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Effects of a Cognitive-Behavioral Intervention on Field Hockey Players' Appraisals of

Organizational Stressors

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49 Abstract

50 *Objectives:* We assessed the effects of a cognitive-behavioral intervention on English field
51 hockey players' appraisals of organizational stressors, emotions, and performance
52 satisfaction.

53 *Design:* A concurrent, across-participants, multiple-baseline, single-case research design with
54 a three months post-intervention follow-up.

55 *Method:* Four high-level female field hockey players participated in a four phase intervention
56 that lasted between 24 and 26 weeks: rapport-building and observation (phase I), baseline
57 monitoring (phase II), educating the players and facilitating acquisition of a cognitive
58 restructuring technique (phase III), and encouraging integration of the technique during sport
59 performance (phase IV). Questionnaires and social validation were used to record the
60 participants' appraisals, emotions, and performance satisfaction throughout the intervention.

61 A three months post-intervention follow-up was conducted to assess the participants'
62 retention of the intervention effects.

63 *Results:* Reduced threat and loss appraisals and elevated challenge appraisals were reported
64 immediately after Phase III had been introduced. Pleasant emotions and performance
65 satisfaction increased while unpleasant emotions decreased throughout the intervention.
66 Social validation immediately post-intervention and at the end of the follow-up period
67 indicated sustained adaptive changes in each of the outcome variables.

68 *Conclusions:* Cognitive restructuring represents a promising technique for optimizing high-
69 level hockey players' appraisals. Challenge appraisals and pleasant emotions appear to be
70 linked with increased performance satisfaction and positive intervention effects can be
71 retained for a period of three months post-intervention. Researchers should examine the
72 effectiveness and efficacy of the cognitive restructuring technique with other populations to
73 develop a robust evidence base for appraisal optimization in sport.

74

Keywords: cognition, stress management, thought adjustment, transactional

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75 Effects of a Cognitive-Behavioral Intervention on Field Hockey Players' Appraisals of
76 Organizational Stressors

77 At the turn of the century, Woodman and Hardy (2001) published the first peer-
78 reviewed empirical study that explored organizational stress in sport. Since then, many
79 researchers (e.g., Didymus & Fletcher, 2012; Sohal, Gervis, & Rhind, 2013) have explored
80 organizational stress with sport performers. This type of stress can be defined as "an ongoing
81 transaction between an individual and the environmental demands associated primarily and
82 directly with the organisation within which he or she is operating" (Fletcher, Hanton, &
83 Mellalieu, 2006, p. 329). Researchers have recently highlighted the potentially debilitating
84 effects that organizational stress can have for athletes in terms of burnout (Tabei, Fletcher, &
85 Goodger, 2012) and diminished personal growth (Sohal et al., 2013). In addition, researchers
86 have explored the factors that make organizational stress different from other types of stress
87 (see e.g., Hanton, Fletcher, & Coughlan, 2005). These factors include the origins and nature
88 of stressors, individuals' appraisals of stressors, and the appropriateness of interventions for
89 managing stress (Fletcher & Hanton, 2003; Hanton et al., 2005; Woodman & Hardy, 2001).

90 In the current study, organizational stress is explored in the context of women's field
91 hockey. Specifically, the focus is on individuals who are competing in the Investec Women's
92 Hockey League, which features the 40 best field hockey teams for women in England. Teams
93 in this league train up to five times per week, compete once or twice each week, and are often
94 supported by a team of coaches (e.g., head coach, strength and conditioning coach). Players
95 are not paid for their involvement with this level of hockey and, therefore, most train and
96 compete alongside full-time study or work. Availability of formal support (e.g., for injury
97 rehabilitation) on a pro bono basis to the athletes is usually limited to those who are
98 competing at the highest echelons of the league. Despite the amateur nature of the hockey
99 teams within this league, their level of performance means that players have opportunities to

100 be selected for international competition. This potential for international selection combined
101 with the amateur (i.e., unpaid) nature of players' involvement and the expectation that
102 athletes compete at the highest level of hockey in England create a context where
103 organizational stressors are both inherent and prevalent.

104 Organizational stressors can be defined as “environmental demands (i.e., stimuli)
105 associated primarily and directly with the organization within which an individual is
106 operating” (Fletcher et al., 2006, p. 329) and researchers (e.g., Fletcher, Hanton, & Wagstaff,
107 2012) have highlighted the variety of organizational stressors that athletes can encounter. For
108 example, athletes may experience high performance expectations from others, unhelpful
109 attitudes among teammates, unclear selection criteria, lack of finances, and or lack of
110 structure during injury rehabilitation. In addition to studying the organizational stressors that
111 athletes may encounter, researchers are increasingly interested in the appraisal mechanisms
112 that are pivotal during sport performers' organizational stress transactions (Didymus &
113 Fletcher, 2012, 2014, 2017; Fletcher et al., 2012; Hanton, Wagstaff, & Fletcher, 2012; Neil,
114 Hanton, Mellalieu, & Fletcher, 2011). Collectively, this research suggests that athletes make
115 both negative (Hanton et al., 2012) and positive (Didymus & Fletcher, 2017) appraisals of
116 organizational stressors. Further, it has been suggested that a variety of coping strategies are
117 used to manage organizational stressors (e.g., Kristiansen & Roberts, 2010); that performers
118 experience a range of emotions, attitudes, behaviors (Fletcher et al., 2012), and affective
119 states (Arnold, Fletcher, & Daniels, 2016) during organizational stress transactions; and that
120 appraisals influence athletes' performance satisfaction (Didymus & Fletcher, 2017).

121 The research in this area has often been underpinned by transactional stress theory
122 (Lazarus & Folkman, 1984) or the cognitive-motivational-relational (CMR) theory of stress
123 and emotion (Lazarus, 1999, 2000). These theories suggest that stress is an on-going
124 transaction between an individual and his or her environment, that an individual will engage

125 in cognitive-evaluative processes to appraise the stressors experienced, and that emotions
126 result from an interpretation of the balance between the stressor(s) experienced and the
127 resources of the person. The theories describe four transactional alternatives (harm/loss,
128 threat, benefit, challenge) that are the essence of stressful appraisals (Lazarus & Folkman,
129 1984, Lazarus, 1999). Threat and harm/loss appraisals are primarily associated with negative
130 emotions whereas challenge and benefit appraisals are largely associated with positive
131 emotions (Lazarus, 1999, 2000). There is a substantial body of literature that has used the
132 CMR theory to explore the influence of emotions on sport performance (see, for a review,
133 Campo, Mellalieu, Ferrand, Martinent, & Rosnet, 2012). Some of this research suggests that
134 positively valenced emotions are associated with superior sport performance whereas
135 negatively valenced emotions are related to inferior performance (e.g., Allen, Jones, &
136 Sheffield, 2011). Other researchers, however, argue that emotions are idiosyncratic and that
137 both positive and negative emotions can be perceived as facilitative and or debilitating for
138 performance (see the individual zones of optimal functioning model; Hanin, 1997, 2000).

139 Despite the aforementioned research highlighting the associations between appraisals,
140 emotions, and performance, and the known importance of organizational stress in athletes'
141 experiences (see e.g., Fletcher & Wagstaff, 2009), interventions that aim to optimize
142 performers' appraisals of organizational stressors are yet to be developed and tested. Indeed,
143 the intervention literature (e.g., Moore, Vine, Wilson, & Freeman, 2015) that has been
144 conducted in sport has focused almost exclusively on athletes' competitive stress experiences.
145 Rumbold, Fletcher, and Daniels (2012) highlighted that, while interventions have been
146 effective in reducing state and trait anxiety (Thomas, Mellalieu, & Hanton, 2008), little is
147 known about stress management interventions (SMIs) for the wider stress process, including
148 the optimization of appraisals. One approach to appraisal optimization involves secondary
149 level stress management. This level of SMI has been described as the "...management of

150 experienced stress by increasing awareness and improving the stress management skills of the
151 individual through training and educational activities” (Cooper & Cartwright, 1997, p. 8).
152 Thus, secondary level SMIs are helpful when the aim is to enhance individuals’ abilities to
153 manage stress effectively and when options to change the environment to remove stressors
154 are not feasible or are too costly (Siu, Cooper, & Phillips, 2014). This is in contrast to other
155 levels of SMI where the aim is to adapt the environment to reduce or eliminate stressors (i.e.,
156 primary level interventions) or to use techniques such as counselling to address the outcomes
157 of stressful experiences (i.e., tertiary level interventions). Although sport psychology
158 researchers have rarely framed applied research as secondary level SMIs, this continues to be
159 a popular and successful approach in the occupational and organizational psychology
160 literature (see, for a review, Giga, Noblet, Faragher, & Cooper, 2003). Secondary level SMIs
161 typically involve cognitive-behavioral therapy (CBT) and or relaxation techniques and have
162 been shown to be effective in improving employee health and business performance, for
163 example (Giga et al., 2003).

