), several principles were identified to  
206 assist research credibility. The research team aimed to: (a) ensure we understood the training  
207 journey of each participant, (b) demonstrate to each participant that we cared about them, (c)  
208 uncover the perspectives we brought to the study, (d) capture participants' perspectives on the  
209 development of their PJDM expertise, (e) provide accounts of PJDM training practice that  
210 would advance knowledge, and (f) provide information that is useful for practitioners and  
211 professional educators. Based on these guiding principles, and from a relativist position (see  
212 Smith & McGannon, 2018), rich rigour, credibility, sincerity, resonance, and significant  
213 contribution were built into our research steps. To ensure we adhered to these principles we:  
214 (a) created a data set that followed participants throughout their training journey; (b) built  
215 trust and rapport with each participant; (c) immersed ourselves in the participants' training

216 environment; (d) employed principles of triangulation including analyst triangulation,  
217 member reflections, and audience review; (e) used *critical friends* to encourage self-  
218 reflexivity; (f) presented and discussed our findings within the field with other TSPs,  
219 qualified practitioners, supervisors, and professional educators; and (g) provided implications  
220 for TSP learning during training.

## 221 **Analysis and Discussion**

222 To illuminate that data analysis and interpretation took place in unison, the analysis  
223 and discussion are presented together, and this is congruent with how participants expressed  
224 their development towards the six goals proposed by Phillips et al. (2004); e.g., as  
225 participants gained experience, aspects from each of these goals developed at once leaving  
226 them difficult to separate. As a result of the TA, two themes and five sub-themes were  
227 developed and are supported by participant quotations. In presenting this information, we  
228 identified how the findings relate to and may extend understanding of how TSPs currently  
229 develop decision-making expertise during training.

### 230 **Theme 1: Creating a Case Library from which to Draw**

231 When participants described the initial development of PJDM skills, it stemmed from  
232 previous client experience. From each consultation, participants described a desire to  
233 understand why the client session had evolved in the way that it had. For example,  
234 “it’s...good to get an evaluation of the session, so what went well, why did it go well, what  
235 was it that I did that made it go so well...things that I need to remember...so you can use it  
236 again essentially” (TSP1). Participants suggested they wanted to learn from their experience  
237 to feed-forward to forthcoming client sessions, and previous experiences soon became the  
238 initial reference point for future decisions.

239           The role of practical experience in the quest for the development of expertise has been  
240 well researched over the years (e.g., Bjork, 2009; Davis, 2009; Ericsson, Krampe, & Tesch-  
241 Römer, 1993) and at times, has been identified as a means to achieving expert performance  
242 levels. Nevertheless, Klein and Hoffman (1993) and Ericsson et al. (1993) both suggest that  
243 direct experience alone, is insufficient. Instead, it is the opportunity to *learn* from experience,  
244 along with the degree of engagement with the task at hand, combined with the opportunity to  
245 be continually challenged that stimulates growth. This view is supported by TSP8 who  
246 described the benefit of reflecting on practice,

247           “I tend to go in [to a consultation] and react to situations. You do the  
248 reflections...pull apart the sessions...say what worked and didn’t work, why did I do  
249 that...where did it come from? ... It’s the reflection afterwards...when you unpick,  
250 that helps you understand.”

251           Participants recognised that examining previous experience provided them with an  
252 opportunity to draw upon their experience with clients when deciding on how to move  
253 forward with new situations. This finding offers support to the claims by Cropley, Miles,  
254 Hanton, and Niven (2007) that reflecting on previous client experience can generate  
255 knowledge and self-awareness, and facilitated practitioner decision-making on how to  
256 improve future behaviour. Similar to the findings of McEwan and Tod (2015), participants in  
257 this study reported reflecting with their supervisors, with other practitioners (e.g., other  
258 TSPs), and individually (e.g., on their own without others) after client consultations.

259           Learning from experience, such as in the example above, has been increasingly linked  
260 to the development of perceptual-cognitive skills in a range of professions including medicine  
261 (e.g., Schubert, Denmark, Crandall, Grome, & Pappas, 2013), firefighting (e.g., Klein et al.,  
262 2010), and the military (e.g., Ross, Klein, Thunholm, Schmitt, & Baxter, 2004). Being able to

263 perceive and recognise what is important to derive from one situation to another has been  
264 identified as a significant step in the decision-making process. For example, Klein and  
265 Hoffman (1993) suggest that as perceptual-cognitive skills develop, we can expect an  
266 individual to begin to judge the typicality of a situation (e.g., a practitioner seeing what goals  
267 are feasible when deciding on how to proceed with a client), to see distinctions (e.g., a  
268 practitioner learning to discriminate between complex client issues), and to see antecedents  
269 and consequences (e.g., a practitioner visualising how a client situation has evolved into its  
270 current state, and how it may continue to develop).