164 CBT (e.g., Beck, 2011) refers to a family of interventions and a general scientific
165 approach to behavior change that has been shown to be effective with sport (e.g., Neil,
166 Hanton, & Mellalieu, 2013), clinical (see, for a review, Butler, Chapman, Forman, & Beck,
167 2000), and occupational (e.g., Bond & Bunce, 2000) populations. The basic premise of CBT
168 is that cognitions, emotions, and behaviors are closely related and that negative automatic
169 thoughts lead to maladaptive emotions and behaviors (Beck, 2011). The underlying principles
170 of CBT, therefore, align well with those that underpin Lazarus’ (1999, 2000) CMR theory of
171 stress and emotion. CBT is not a single intervention protocol but refers to a variety of
172 techniques that focus on the importance of cognitive processes for emotion regulation (cf.
173 Hofmann, Asmundson, & Beck, 2013). One such technique is cognitive restructuring, which
174 aims to change an individual’s beliefs about stressors to reduce negative appraisals (Larsen &

175 Christenfeld, 2011). In addition to adjusting an individual's perception of stressors, cognitive
176 restructuring is thought to causally improve undesirable emotional responses and behaviors.
177 This may be useful in sport because of the aforementioned link between emotions and
178 performance. Indeed, sport psychologists have suggested that cognitive restructuring may be
179 beneficial for high level sport performers and, in particular, for adjusting athletes' appraisals
180 of stressful situations (Didymus & Fletcher, 2017; Neil et al., 2013; Rumbold et al., 2012).
181 Although cognitive restructuring has been successfully integrated into sport psychologists'
182 applied research (e.g., Thomas, Maynard, & Hanton, 2007), the efficacy of this technique is
183 yet to be explored in an organizational context in sport.

184 McArdle and Moore (2012) encouraged the exploration of sport-specific interventions
185 that produce cognitive change in athletes. Other sport psychologists have acknowledged that
186 intervention research should be of paramount importance to better understand the most
187 appropriate ways to manage performers' stress (e.g., Thomas et al., 2008) and, specifically,
188 the cognitive-evaluative process of appraising (Rumbold et al., 2012). Further, Hanton et al.
189 (2012) called for research that improves understanding of how best to tackle negative
190 appraisals of organizational stressors. In other works, Fletcher and colleagues (e.g., Fletcher
191 et al., 2006; Fletcher & Wagstaff, 2009; Rumbold et al., 2013) highlighted a need for
192 intervention studies that target organizational stress in sport yet no published research has
193 addressed this void to date. With these calls for research and the aforementioned gaps in
194 knowledge in mind, the purpose of this study was to assess the effects of a cognitive-
195 behavioral intervention on English field hockey players' appraisals of organizational
196 stressors, emotions, and performance satisfaction.

197 **Method**

198 **Design**

199 Organizational stress researchers have highlighted the idiographic nature of athletes'

200 appraisals (Didymus & Fletcher, 2012, 2014; Hanton et al., 2012) and, thus, a single-case
201 research design was appropriate to examine intra-individual changes during this study. This
202 design was advantageous because it allowed demonstration of intervention efficaciousness at
203 an individual level, promoted a naturalistic setting to assess and observe participants, enabled
204 the researchers to provide an individualized intervention, and allowed intervention effects
205 that may have been masked by group designs to be detected (Barker, McCarthy, Jones, &
206 Moran, 2011; Hrycaiko & Martin, 1996). Further, Swain and Jones (1995) suggested that
207 single-case designs are particularly useful for research with high-level sport performers
208 because their performance may not improve substantially from pre-intervention levels.

209 A concurrent, across-participants, multiple-baseline (Kazdin, 2010) variation of the
210 single-case design was used. Concurrent measurement of each participant controlled for
211 threats to internal validity (Barker et al., 2011). Internal validity was also enhanced by
212 replicating the intervention within and across participants (Kazdin, 2010). The outcome
213 variables were consistent for each participant, which adhered to the across-participants aspect
214 of the design. The multiple-baseline element negated the need for a control group because the
215 baseline measurements for each participant acted as her control data (Barker et al., 2011). A
216 noteworthy strength of the multiple-baseline design is that a stable baseline, which changes
217 only when the intervention is introduced, indicates that intervention effects are not due to the
218 influence of uncontrolled variables (Barker et al., 2011).

219 **Participants**

220 Five female hockey players ($M_{\text{age}} = 19.60$, $SD = .55$ years, $M_{\text{experience}} = 9.40$, $SD =$
221 1.34 years) volunteered for this study. At the time of data collection, each participant was
222 training with and competing regularly for the same team that was part of the Investec
223 Women's Hockey League. This team was purposefully sampled (Patton, 2002) because a
224 previous study (Didymus & Fletcher, 2017) concluded that some of the players in the team

225 experienced a variety of organizational stressors, predominantly appraised these stressors as a
226 threat or with a sense of loss, and that these appraisals were associated with performance
227 dissatisfaction. The purposeful approach to sampling aimed to maximize ecological validity
228 by recruiting individuals in a way that represents real-life situations (i.e., recruiting those who
229 require assistance).

230 **Measures**

231 **Appraising.** Primary appraisals of organizational stressors were assessed using the
232 Appraisal of Life Events scale (ALE; Ferguson, Matthews, & Cox, 1999), which is an
233 adjective checklist that assesses appraisals (threat, challenge, loss) of recalled events. Each
234 adjective is scored on a six-point rating scale (where 0 = 'not at all' and 5 = 'very much so').
235 In a series of five related studies Ferguson et al. (1999) demonstrated that the three
236 dimensions of the ALE scale had excellent factor congruence by method² (range .94-.99); a
237 factor structure that was confirmed using LISREL confirmatory factor analysis; acceptable
238 test-retest coefficients (range .48-.90); acceptable internal reliabilities (range .75-.91); no
239 significant associations with social desirability; and construct validity related to personality,
240 coping, and psychological (ill) health. The instructions that accompanied the ALE scale asked
241 each participant to describe, in her own words, the most recent organizational stressor that
242 she had experienced during training or competition. The instructions then invited the
243 participants to use the adjective checklist to describe how they appraised the stressor at the
244 time that it occurred.

245 **Emotions.** Emotions were assessed using the Sport Emotion Questionnaire (SEQ;
246 Jones, Lane, Bray, Uphill, & Catlin, 2005). The SEQ is a 22-item checklist that was designed
247 to elicit respondents' emotions in terms of anger, anxiety, dejection, excitement, and

² Factor congruency by method refers to the extent to which a factor structure can be reproduced by different methods of extraction and rotation. Coefficients range from 0 (cannot be reproduced) to 1 (can be perfectly reproduced). The formulas for these coefficients can be found in Gorsuch (1983).

248 happiness. These five factors represent two higher-order dimensions: pleasant (excitement
249 and happiness) and unpleasant (anger, anxiety, and dejection) emotions. Each word on the
250 SEQ is scored on a five-point rating scale (where 0 = 'not at all' and 4 = 'extremely') and the
251 instructions asked participants to use the words to describe how they felt about the stressor
252 that was described on the ALE at the time that it occurred. The SEQ has been reported to be a
253 reliable measure of both pre- (Cronbach's alpha .81-.88) and post-competition (Cronbach's
254 alpha .70-.89) emotions (Allen et al., 2011; Jones et al., 2005).

255 **Performance satisfaction.** Due to the difficulty of objectively measuring individual
256 performance in a team sport and the link between appraisals of organizational stressors and
257 performance satisfaction (Arnold et al., 2016; Didymus & Fletcher, 2017), this study used a
258 measure of subjective performance satisfaction. Based on the procedure outlined by Levy,
259 Nicholls, and Polman (2011), the participants rated performance satisfaction on a single-item
260 11-point rating scale (where 0 = 'totally dissatisfied' and 10 = 'totally satisfied'). The
261 performance satisfaction measure instructed players to record how satisfied they were with
262 their individual performance, rather than the performance of the team, at the time that the
263 stressor that was described on the ALE occurred.

264 **Social Validation.** Hrycaiko and Martin (1996) suggested that research should
265 evaluate the practical importance of intervention effects. A 10-item post-intervention social
266 validation measure was developed for this study using previous research (Page & Thelwell,
267 2013). Participants responded to questions that assessed their expectations, their thoughts
268 about changes in the outcome variables (i.e., appraisals, emotions, and performance
269 satisfaction), the 'significance' of these changes, and the acceptability and usefulness of the
270 intervention using an eight-point rating scale (where 0 = 'not at all' and 7 = 'very much so').
271 An open-ended question was included at the end of the measure to gather additional
272 information about the participants' experiences (Mellalieu, Hanton, & Thomas, 2009).

273 Procedure

274 An application for ethical approval was reviewed and approved by the research ethics
275 committee at the authors' institution. To begin participant recruitment, the first named author
276 approached the head coach and players of one field hockey team and explained the nature of
277 the study. The players who agreed to be screened for participation completed the ALE scale
278 (Ferguson et al., 1999), the SEQ (Jones et al., 2005), and the performance satisfaction
279 measure (see Levy et al., 2011) on four occasions over a two week period of training and
280 competition. During this screening process, the researchers reviewed the players' responses
281 and paid particular attention to the ALE scale scores because high threat and loss scores were
282 the key indicators of suitability for participation in the intervention. Those players who
283 consistently appraised organizational stressors as a threat or with a sense of loss were invited
284 to participate. On invitation, the players were informed that they would need to commit to the
285 intervention and that they would be asked to regularly practice the techniques that would be
286 learnt (see Neil et al., 2013). All of the participants who were invited agreed to take part in
287 the study and provided written informed consent.