271 **Analytical reasoning.** For participants in this study, examining previous experience  
272 was a means to engage in deliberate analytical reasoning, a process whereby practitioners  
273 participate in structured, systematic contemplation of practice features, and how they relate to  
274 judgement of client cases (Patterson et al., 2016). TSP2 exemplified this process,

275 “I’ll have the consultations...and I’ll...start to write reflections of ...the  
276 situation...what I thought went really well and maybe...action planning for next  
277 time...At that point I might keep my reflections pretty brief...and then I’ll come back  
278 to them... I’ll start...an afternoon of research ...to find something out...like... ' how  
279 can I add to this' ...it could be an answer that I’m looking for... That then starts a  
280 process of me going out there and doing a bit of research, ...and reading some books.”

281 Until recently, little was understood about the nature of the environment in which an  
282 ASP practitioner is required to make decisions. Nevertheless, in establishing theoretical  
283 understanding on the development of PJDM expertise within ASP, Martindale and Collins  
284 (2013) offered new insights on why the development of analytical reasoning may be of  
285 benefit to the decision-making process in which an applied practitioner will engage. For  
286 example, in the presentation of a PJDM case study of a practitioner working with an elite

287 judo athlete, Martindale and Collins (2012) highlighted the influence of practitioner PJDM at  
288 multiple levels of practice including programme (e.g., anticipating how the theoretical  
289 orientation will fit with the overall program of support), intervention (e.g., considering how  
290 the direction of support will fit the design of the specific intervention) and session level  
291 (responding to emerging moment-to-moment issues within a session). The authors  
292 emphasized the role of analytical reasoning in both the programme and intervention level of  
293 practice, where the practitioner had a considerable amount of time available to engage in the  
294 decision-making process.

295         The development of analytical reasoning in the present study was facilitated through  
296 the examination of previous experience (See Huntley, Cropley, Gilbourne, Sparkes, &  
297 Knowles, 2014 for a review of reflective practice in sport), by consulting contemporary  
298 literature, or engaging in discussion with peers or supervisors. For example, TSP1 noted the  
299 benefit of discussing upcoming client sessions with a professional practice group, “[It’s]  
300 really useful and that tends to be more for the trainees so ‘I’ve got this [client session]  
301 upcoming and what is everyone’s ideas and opinions?’ ” Engaging in analytical reasoning  
302 during training provided participants with an opportunity to consider different options that  
303 could be applied to client cases, while evaluating an alternative course of action (from what  
304 they had originally planned), individually or with peers and supervisors. Training, as  
305 illustrated by the examples provided above, where the action is slow and allows participants  
306 time to process information, may be of benefit for developing the analytical aspect of  
307 reasoning that is necessary in ASP decision-making (Martindale & Collins, 2013).

308         **Situation awareness.** Experience slowly became a catalyst for participants to  
309 recognise client situations. For example, TSP7 reflected on how he had developed with more  
310 experience,

311 “I’ve probably got a better sense of the decision making actually. I’ve got a better  
312 sense of...if I do action X now, then Y results, and I’ve got a better sense of well that  
313 will also result in Z and I don’t want Z, I’d rather have W so what I’ll do is this.”

314 By drawing on previous client experience, participants could recognise similar  
315 situations to help them identify a typical course of action that could be used with a client.  
316 According to Klein and Hoffman (1993), developing a sense of typicality, as in the example  
317 described above, can help an individual to better identify what information is important to  
318 derive from a situation. Participants were essentially *pattern matching* against what they had  
319 already seen or done. Being able to see patterns provides an individual with an opportunity to  
320 develop situation awareness, helping them to recognise relevant cues within the environment  
321 (Klein, 2017). This awareness can help facilitate practitioners in using the macrocognitive  
322 process of mental simulation that supports the primary functions of decision-making, sense-  
323 making, and problem detection (Crandall et al., 2006). Mental simulation requires the  
324 practitioner to enact a series of events, and assess them as they lead to possible outcomes  
325 while anticipating difficulties (Klein, Moon, & Hoffman, 2006). For example, the participant  
326 quotation above is exemplifying a variation of the recognition-primed decision model,  
327 presented by Klein (2017). Here, the participant is evaluating option ‘X’ by imagining how  
328 this course of action may play out with the client (e.g., ‘Y’ and possibly ‘Z’). The participant  
329 anticipates problems with option ‘X’, and rejects this in favour of option ‘W’ as the  
330 anticipated end result. Being able to mentally simulate a course of action is derived from  
331 extensive experience where mental models are formed to develop cognitive frameworks that  
332 are *immediately* available to give meaning and structure to familiar situations (Hoffman et al.,  
333 2014).