288 Four phases were adopted for the intervention: 1) rapport-building and observation, 2)
289 baseline monitoring, 3) educating the players and facilitating acquisition of a cognitive
290 restructuring technique, and 4) encouraging integration of the technique during sport
291 performance (see e.g., Barker et al., 2011). Throughout each phase the first author attended
292 two pitch-based training sessions each week and some gym-based sessions and home
293 matches. Each phase of the intervention was conducted by the first author who had completed
294 British Psychological Society (BPS) accredited courses in cognitive-behavioral therapy and
295 stress management, and was in the process of gaining accreditation for psychology support
296 with the British Association of Sport and Exercise Sciences. The second named author, who
297 is a Health and Care Professions Council registered sport and exercise psychologist, acted as

298 supervisor and mentor throughout the intervention.

299 **Phase I: Rapport-building and observation.** The first phase of the intervention
300 began at the start of the players' pre-season hockey training and finished half way through the
301 competitive season. In total, phase I lasted for a period of 12 weeks and involved the first
302 named author integrating with and observing the team during training and competition. A
303 period of 12 weeks was deemed appropriate for new members of the team and those who had
304 not previously met the researcher to adjust to her presence. In addition, this period of time
305 allowed the researcher to show commitment to the team, to build confidence among the
306 players and coaches in her ability to do her job (Beckmann & Kellmann, 2003), and to build
307 trust and rapport with the players and coaches (Andersen, 2000).

308 **Phase II: Baseline monitoring.** Phase II began immediately after phase I and lasted
309 between two and four weeks, depending on the stability of each participant's questionnaire
310 scores. On the Monday of each week from this point forward (i.e., during phases II, III, and
311 IV, and during the three-months post-intervention follow up phase), each participant was
312 given two copies of each questionnaire (the ALE scale, the SEQ, and the performance
313 satisfaction measure) and was instructed to complete one copy of each immediately before a
314 training session or a hockey match and one copy of each immediately after a training session
315 or a hockey match. This procedure was in place to obtain a balanced view of the participants'
316 appraisals, emotions, and performance satisfaction before and after their hockey participation.
317 Participants were required to return completed questionnaires to the researcher at weekly
318 intervals. The first author monitored each participant's responses and liaised with the second
319 author to decide when the responses were stable or progressing in the opposite direction to
320 the desired intervention effects (i.e., elevated threat and or loss appraisals, elevated negative
321 emotions, and or decreased performance satisfaction; Hrycaiko & Martin, 1996). Each
322 participant was moved onto phase III of the intervention once the researchers agreed on her

323 suitability to do so. Thus, in accordance with the multiple-baseline element of the
324 intervention, each participant moved to Phase III at a different point in time.

325 **Phase III: Educating the players and facilitating acquisition of a cognitive**
326 **restructuring technique.** Phase III represented the first of two intervention phases and
327 consisted of eight 60-minute one-to-one sessions. The sessions were conducted at weekly
328 intervals by the first author. At the end of each session, the participant and the researcher
329 agreed a between-session task (Beck, 2011) that aimed to facilitate transfer of the
330 intervention content to everyday life (Fehm & Mrose, 2008). The eight sessions in this phase
331 adhered to the following structured format:

332 *Sessions one and two: Education.* The first two sessions of phase III were the same
333 for each participant. They focused on the prominent organizational stressor(s) that each
334 participant was experiencing and familiarized her with CBT. The familiarization section
335 focused on the following three areas: 1) education, which consisted of an introduction to the
336 differences and relationships between cognitions (i.e., thoughts), emotions (i.e., feelings),
337 behaviors, and physiology; 2) activities, which involved interactive tasks to help participants
338 distinguish between cognitions and emotions and understand the impact of negative
339 automatic thoughts on emotions and behaviors; and 3) tools, which introduced a thought
340 adjustment sheet³ (TAS) that would be used to restructure negative automatic thoughts. The
341 TAS contained five columns that asked each player to: 1) describe a prominent organizational
342 stressor that she was currently experiencing, 2) record her negative automatic thoughts about
343 the stressor, 3) record her emotions related to the stressor, 4) develop and record more
344 functional restructured thoughts, and 5) write down the emotions that might subsequently be
345 felt. At the end of the second session the researcher discussed the links between negative
346 automatic thoughts and appraisals with each participant (e.g., 'I must play well or I will ruin

³ For a copy of the thought adjustment sheet, contact the corresponding author. See also Figure 6.

347 my chances of selection' signifies a threat appraisal) and confirmed her understanding of how
348 the TAS would be used for appraisal optimization.

349 **Session three: Acquisition stage one.** This session began with a re-cap of the TAS.
350 The participant then completed the first three columns on the TAS in relation to the
351 prominent organizational stressor(s) that she was experiencing. This activity represented the
352 start of the cognitive restructuring process because the participants began to recognize their
353 thoughts (appraisals), emotions, and behaviors in relation to the recalled stressor(s). During
354 the between-session task, each participant completed the first three columns on the TAS in
355 relation to the organizational stressor(s) that she experienced between sessions three and four.

356 **Session four: Acquisition stage two.** During this session, the researcher encouraged
357 each participant to discuss the parts of the TAS that she had completed since session three.
358 The aim of these discussions was to monitor the players' progress, answer questions, and
359 develop a strong foundation for the core period of cognitive restructuring (cf. Froján-Parga,
360 Calero-Elvira & Montaña-Fidalgo, 2011). The researcher then offered examples of more
361 functional thoughts and introduced the participants to the last two columns of the TAS. The
362 participants used the examples to begin developing their own personally significant
363 restructured thoughts about organizational stressors (cf. Froján-Parga et al., 2011) and
364 recorded these thoughts using the fourth column of the TAS. The relationships between
365 restructured thoughts, emotions, and performance were then discussed. The participants
366 continued to complete the first three columns on the TAS for their between-session task.

367 **Sessions five, six, seven, and eight: Acquisition stage three.** Sessions five to eight
368 involved the first author guiding the participants through cognitive restructuring. This self-
369 directed process was adapted from Beck's (2011) functional belief protocol. The participants
370 were asked to record functional alternatives to their negative automatic thoughts about
371 organizational stressors using the TAS and to describe the emotions that they believed would

372 ensue. The between-session tasks were the same each week and involved the participants
373 completing each of the five columns on the TAS for each organizational stressor that they
374 experienced. During each session, the researcher monitored the completed TASs and
375 discussed the influence of the cognitive restructuring procedure on sport performance.

376 **Phase IV: Encouraging integration of the technique during sport performance.**

377 This second intervention phase was introduced immediately after the education and
378 acquisition phase, began with one 60-minute one-to-one session that outlined the procedure
379 for the phase, and lasted for a period of two weeks. This phase involved the participants using
380 the restructured thoughts that had been developed in phase III during their sport performance.
381 The participants were instructed to remain aware of the organizational stressors, associated
382 thoughts, and subsequent emotions that they experienced and to continue using the TAS to
383 record new negative automatic thoughts and functional alternatives. The researcher sought
384 verbal confirmation of understanding from the participants (Neil et al., 2013) before they
385 began to formally integrate the technique with their performance. During this phase, each
386 performer met with the researcher once per week so that their questionnaires and TASs could
387 be collected and monitored. At the end of Phase IV, each participant attended an
388 individualized 60-minute de-briefing session. During this session, the researcher presented
389 each participant with graphical representations of her questionnaire data from each phase of
390 the intervention and asked the participants to complete the social validation questionnaire.

391 **Three Months Post-Intervention Follow-Up**

392 Post-intervention assessments are important to identify long-term intervention effects
393 (Rumbold et al., 2012). Thus, a follow-up procedure was used in this study to assess the
394 participants' retention of the intervention effects. The aforementioned questionnaires were
395 completed by the each of the participants three months post-intervention. To ensure
396 consistency, each participant completed one copy of each questionnaire on the same number

397 of occasions as she did during the baseline monitoring phase. At the end of the follow-up
398 period, the participants were asked to re-complete the social validation questionnaire.