334 While mental simulation is commonly associated with making decisions at speed  
335 (Klein & Crandall, 1995), participants in this study continued to develop and engage in this



336 macrocognitive process in an analytical manner. For example, TSP8 reflected on his  
337 approach to decision-making,

338 “...I’d...do the reading on it [client situation] and chat to other colleagues and peers  
339 that I’ve got... maybe even look back at other stuff that I’ve done before and see if  
340 there was any similarities or maybe another athlete has shown something similar...-  
341 So how did that help them? And then decide the best way to move forward with that.”

342 Although analytical reasoning may be useful for making judgements and decisions at  
343 the programme or intervention stage of practice, it might not fully prepare a practitioner with  
344 the skills required to make effective decisions at a session level where the practitioner is  
345 expected to respond at speed, intuitively.

346 **Vicarious experience.** Participants also referred to the experiences of other  
347 practitioners as a source they could draw upon when making decisions. This experience  
348 included reading, observing, and listening to the client experiences of others. For example,  
349 when referring to a discussion with another practitioner, TSP7 noted,

350 “Now that I reflect on it, a lot of listening to other psychs [psychologists]; it’s  
351 storytelling, and hearing their stories...Maybe the massively experienced psych of 40  
352 years has...got a lot of stories, cause they’ve seen a lot of stuff...I think that’s very  
353 valuable for trainees to hear those stories.”

354 When asked what he found useful about this experience, TSP7 continued:

355 I guess a part of it is hearing what the approach was, how did they go about it? ...how  
356 did it [the presenting issue] come to be there in the first place? ...but also...what  
357 approach did you use? ...What did the client do? How did they respond? And  
358 it’s...like you get 20 sessions condensed into 2 minutes versus, you had to sit there for  
359 6 months...So you...get that compression of knowledge.

360           The merits of sharing experienced practitioners' accounts of practice with trainee  
361 practitioners has been well-documented in other domains such as the military (Klein, Hintze,  
362 & Saab, 2013), healthcare (Geis et al., 2018), and firefighting (Hintze, 2008). Often, when the  
363 shared experience is vivid enough, it can add to the experience base that a practitioner may  
364 draw upon when making decisions. For example, using principles of cognitive task analysis  
365 (see Crandall et al., 2006 for a review), Hintze (2008) developed scenario-based training to  
366 allow novice firefighters to experience the situations through the eyes of expert firefighters.  
367 Hintze (2008) found that scenario-based training, where expert feedback was made available,  
368 was helpful for expanding the experience base of novice firefighters, with improvements in  
369 situation awareness and decision-making skills.

370           The sharing of experience was evident throughout participants' training, and was used  
371 during supervision, peer discussions, and networking events. Although identified as a helpful  
372 experience that often stimulated the microcognitive process of storybuilding (Crandall et al.,  
373 2006), participants noted it could be unhelpful at times too. For example, TSP10 claimed,

374           “He's [his supervisor] brilliant but he'll go off on a tangent. Sometimes the meetings  
375 can end up talking about one of his clients. Now he's doing it in a sense that I'll share  
376 my experience and how I'm thinking about it, but sometimes...I don't know what the  
377 point is here.”

378           Participants claimed at times they failed to understand the importance of the  
379 experienced being shared, missing the critical cues they might learn from, and subsequently,  
380 were confused by the point of the scenario. For example, TSP7 described storybuilding  
381 during supervision:

382           “The [supervision] sessions were so informal but I guess those stories are...a constant.  
383 You're always gonna get stories both ways [from supervisor and trainee] but it's how

384           they tell that story that will often cause a reaction...your tone of voice just changed,  
385           and sometimes that can be all you need to see something is important here.”

386           Although confusing, on occasion participants could pinpoint important cues within the  
387 scenario by how it was told (e.g., a change in tone). Although this strategy might be helpful  
388 for alerting the practitioner to ‘something’ important, unless the practitioner can understand  
389 and make sense of the situation, then the sharing of experience during training may not be  
390 sufficient to act as a vicarious experience where the practitioner can use the presenting  
391 information in an effective way in future client sessions (Klein, 2017).