399 **Data Analyses**

400 The data analyses consisted of three stages. First, the questionnaire data were inputted
401 into a Microsoft® Excel® document and visually inspected (cf. Kinugasa, Cerin, & Hooper,
402 2004) to determine whether the cognitive restructuring technique had influenced the
403 participants' appraisals, emotions, and or performance satisfaction. This approach was used
404 instead of statistical analyses due to a lack of consensus regarding which statistical technique
405 should be used to analyze single-case data (Gage & Lewis, 2013), and based on knowledge
406 that an individualized research design emphasizes practical rather than statistical significance
407 (Barker et al., 2011). When using visual analysis to examine the effects of an intervention,
408 greater confidence can be assured if the following conditions are satisfied: (a) baseline
409 measures are stable or in the opposite direction to that expected for the intervention effects,
410 (b) an effect is replicated both within and across participants, (c) few overlapping data points
411 are observed between the baseline and intervention phases, (d) the effect occurs soon after the
412 intervention is introduced, (e) a large effect is observed during the intervention phase when
413 compared to the baseline phase, and (f) the results are consistent with accepted theory
414 (Hrycaiko & Martin, 1996). During the second stage of the analyses, graphical accounts of
415 the data were created (Dixon et al., 2009) to facilitate visual analysis of changes in the
416 outcome variables over time. Illustrative flow charts were also created to highlight examples
417 of the organizational stressors that were recalled by the participants and to provide a visual
418 overview of exemplar appraisal, emotion, and performance satisfaction data from the baseline
419 and intervention phases. The third stage involved the analysis of social validation data.
420 Quantitative data from the social validation questionnaire were entered into a Microsoft®
421 Excel® document and descriptive statistics were calculated for each question. The qualitative

422 data were transcribed verbatim into a Microsoft® Word® document and analyzed using
423 inductive thematic analysis procedures at a semantic level (Clarke & Braun, 2016). This type
424 of analysis was used to identify patterns in the data and involved familiarization with the
425 data, generating and grouping codes, searching for and identifying themes, reviewing the
426 themes, naming the themes, and producing this article.

427 **Results**

428 One of the five participants withdrew from the study during baseline monitoring due
429 to an injury that terminated her hockey career. Each of the remaining four participants ($M_{\text{age}} =$
430 19.50 , $SD = 0.58$ years; $M_{\text{experience}} = 9.25$, $SD = 1.50$ years) completed the intervention
431 voluntarily and without remuneration. Each of the participant's data relating to appraisals,
432 emotions, and performance satisfaction are presented as X Y (scatter) graphs (see Figures 1-
433 5; Dixon et al., 2009) and as descriptive statistics (Table 1). Social validation data are
434 presented as descriptive statistics (Table 1) and verbatim quotes that represent four themes
435 from the qualitative data. One example of a completed TAS (see Figure 6) is included to
436 demonstrate how this tool was used and two illustrative flow charts (see Figure 7) are
437 presented to show changes in participants' appraisals, emotions, and performance
438 satisfaction.

439 **Appraisals**

440 Figures 1 to 4 and Table 1 suggest that each participant experienced intervention
441 effects on their appraisals of organizational stressors. The organizational stressors that were
442 reported during the intervention included availability of equipment, balancing national
443 training camps and league training, deselection, lack of access to gym facilities, lack of
444 communication from the coach, lack of effort from teammates, monotony of training, poor
445 umpire decisions, presence of a crowd at a big game, presence of England selectors at a big
446 game, relationships with teammates, selection, snow causing training to be cancelled, timing

447 of fitness testing, training overload, and unhelpful comments from teammates. The
448 intervention effects were inter-individual in terms of the changes to appraisals and the point
449 in time that the effects occurred. To illustrate, participants A, B, and D experienced
450 immediate intervention effects on each type of appraisal and they began to appraise the
451 organizational stressors that they recalled as more of a challenge than a threat or a loss
452 between sessions three and four of phase III (see Figures 1, 2, and 4). Participant C also
453 experienced immediate intervention effects on each type of appraisal but began to appraise
454 stressors as more of a challenge than a threat or a loss after session two of phase III (see
455 Figure 3). Once participants A, B, and C had begun to appraise stressors as more of a
456 challenge than a threat or a loss, challenge remained the highest scored appraisal throughout
457 the intervention. For Participant D, however, challenge appraisals were predominantly
458 experienced during the intervention but threat and loss appraisals scored higher than
459 challenge appraisals at one data collection point between sessions four and five of phase III
460 (see Figure 4). The organizational stressor recalled at this point in time was temporary
461 deselection from the first hockey team.

462 Each participant's baseline ALE scores were relatively stable and progressing in an
463 opposite direction to the expected intervention effects when the intervention was introduced.
464 Of the 240 units of data relating to appraisals, 11 (5%) that were recorded during the
465 intervention and follow-up phases overlapped with baseline data. The majority ($n = 9$) of
466 these overlapping units of data were reported during the first three weeks of phase III. There
467 were observable differences in the participants' appraisals during the intervention phases
468 when compared to the baseline monitoring phase (see Figures 1-4).

469 **Emotions**

470 Each of the participants scored unpleasant emotions (anxiety, dejection, anger) higher
471 than pleasant emotions (excitement, happiness) during the baseline monitoring phase (see

472 Figures 1-4 and Table 1). This pattern of emotions was reversed by the intervention and the
473 effects were retained by the participants. To illustrate, anger (participant A), anxiety
474 (participants B and D), and dejection (participant C) were the highest scored emotions during
475 baseline monitoring. However, excitement (participants A, B, and C) and happiness
476 (participant D) scored highest during phase IV of the intervention. While pleasant emotions
477 were scored higher than unpleasant emotions during the intervention phases, both pleasant
478 and unpleasant emotions were experienced to some degree throughout the intervention (see
479 Figures 1-4 and Table 1).

480 The baseline SEQ scores were relatively stable when the intervention was introduced.
481 Of the 400 units of SEQ data, 53 (13%) that were recorded during the intervention phases
482 overlapped with those collected during baseline monitoring. Forty-three (81%) of the
483 overlapping units of data occurred during the first four weeks of phase III. There were
484 observable differences in the participants' emotions during the intervention phases when
485 compared to the baseline monitoring phase (see Figures 1-4).

486 **Performance Satisfaction**

487 Figure 5 shows that each participant's performance satisfaction rose from baseline
488 monitoring to the intervention phases and from the intervention phases to the follow-up
489 period (see also Table 1). During baseline monitoring, participants A and D reported
490 decreasing performance satisfaction scores while the scores for participants B and C were
491 unstable. Of the 160 units of performance satisfaction data, 83 (52%) that were recorded
492 during the intervention phases overlapped with baseline data. Sixty-four (40%) of the
493 overlapping units of data occurred during the first five weeks of phase III.

494 **Social Validation**

495 The quantitative social validation data suggest that the participants understood what
496 was expected of them ($M = 6.25$, $SD = .96$), thought that improving their performance was

497 important ($M = 6.50$, $SD = 1.00$), and reported that the intervention was acceptable ($M = 6.75$,
498 $SD = .50$) and useful ($M = 6.50$, $SD = .58$). Responses relating to the participants' perceptions
499 of change indicated that the intervention improved their appraisals ($M = 6.25$, $SD = .96$),
500 emotions ($M = 6.00$, $SD = 1.41$), and performance satisfaction ($M = 5.50$, $SD = 1.29$). Each
501 participant reported that the changes in their appraisals ($M = 6.25$, $SD = .50$), emotions ($M =$
502 5.50 , $SD = 1.73$), and performance satisfaction ($M = 5.00$, $SD = 1.63$) were 'significant.'

503 The semantic thematic analyses of participants' qualitative social validation data
504 revealed four main themes: raising awareness of negative thoughts and emotions, more
505 effectively managing stressors, thinking differently about organizational stressors, and seeing
506 a link between appraisals and performance. To illustrate, participant A wrote about the
507 intervention being useful for raising her awareness of negative thoughts and emotions: 'I am
508 now more aware of my negative thoughts and emotions and have learnt to recognize the
509 difference between what I'm thinking and what I'm feeling. This helps when I get on the
510 pitch.' Participant B suggested that the intervention was particularly helpful when managing
511 stressors relating to selection procedures: 'The study benefitted me, particularly when I was
512 stressed about selection. I learnt to approach selection positively and this helped me to get
513 selected again for [country].' In a different example, participant C reported that the
514 intervention helped her to think differently about organizational stressors and to appraise
515 these stressors as a challenge: 'The research has helped me to think in different ways about
516 org[anizational] stressors . . . [such as] my relationship with my captain and support during
517 injury rehab. It's changed my mind-set both on and off the pitch.' Participant D reported that
518 the research helped to optimize her appraisals, which had a positive influence on her
519 performance: 'It was a hugely helpful process . . . If I'm thinking about stressors as a
520 challenge not a threat then I play better. I learnt *how* to see things as a challenge, which has
521 helped my performance.'

522 **Three Months Post-Intervention Follow-Up.** The follow-up social validation data
523 suggest that the participants' understanding of what was expected had increased ($M = 6.50$,
524 $SD = .58$) and that the importance of improving their performance ($M = 6.50$, $SD = 1.00$) and
525 their thoughts about the intervention in terms of acceptability ($M = 6.75$, $SD = .50$) and
526 usefulness ($M = 6.50$, $SD = .58$) had remained the same. The data also indicate that the
527 participants retained the intervention effects relating to appraisals ($M = 6.75$, $SD = .50$),
528 emotions ($M = 6.50$, $SD = 1.00$), and performance satisfaction ($M = 5.50$, $SD = .58$). Each
529 participant reported that the changes in her appraisals ($M = 6.25$, $SD = .50$), emotions ($M =$
530 5.75 , $SD = 1.26$), and performance satisfaction ($M = 5.50$, $SD = 1.00$) remained 'significant.'