## 392 **Theme 2: Developing a Repertoire of Techniques**

393           As participants developed mental models of how psychological skills and techniques  
394 were supposed to work in practice, they began to shape their role as sport psychologists, and  
395 practice was often changed to reflect these developments. For example, TSP4 reflected on  
396 how he practiced in year 1 of training: “I was so focused on getting through those questions  
397 [from a book] that I wasn’t listening properly, I was taking them [the client] to  
398 places...they...had no interest in going. I was forcing them in directions...” When asked  
399 how he practiced now, TSP4 responded: “It’s client-centred...I’m quite passionate about  
400 getting...to that root cause.” Participants agreed that in the early stages of training, they were  
401 more likely to apply and stick to a ‘recipe-like’ approach – lifting guidelines for practice from  
402 a book, and applying each step in a structured manner. This finding reflects the work of Tod,  
403 Andersen, and Marchant (2009) who found that TSPs adopt an external and rigid orientation  
404 within their role during training. This practice approach may be a direct result of the  
405 professional pressures initially placed upon the trainee practitioner to demonstrate  
406 competency in areas outlined by professional bodies, and may help to explain why

407 participants were reluctant to deviate from their initial plan and the decisions embedded  
408 within it, in the early stages of training.

409 As participants progressed through training, the accumulation of a range of  
410 experiences played a role in the development of practice models, and how skills and  
411 techniques embedded within practice could be used with clients. Participants frequently noted  
412 a change in their understanding of ‘how things worked’ and began to make changes. For  
413 example, TSP5 reflected on how his understanding of listening skills was beginning to  
414 change:

415 “I’m thinking...I’ve got to listen - not just hearing what they’re saying but focusing  
416 on what they are saying...I’ve found myself thinking what question am I going to ask  
417 now and how does it fit in with my approach...before I’ve really finished listening to  
418 what they are saying.”

419 Participants agreed that their understanding of ‘how things worked’ developed  
420 through learning from their own experience with clients, and by listening to or reading about  
421 the experiences of others. For example, TSP5 described the changes he was making to his  
422 practice: “I’ve read a book on counselling skills...learning about active listening, learning  
423 about paraphrasing, summarising. But of course it’s not just a series of techniques, it’s more  
424 the attitudes they reflect...” This cognitive representation of ‘how things work’ is often  
425 referred to as a mental model - an internal representation of the external world. In cognitive  
426 science, these mental representations are a focus of how individuals understand systems  
427 (Rouse & Morris, 1986). They allow the decision-maker to describe, explain, and predict the  
428 purpose, form and function of practice skills and techniques. For example, as a mental model  
429 of ‘listening to the client’ develops, we can expect a practitioner to be able to describe the  
430 purpose and form of listening (i.e., why listening skills exist, and what they look like in

431 practice), explain the function and state of listening skills (i.e., how listening to the client  
432 works, and what this will achieve with a client), and predict the state of listening (i.e.,  
433 foreseeing how this may influence the client session). In developing mental models of their  
434 domain, participants began to create a set of skills and techniques they could draw upon when  
435 working with clients.

436 **Learning and elaborating on new ideas.** Being exposed to skills, techniques, and  
437 approaches used by other practitioners was identified by participants as an opportunity to  
438 borrow and adapt ideas for their own practice. For example, TSP7 noted;

439 “I steal stuff...I stole one [an ice-breaker] from an Institute psych[ologist] that I use all  
440 the time. It’s great but I met up with another trainee...a few months ago, and he said,  
441 ‘oh I always do this’ - ...he was talking about decision-making under pressure, he’s  
442 got this little game he plays and I was like oh that’s brilliant.”

443 Participants often used skills and techniques that had worked for other practitioners  
444 and adapted them in a similar context within their own practice. This shows similarities to  
445 earlier discussions on situations becoming familiar, in that participants may be developing an  
446 ability to recognise client situations as either typical or atypical, and draw upon the action  
447 they have associated with this situation (Klein, 2017).

448 Although limited during the training period, formal observation (i.e., one-to-one  
449 organised observation) was a training practice that prompted participants to think about *why*  
450 and *how* they could begin to adapt their own practice. For example, when discussing  
451 observation, TSP1 noted,

452 “...one observation that I did of someone delivering a one-to-one...she was very  
453 comfortable with silence and didn’t...feel the need to jump in...and say something,  
454 and...what often happened was she'd long that silence out, and the athlete would break

455 it...cause he just had some time to think. I remember taking that from that session and  
456 thinking...that's something that I need to become more comfortable with - riding out  
457 the silence and giving the athlete time to think... There were loads of strategies,  
458 techniques that you pick up and just seeing it...reinforced that it might be something  
459 that I want to consider in my practice.”

460 Participants believed that formal observation made them think about their own  
461 practice, and how they could develop it to become better practitioners. Examining experience  
462 post-observation continued to provide participants with an opportunity to challenge their  
463 thinking about why things worked for others, before implementing change in their own  
464 practice. Modelling of performance, as in the example above, has been increasingly linked to  
465 the development of perceptual-cognitive skills when observation acts as a prompt for learning  
466 to occur (Klein & Hoffman, 1993). Despite what has been learnt from social psychologists  
467 (i.e., people learn from watching the behaviour of others), formal observation opportunities  
468 within ASP training were limited.

469 **Have I become my supervisor?** As participants reflected on how they developed  
470 their practice, it became apparent that informal observation had also played a role. For  
471 example, TSP7 noted:

472 “...I think questioning skills - I think that’s one thing [from a supervision meeting]  
473 I’ve always picked up informally from [my supervisor], the other thing is...listening  
474 skills...I picked up quite a lot of that from him informally...Looking for entry points  
475 and listening and reflecting back. These are basic day one skills and just observing  
476 how well he does that, you’re like ‘right ok I’ve got a long way to go.’ ”

477 Participants commented that they had integrated various skills and techniques from  
478 supervision, and now adopted a similar approach to practice when deciding on how to work  
479 with clients.

480 For example, TSP10 explained, “I feel through reflection that I... just embodied [his  
481 supervisor], and his attitudes, and styles and mannerisms, not mannerisms per se but the way  
482 he speaks, and his ideas and that makes me cringe.” Participants in this study, who all had the  
483 same philosophical perspective as their supervisor, agreed that supervisors were helping in a  
484 similar way in which we would expect them to work with clients. This finding offers support  
485 to the ethical concerns outlined by Castillo (2014) in that models of supervision tend to  
486 mirror models of therapy. Castillo outlines various other concerns with the supervisory-  
487 trainee relationship including transference. Similar to Van Raalte and Andersen (2000),  
488 Castillo suggests that due to the power and knowledge differential inherent in the supervisory  
489 relationship, it is entirely possible that a trainee practitioner may begin to mimic a past  
490 significant relationship (e.g., parent or coach). This transference could lead the trainee  
491 practitioner to relate to his or her supervisor with the aim of gaining approval or recognition.

492 Findings from this study may offer support to these claims by Castillo as TSP10  
493 reflected on why he adopted a similar approach to his supervisor: “So I never felt I had to, it  
494 was just...what age was I? 22 - quite impressionable, still am... It’s easy then to take on the  
495 beliefs of someone, I suppose in a sense you admired because of their different approach.” In  
496 the early stages of training, TSPs professional identities may reflect those of their  
497 supervisors. With critical reflection on their own values and worldviews, TSPs might begin to  
498 develop their own approach to practice (Tod, Hutter, & Eubank, 2017).

499 The idea that supervisors hold a significant role in the development of practice  
500 models, and subsequently, philosophies of practice, echoes research findings on supervision

501 in sport psychology and teacher training (e.g., Van Raalte & Andersen, 2000; Walkington,  
502 2005). For example, in a study where teacher supervisors were encouraged to think about  
503 how the values and beliefs of trainee teachers influenced the dynamics of learning to teach,  
504 Walkington (2005) emphasized the role supervisors hold in the development of a philosophy  
505 of practice, and suggested that supervisors must continually encourage trainee practitioners to  
506 challenge their experiences and beliefs. Without the opportunity to do this, trainee  
507 practitioners will simply maintain the beliefs and behaviours of the supervisor. Findings from  
508 this study may offer support to the claims by Walkington. For example, while reflecting on  
509 the development of his professional philosophy, TSP10 noted that although he was always  
510 encouraged to do his own reading and generate his own ideas for practice, he commented that  
511 his supervisor still held an influencing role:

512        “So massive influence on it [his philosophy of practice]...when I look back to make it  
513        more specific to my own experience [of training]...I’m like, where am I developing  
514        though? [his supervisor], (1), you’re not giving me anything else to read, and (2), I  
515        shouldn’t be expecting you to do that anyway because if you do give me anything it’s  
516        all influenced by existential approaches. It’s almost like, I just want something else.  
517        Something different.”

518 TSP10 continued to reflect on his approach to training and practice:

519        “I don’t know if you’ve came across Brene Brown on Vulnerability? ...I find it a  
520        fascinating area, but for me I’m always looking at it from an existential perspective...  
521        So it’s kind of annoying because Brene Brown didn’t write it in that context so why  
522        am I then looking at it like that?”