531 Each of the participants reported that the three month period after the intervention
532 provided them with an opportunity to develop their cognitive restructuring skills and that
533 these skills had improved their appraisals, emotions, and performance satisfaction. For
534 example, participant C stated: 'The thought adjustment process is easier now I have had more
535 time to practice. It's a normal part of what I do when I have org[anizational] stressors and it
536 helps me to feel positive emotions and perform better.' Participant D suggested that the
537 cognitive restructuring technique helped her to transfer her performance from training to the
538 competition arena: 'I practice thought adjustment in training like I do my hockey so it comes
539 naturally in matches and nine times in ten I'm more satisfied with how I perform.'

540 **Discussion**

541 This study assessed the effects of a cognitive-behavioral intervention on English field
542 hockey players' appraisals of organizational stressors, emotions, and performance
543 satisfaction. Previous research has found that athletes' appraisals of organizational stressors
544 are a pivotal factor in stress transactions (Didymus & Fletcher, 2012, 2014) and that
545 challenge appraisals are associated with positive emotions (Neil et al., 2013) and performance
546 satisfaction (Didymus & Fletcher, 2017). It is, therefore, important to better understand how

547 to optimize athletes' appraisals of organizational stressors (cf. Hanton et al., 2012). The
548 results of this study suggest that a one-to-one cognitive restructuring intervention reduced
549 threat appraisals and encouraged challenge appraisals in a sample of female high-level field
550 hockey players. In addition, the cognitive restructuring technique learnt by the participants
551 appeared to positively influence emotions and performance satisfaction.

552 The participants' appraisal data adhered to the six visual inspection criteria that were
553 used to guide the research (Hrycaiko & Martin, 1996). Specifically, the baseline scores were
554 stable when the intervention was introduced, the intervention effects were replicated within
555 and across participants, there were few overlapping data points, the intervention effects
556 occurred immediately after the intervention was introduced, there were observable
557 intervention effects, and the results are consistent with existing theory (e.g., Beck, 2011;
558 Lazarus, 1999, 2000; Lazarus & Folkman, 1984). The data relating to emotions and
559 performance satisfaction were less stable during baseline monitoring and more of the data
560 overlapped between the baseline and the intervention phases of the intervention. The
561 overlapping data indicate that the intervention had less of an effect on the participants'
562 emotions and performance satisfaction than it had on their appraisals. This finding is not
563 surprising because the cognitive restructuring technique that was used in this study targeted
564 appraisals as the primary outcome variable. Lazarus' (1999, 2000) CMR theory of stress and
565 emotion and the basic principles of CBT help to explain how targeting an individual's
566 appraisals can have causal influences on his or her emotions. Indeed, Lazarus (2000)
567 described the separation of stress and emotion as an 'absurdity' (p. 35) and discussed the
568 inextricable links between and interdependence of appraisals and emotions. In his seminal
569 work on CBT, Beck (e.g., 2011) explained the close relations between cognitions (e.g.,
570 appraisals), emotions, and behaviors (e.g., performance). Thus, if appraisals influence
571 emotions and emotions influence performance (see Campo et al., 2012), it is theoretically

572 logical that optimizing an athlete's appraisals will also optimize emotions and performance
573 satisfaction, albeit to a lesser and perhaps less stable extent. Another explanation for this
574 finding relates to the hockey players' negative appraisals and emotions during the baseline
575 monitoring period. These experiences could have created a ceiling effect whereby a decrease
576 in emotional negativity over time was likely even in the absence of an intervention.

577 The observable differences in each of the participant's appraisals, emotions, and
578 performance satisfaction are notable because Hrycaiko and Martin (1996) suggested that
579 greater confidence can be had in the effectiveness of an intervention if the effects are
580 replicated within and across individuals. The observable differences in the outcome variables
581 and, thus, in the effectiveness of the current intervention may have been enhanced by various
582 factors. First, cognitive restructuring has previously been shown to be an effective way to
583 target negative thoughts about stressors (Suinn, 2005). Second, although each participant
584 engaged in the structured intervention, each session was driven by the participant to
585 accommodate the idiographic nature of her appraisals (cf. Didymus & Fletcher, 2012; Hanton
586 et al., 2012). Third, a period of rapport building and observation took place before baseline
587 monitoring, which afforded the participants opportunities to build a relationship with the
588 researcher before taking part in the intervention (Andersen, 2000; Beckmann & Kellmann,
589 2003). Fourth, pre-existing factors (e.g., skills, attitudes) that are relevant to high-level
590 performers (e.g., Boes, Harung, Travis, & Pensgaard, 2012; Mahoney, Gabriel, & Perkins,
591 1987) may have meant that the participants were ready to change (Pawson & Tilley, 1997)
592 when the intervention was introduced. Fifth, our sample consisted of female athletes and
593 some researchers have highlighted that women are more willing to seek psychological
594 support (e.g., Martin et al., 2001) and may be more receptive when they do (cf. Martin,
595 Lavallee, Kellmann, & Page, 2004). Collectively, these factors are likely to have influenced
596 the effectiveness of the intervention that was developed and tested during this study.

597 The questionnaire and social validation data were congruent because they both
598 indicated that each performer's appraisals, emotions, and performance satisfaction were
599 optimized as a result of the intervention. These effects may be explained by the time that was
600 dedicated to developing participants' understanding of the differences between thoughts and
601 emotions (Beck, 2011); their heightened awareness of the relationships between appraisals of
602 organizational stressors, emotions, and performance satisfaction (Didymus & Fletcher, 2017;
603 Neil et al., 2011); and the integration period during which participants refined and practiced
604 the techniques that they had learnt. Indeed, the participants reported that the integration
605 process was central to maintaining their optimized appraisals, emotions, and performance
606 satisfaction. This may have been because the cognitive restructuring technique takes time to
607 learn but is a cornerstone of therapeutic processes and is thought to be an important mediator
608 of adaptive outcomes (Wishman, 1993).

609 The findings of this study suggest that the participants experienced elements of
610 challenge, threat, and loss appraisals simultaneously, which indicates that the players
611 perceived multiple possibilities and meanings during their stress transactions. This supports
612 transactional stress theory (Lazarus & Folkman, 1984) and the CMR theory of stress and
613 emotion (Lazarus, 1999, 2000), which highlight that individuals can experience seemingly
614 contradictory appraisals and emotions during a stressful encounter. The findings also support
615 some occupational (e.g., Webster, Beehr, & Love, 2011) and sport psychology researchers
616 (e.g., Anshel, Jamieson, & Raviv, 2001) who have proposed that challenge and threat
617 appraisals can occur simultaneously. However, our findings contradict other researchers (e.g.,
618 Jones, Meijen, McCarthy, & Sheffield, 2009; Moore, et al., 2015) who have suggested that
619 challenge and threat appraisals are mutually exclusive. This may be because our study was
620 designed to allow participants to report elements of threat, challenge, and loss simultaneously
621 using the ALE scale while other studies (e.g., Moore et al. 2015) were designed to measure

622 threat and challenge as psychophysiological states that have distinct patterns of
623 cardiovascular activity.

624 The applied implications of this intervention are relevant to athletes, coaches,
625 researchers, and practitioners. The results suggest that the theoretically informed cognitive
626 restructuring technique that was used in this study is useful when working with high-level
627 female field hockey players who typically appraise organizational stressors as a threat or with
628 a sense of loss. The TAS that was developed and used can be seen as a catalyst for appraisal
629 optimization that could be incorporated in applied practitioners' psychological skills training
630 programs. Indeed, the participants in this study embraced the use of the TAS as a tool that
631 encouraged regular self-reflection on their appraisals and emotions. The players also reported
632 that they had increased performance satisfaction when they appraised organizational stressors
633 as a challenge. Thus, while there are extraneous factors (e.g., physical training) that may have
634 influenced the players' performance satisfaction, the usefulness of cognitive restructuring for
635 enhancing performance satisfaction should be noted.

636 A noteworthy strength of this study relates to the single-case multiple-baseline design,
637 which allowed the researchers to explore intra-individual changes in the outcome variables.
638 In addition, the inclusion of a three months post-intervention follow-up allowed the
639 participants' retention of the intervention effects to be assessed. This aspect of the study
640 design makes a unique contribution to the literature because Brown and Fletcher (2017)
641 highlighted that most published intervention studies in sport have not included a follow-up
642 and those that have are most often conducted within a month of intervention completion. This
643 is problematic if the aim is to develop and test interventions that have longer term benefits for
644 performers. Other strengths of this research relate to the naturalistic setting of the intervention
645 and the semi-structured nature of the content, which allowed the participants to explore
646 organizational stress transactions in ways that were personally significant. This was important

647 because the intervention needed to be replicable but cognitive restructuring is based on the
648 premise that each session is driven by the participant (Beck, 2011) to facilitate personally
649 adaptive appraisals (see Mancini, 2015).