523 These findings support Hutter (2014), who outlined ethical concerns for novice supervisors  
524 on whether they were examining their own work when monitoring trainee progress. For



525 example, Hutter noted that the supervisor will advise and guide TSPs in their work with  
526 clients. TSPs then absorb the supervisor's input, and (at least parts of) the input is worked  
527 into their own practice. Thus, a case can be made for the influence that supervisors have on  
528 TSPs in relation to professional behaviour. Although TSPs may find this imitation helpful in  
529 the early stages of training where they strive to demonstrate competence, TSPs may fall short  
530 when forced to make decisions in atypical client situations. In short, unless TSPs understand  
531 the rationale behind their behaviour, ASP as a profession is in danger of producing  
532 practitioners who know how to fit the context, but lack the skills and confidence required to  
533 make effective decisions in new or unfamiliar situations.

#### 534 **Applied Implications**

535 The current study has contributed to the literature on sport psychology training by providing  
536 empirical data on UK TSPs' perspectives on developing decision-making expertise during  
537 training. Findings indicate that opportunities exist to accelerate development of these  
538 cognitive skills (e.g., ensuring that TSPs have a critical and nuanced understanding of why  
539 skills and techniques were appropriate for application in one client case, and not another).

540 The current findings give rise to several applied implications. First, a recurrent finding  
541 in the study was the development of analytical reasoning to inform decision-making. TSPs  
542 frequently created practice opportunities that provided time to process information by  
543 examining previous experience, by consulting contemporary literature, and through  
544 discussions with peers and supervisors. For example, TSPs drew upon their previous  
545 experience with clients to look for similarities across client cases while searching for  
546 direction on how to move forward when selecting appropriate interventions for new client  
547 situations. TSPs also noted value in discussing client situations with peers where they could  
548 collaboratively explore and identify ways to move forward in future client situations.

549           Although this practice is helpful for making decisions at the programme or  
550 intervention level of practice (Martindale & Collins, 2013), it may not fully prepare TSPs to  
551 make decisions at a session level where the practitioner must respond to the changing needs  
552 of a client, at speed. When a practitioner can see consequences at speed, it becomes a source  
553 of power (Klein, 2017). In the expertise literature, this source of power is often in the form of  
554 a mental simulation, allowing the practitioner to explain cues and information they have  
555 received to interpret and diagnose a situation at speed (Klein, 2017; Klein & Hoffman, 1993).  
556 Given that ASP practitioners are required to think both analytically and intuitively when  
557 applying sport psychology knowledge (Martindale & Collins, 2013), and with findings from  
558 this study suggesting that TSPs are more attentive to developing analytical reasoning, it may  
559 be beneficial for professional educators and supervisors to introduce training practices that  
560 require the TSP to apply mental simulation (e.g., in role-play) to a client situation where they  
561 can respond to the anticipated end states, at speed.

562           Tod et al. (2007) have documented the value in gaining service-delivery experience  
563 via role-plays. Role-plays were useful for practicing how to manage specific situations that  
564 may arise with clients, while drawing on past experiences, as practitioners performed within a  
565 replicated client experience. Building on the work of Tod et al. role-play practice that  
566 prompts TSPs to use mental simulation (e.g., to enact a series of events) where they pattern  
567 match from previous experience may be useful for fuelling the development of the intuitive  
568 type of thinking required in ASP decision-making. The model of mental simulation proposed  
569 by Klein (2017) can guide this practice. Applying mental simulation during role-play would  
570 require the TSP to first identify the need (e.g., to explain the past, or project the future of a  
571 client situation). The TSP would then develop a 6-phase action sequence (e.g., the set of  
572 transitions that make up the simulation), before evaluating the sequence for coherence (e.g.,  
573 does it make sense?), applicability (e.g., will the TSP get what they need?), and completeness

574 (e.g., does it include enough detail?). The sequence is then run to form an explanation, model,  
575 or projection. If the TSP experiences difficulties with the internal evaluation, the TSP may re-  
576 examine the need, and/or reconstruct the sequence before trying again.