650 Despite these strengths, some limitations of the study should be considered when
651 interpreting the findings. For example, the purposeful sample should be kept at the forefront
652 of readers' minds when reviewing the effects of the intervention. This is because the
653 sampling strategy may have inadvertently encouraged favorable outcomes that may not have
654 been apparent if athletes who typically experienced challenge and benefit appraisals had also
655 been recruited. In addition, the selection of one sport and the all-female, small sample limit
656 the generalizability of the findings. Expectancy effects and or a Hawthorne effect may have
657 also influenced the findings due to the single-case design and the associated scrutiny that the
658 participants received (Swain & Jones, 1995). This limitation is especially relevant when
659 considering the immediate intervention effects that the participants reported, which may have
660 been due to the intervention or due to a placebo effect. Another limitation relates to the
661 reported increases in performance satisfaction, which could have been due to external factors
662 (e.g., team form, stage of the competitive season). Although not essential for multiple-
663 baseline single-case research designs, this limitation could have been mitigated by including
664 control participants. In addition, the collection of objective performance data (e.g., number of
665 successful and unsuccessful passes) could help to address this limitation during future
666 intervention research.

667 Future research should replicate this study with other populations to assess the
668 internal validity of the intervention and to test whether the findings are generalizable. To
669 advance knowledge of organizational stress management, researchers should also develop
670 and evaluate primary and tertiary level SMIs in collaboration with sport organizations.
671 Understanding in this area could be further enhanced if the collective and relative effects of

672 primary, secondary, and tertiary stress management techniques were assessed in different
673 contexts. A more robust understanding of how to optimize sport performers' appraisals could
674 be developed by examining the underlying mechanisms of cognitive restructuring. From a
675 methodological perspective, researchers should consider using randomized controlled designs
676 in an organizational context in sport and should develop novel ways to objectively measure
677 performance in team sports. The results of this study indicate that the intervention had a
678 positive effect on players' appraisals of organizational stressors but that it had a less
679 'significant' effect on their emotions and performance satisfaction. Thus, future research
680 should examine the effects of multi-modal interventions that target appraisals and emotions
681 as the primary outcome variables.

682 **Conclusion**

683 This study outlines the first intervention that has aimed to optimize performers'
684 appraisals of organizational stressors. The findings suggest that cognitive restructuring
685 encouraged challenge appraisals, pleasant emotions, and enhanced performance satisfaction
686 in four high-level female field hockey players who typically appraised organizational
687 stressors as a threat or with a sense of loss at the start of the intervention. While the players'
688 appraisals and emotions appeared to be influenced by cognitive restructuring, the relationship
689 between these two constructs may be more ambiguous than previous literature suggests.
690 Researchers should examine the effectiveness and efficacy of the intervention with other
691 populations to develop a robust evidence base for appraisal optimization in sport.

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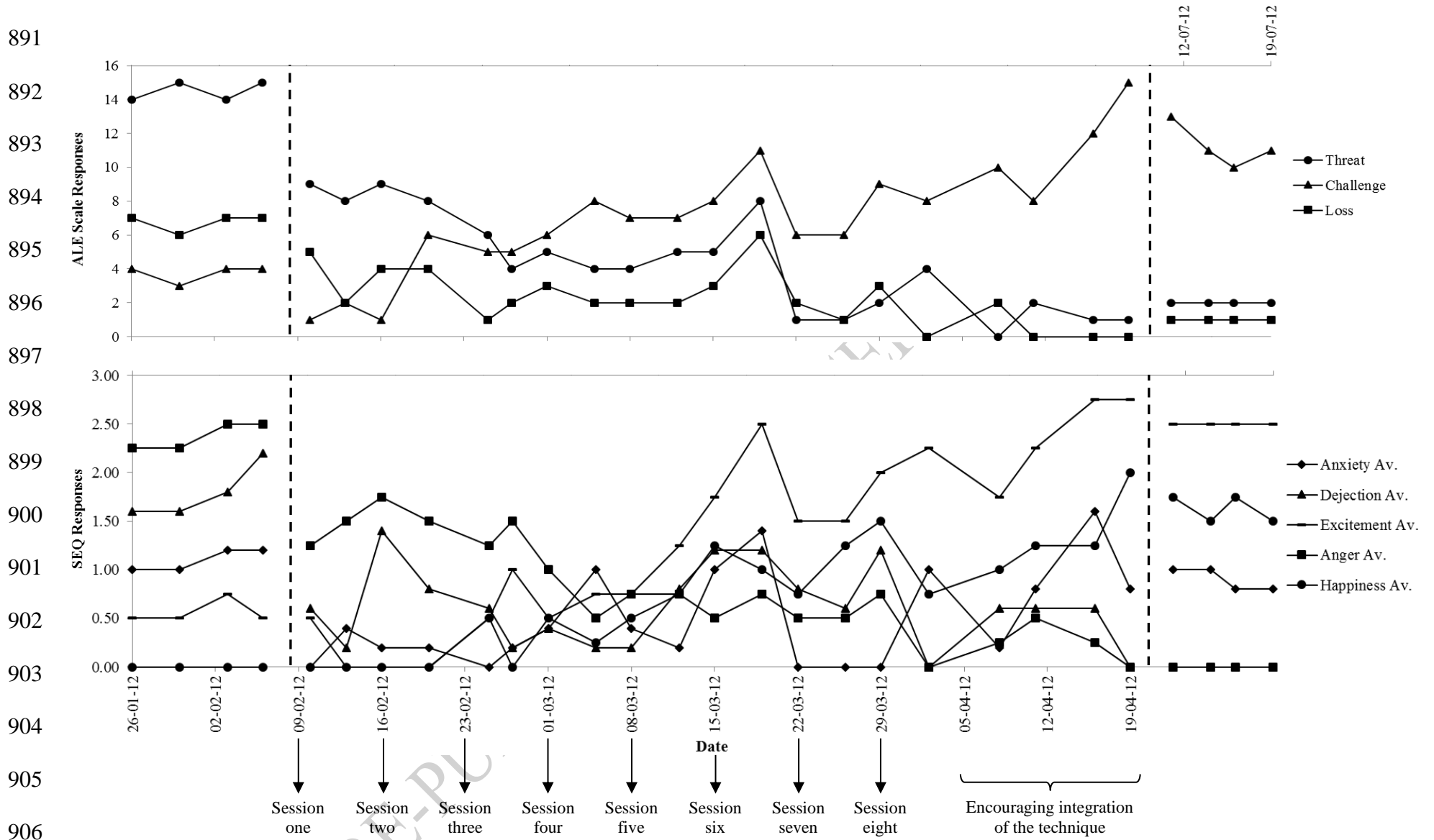
887 Table 1

888 *Descriptive statistics for each participant's questionnaire responses during the baseline, intervention, and follow-up phases of the intervention.*

	Participant A			Participant B			Participant C			Participant D		
	Baseline M (SD)	Intervention M (SD)	Follow-up M (SD)	Baseline M (SD)	Intervention M (SD)	Follow-up M (SD)	Baseline M (SD)	Intervention M (SD)	Follow-up M (SD)	Baseline M (SD)	Intervention M (SD)	Follow-up M (SD)
ALE												
Threat	14.5 (0.6)	4.4 (2.9)	2.0 (0)	23.7 (2.1)	10.6 (5.2)	4.0 (0.8)	19.0 (1.5)	6.4 (3.5)	5.3 (0.7)	27.0 (2.2)	9.8 (4.8)	7.3 (1.2)
Challenge	3.8 (0.5)	7.1 (3.5)	11.3 (1.3)	5.0 (1.4)	16.2 (2.7)	17.7 (0.5)	6.5 (0.5)	12.1 (1.5)	12.4 (0.5)	5.3 (1.6)	11.8 (4.8)	14.2 (1.2)
Loss	6.8 (0.5)	2.2 (1.7)	1.0 (0)	13.6 (1.3)	1.5 (1.4)	1.4 (1.3)	11.1 (1.2)	4.8 (1.7)	2.4 (0.5)	11.8 (2.3)	2.9 (1.6)	4.3 (1.4)
SEQ												
Anxiety	1.1 (0.1)	0.5 (0.5)	0.9 (0.1)	3.7 (0.2)	1.7 (0.7)	1.5 (0.1)	2.7 (0.2)	1.6 (0.2)	1.9 (0.1)	4.0 (0.3)	2.0 (0.6)	2.1 (0.2)
Dejection	1.8 (0.3)	0.6 (0.4)	0 (0)	3.1 (0.3)	0.5 (0.4)	0.3 (0.2)	3.5 (0.3)	1.6 (0.5)	1.2 (0.2)	2.2 (0.5)	0.8 (0.6)	1.0 (0.2)
Excitement	0.6 (0.1)	1.3 (0.9)	2.5 (0)	0.3 (0.3)	1.6 (0.5)	2.5 (0.2)	0.3 (0.2)	1.8 (0.5)	2.3 (0.2)	0.2 (0.3)	0.9 (0.7)	2.0 (0.2)
Anger	2.4 (0.1)	0.8 (0.5)	0 (0)	3.3 (0.2)	0.7 (0.6)	0.3 (0.2)	2.1 (0.2)	0.8 (0.4)	0.5 (0.3)	1.0 (0.2)	0.4 (0.5)	0.1 (0.1)
Happiness	0 (0)	0.7 (0.6)	1.6 (0.1)	0.1 (0.2)	1.1 (0.5)	1.5 (0.4)	0.2 (0.2)	1.5 (0.6)	2.1 (0.1)	0.3 (0.2)	1.9 (1.2)	2.9 (0.1)
PS	5.8 (1.5)	7.3 (1.0)	8.3 (0.5)	5.3 (1.0)	7.4 (1.5)	7.6 (0.5)	5.6 (0.9)	7.1 (1.1)	7.9 (0.8)	6.3 (0.8)	7.3 (1.2)	7.8 (0.8)

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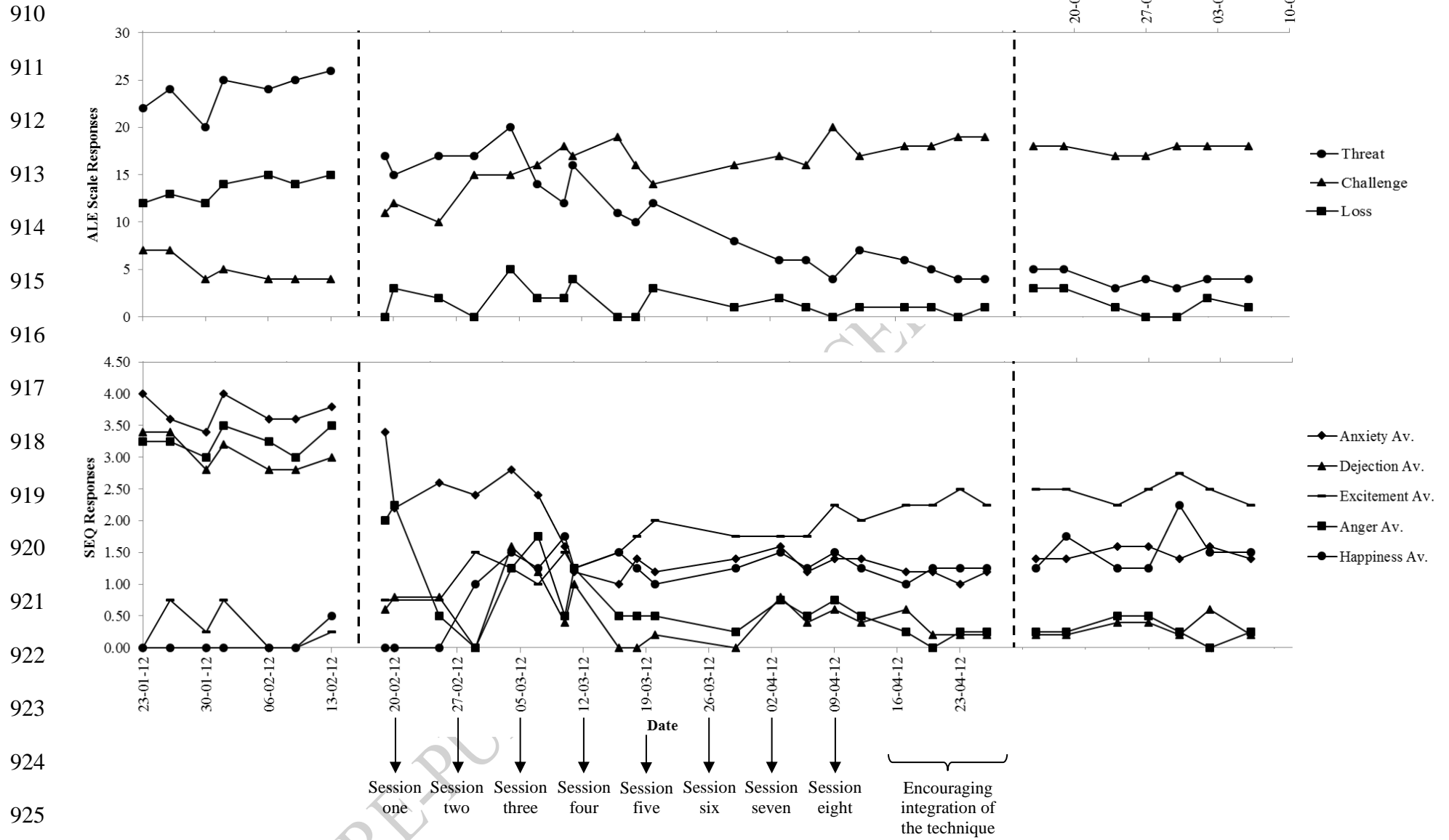
890 *Note.* PS = performance satisfaction.



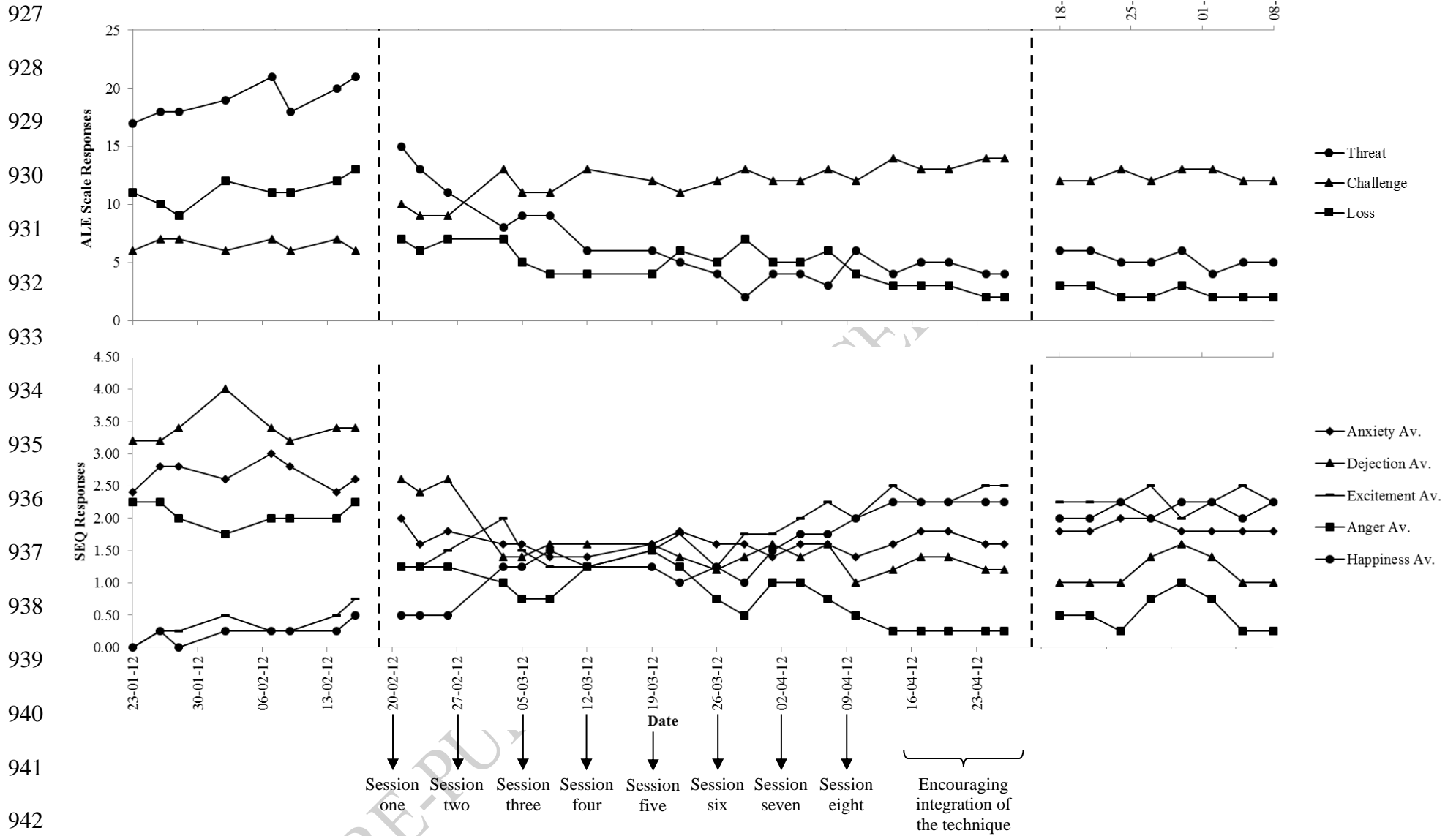
907 Figure 1. ALE scale and SEQ responses from participant A (the left section of the graph shows the baseline data, the middle section shows data

908 from the intervention phases, and follow-up data are shown on the right. The dashed vertical lines separate each section. Each data point
909 represents the mean score for one type of appraisal or emotion at one data collection point. The same system applies to figures 2-4).

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926 Figure 2. ALE scale and SEQ responses from participant B.