577         Role-play with mental simulation could also *strengthen* the development of intuition.  
578 For example, in clinical and counselling psychology, role-plays were identified as useful for  
579 developing service-delivery knowledge through peer, actor, and supervisor feedback  
580 (McEwan & Tod, 2015). Although Tod et al. (2007) reported that students felt uncomfortable  
581 and fearful of their behaviour being identified as right or wrong during role-play, engaging in  
582 critical discussions on decisions made during mental simulation might help to strengthen the  
583 experience base that TSPs can draw from in future consultations. Pitt et al. (2015) have also  
584 outlined the benefits of immediate, real-time feedback for TSPs who work in consultancy  
585 teams, including opportunities to draw upon a greater depth of experience when interpreting  
586 client situations, and to enhance TSP expertise in consultancy settings. Martindale and  
587 Collins (2013) noted that opportunities to engage in pro-longed practice in combination with  
588 real-time feedback is considered one of the conditions for the development of skilled intuition  
589 in ASP. For example, if a TSP applies sport psychology knowledge that is less helpful for a  
590 client, and remains unaware of this, it is likely that the TSP will reproduce this behaviour  
591 from memory, creating a faulty intuition. The introduction of training practice that also  
592 allows for real-time feedback, may create an opportunity to refocus aspects of training on  
593 *why* we do the things that we do, creating more meaningful learning experiences for the TSP  
594 (Martindale & Collins, 2010). This blended approach may be useful for fuelling development  
595 of both the analytical and intuitive thinking that is a requirement of ASP decision-making.

596         Findings also indicated ways in which the experiences of other practitioners (e.g.,  
597 supervisors) could be optimised for use in sport psychology training. TSPs emphasised  
598 drawing upon the experiences of others when deciding how to move forward during

599 consultations, and when to develop and refine their practice models. Although the sharing of  
600 scenarios from supervisor to trainee has been identified as a means to pattern match from  
601 case-to-case in other domains (Patterson et al., 2016), trainees must first understand the  
602 scenario being staged to use the presenting information in a meaningful way in future client  
603 cases (Crandall et al., 2006). For example, TSPs in this study reported missing critical cues  
604 they might learn from within a scenario (e.g., supervisor's shared experience), and at times  
605 were left confused. Nevertheless, TSPs noted that on occasion, even if they failed to  
606 understand, they could still pinpoint important parts of the story by a change in tone.  
607 Although this shared experience might be helpful in the short term, unless TSPs can make  
608 sense of the scenario being presented, and the decision-making process embedded within it  
609 (e.g., what information was considered during decision-making?), it is unlikely to be helpful  
610 in applied situations in the future (Klein, 2017). In other words, it would be naïve to assume  
611 that TSPs could borrow and apply the work of other practitioners with the same effect, unless  
612 they understand the rationale for the application (i.e., why do they do the things that they do?;  
613 Martindale & Collins, 2010). One way that TSPs may gain access to this rationale, is to elicit  
614 the decision-making knowledge used by domain experts (e.g., ASP supervisors) via cognitive  
615 apprenticeship.

616       Cognitive apprenticeship is a model of training that helps to make thinking visible by  
617 illuminating the cognitive strategies used to make decisions (Collins, Brown, & Holum,  
618 1991). In contrast to traditional apprenticeship models, where the expert (e.g., the supervisor)  
619 shows the trainee how to complete a task, cognitive apprenticeship provides a platform to  
620 elicit how the expert thinks, what they are paying attention to, how they structure  
621 information, and the strategies they are using to make decisions or detect problems (Crandall  
622 & Gamblian, 1991). These knowledge elicitation principles have been applied in various  
623 domains, and in various forms, to capture and disseminate the tacit knowledge used during

624 expert decision-making. For example, Crandall and Gamblian (1991) used the critical  
625 decision method (CDM) to capture and communicate the perceptual skills needed by nurses  
626 who were new to a neonatal ward. Patterson et al. (2016) also used the CDM to develop  
627 simulation-based training that would facilitate the acquisition of expertise in the early  
628 recognition of sepsis. Using applied cognitive task analysis (ACTA), Martindale, Collins, and  
629 Morton (2017) ‘made thinking visible’ by capturing the decision-making thought processes  
630 of expert crime scene examiners, while highlighting the cognitive demands placed upon these  
631 practitioners when working in an ill-defined domain. In these studies, the tacit knowledge  
632 required for expert decision-making was extracted and used to develop training material to  
633 bring new practitioners up to speed. In ASP, ACTA could be applied to maximise the use of  
634 shared experience between the supervisor and their TSPs. ACTA consists of three interview  
635 techniques with the expert (e.g., the supervisor) to extract the cognitive demands of the  
636 experience they are sharing (Militello & Hutton, 1998). The final step in ACTA is to produce  
637 a cognitive demands table to consolidate the data collected during each interview technique.  
638 This data could then be used to create training scenarios for TSPs where they can compare  
639 their thinking (e.g., cues, projections, and anomalies) in simulated client cases, to that of the  
640 expert.

641 Findings from the current study offer support to Martindale and Collins (2010)  
642 suggestion that there are several benefits to exploring the metacognition behind expert  
643 decision-making including uncovering another layer of understanding when disseminating  
644 knowledge to the TSP. For example, instead of only explaining what the supervisor did, it  
645 may be helpful for the trainee to hear *why* they recognised cues as relevant to that client  
646 situation, what they anticipated would happen, or why some goals were more feasible than  
647 others (Klein & Hoffman, 1993). Exposure to this type of information during training could  
648 encourage a step away from traditional procedural training approaches (e.g., a copy and paste

649 approach as discussed earlier in this study) by helping trainees to recognise different options  
650 that may be available to them, and why these options might be applicable in some client  
651 situations and not others (Cruickshank, Martindale, & Collins, 2018). The application of  
652 knowledge elicitation studies in ASP that focus specifically on decision-making have the  
653 potential to produce training material that could fuel development of TSPs' ability to make  
654 effective decisions in a complex and ill-structured domain, such as ASP.

655         Finally, given that supervisors have been identified to influence how TSPs make  
656 decisions, it may be helpful to uncover the supervisors' perspective on the role they play in  
657 developing TSP decision-making expertise during professional training. For example, TSPs  
658 noted they unconsciously picked up skills and techniques that could be used with clients by  
659 informally observing supervisors. Subsequently, practice models often mirrored the approach  
660 adopted by the supervisor. Informal observation, where the TSP remains unchallenged on  
661 why supervisors might be practicing in the way that they do, may limit the development of  
662 key microcognitive functions and processes such as decision-making, sensemaking,  
663 storybuilding, and problem detection. Therefore, it may be beneficial to explore the intentions  
664 of training practices offered by supervisors (e.g., observation), during supervision. This line  
665 of enquiry may help to illuminate new training requirements for both TSPs and supervisors,  
666 while providing new training direction for professional training educators (Cruickshank et al.,  
667 2018).

668

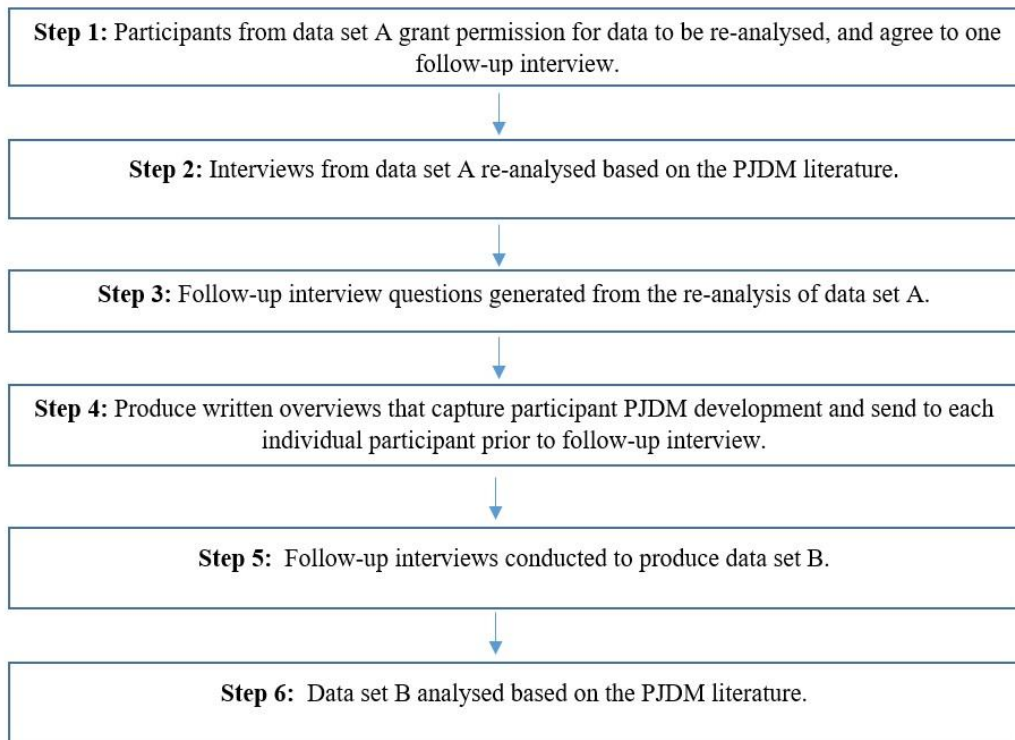
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**Figure 1. Assorted analysis research steps**