943 Figure 3. ALE scale and SEQ responses from participant C.

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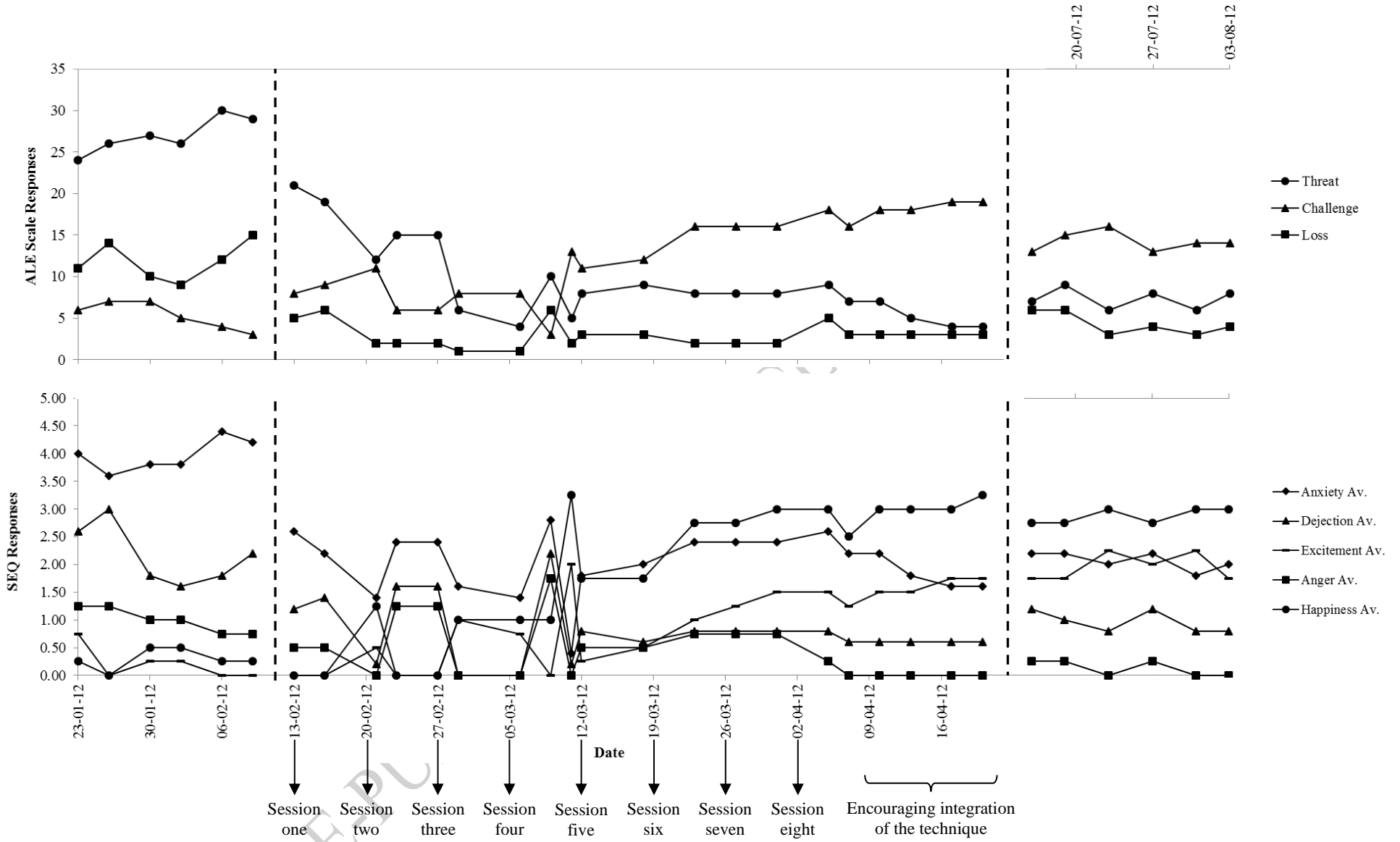
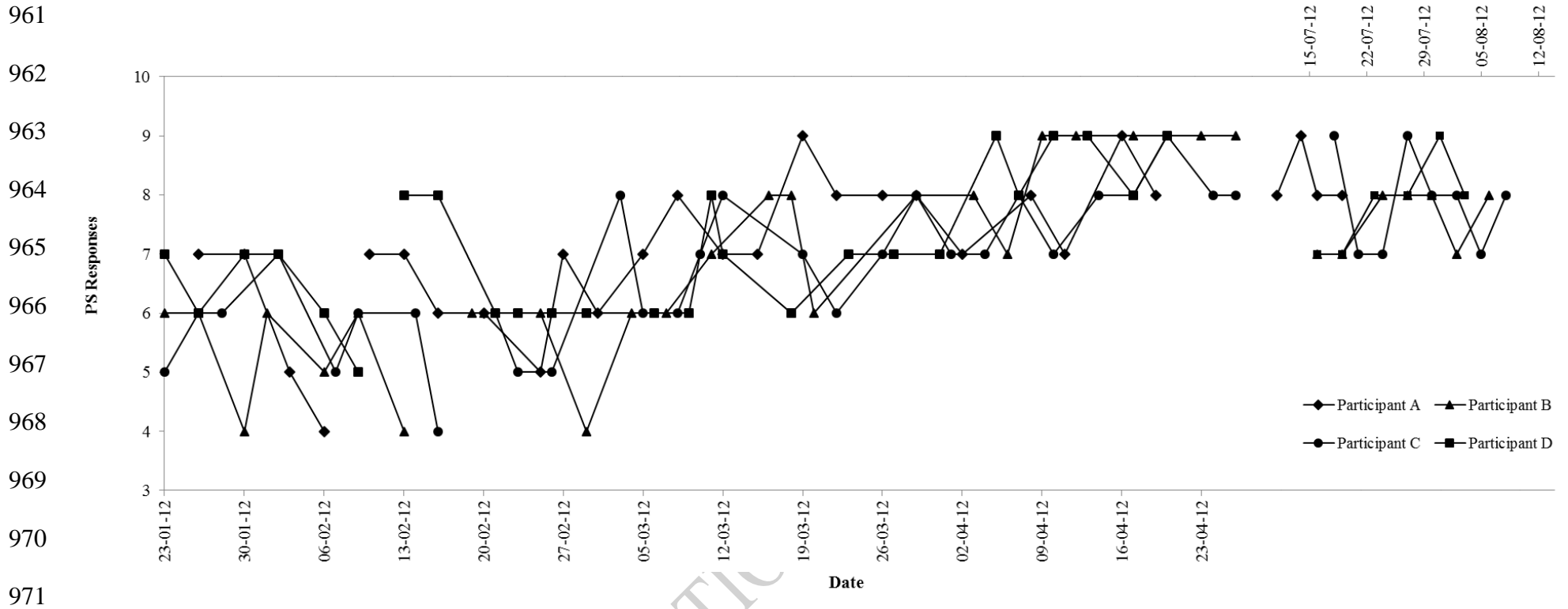


Figure 4. ALE scale and SEQ responses from participant D.



972 *Figure 5.* Performance satisfaction responses from participants A, B, C, and D (the breaks in each data series represent the points in time when
 973 each of the baseline monitoring, intervention, and follow-up phases started and finished. Each data point represents a mean performance
 974 satisfaction score at one data collection point).

1. Organizational Stressor	2. Negative Automatic Thoughts	3. Emotions	4. Alternative Thoughts	5. Alternative Emotions
Describe the organizational stressor clearly and concisely.	What thoughts do you have about the stressor? Rate the believability of these thoughts from 0% to 100%	What are you feeling? Rate the intensity of these emotions from 0% to 100%	What more functional thoughts could you have about this stressor? Rate the believability of these thoughts 0% to 100%	How might you feel after having the alternative thought? Rate the intensity of these emotions from 0% to 100%
The team are not playing like they want to win.	“So annoying: we will never win” (80%) “What’s the point in playing if no one else is trying” (50%)	Irritated (80%) Annoyed (80%) Upset (80%)	“I will keep trying” (100%) “We have the time, we can score” (80%) “It’s not over until the whistle blows” (80%)	Determined (90%) Apprehensive (80%) Irritated (30%)
The England selectors are watching our game.	“I will not impress” (100%) “I will not play well” (80%) “I may not start the game” (70%)	Nervous (100%) Uneasy (90%) Scared (80%)	“It’s worth trying” (100%) “I can play well” (80%) “I can make an impact even if I start from the bench” (80%)	Excited (80%) Nervous (60%)
There’s a big crowd at the game so I need to not mess up.	“I’m not playing well, my next pass will be rubbish” (90%) “This is gonna be hard” (70%) “I bet I make mistakes” (70%)	Worried (70%) Scared (70%) Anxious (60%)	“I know I can play well” (80%) “I will try my best” (80%) “The crowd makes no difference to how well I can play” (60%)	Excited (70%) Anxious (40%)
The coach told us about selection too late.	“F*** sake, that’s inconvenient” (90%) “I should be on holiday, not stuck at training” (80%)	Frustrated (90%) Annoyed (85%) Sad (70%)	“He’s busy, just be patient” (70%) “I am being selected so training can come first” (60%) “Take it as a compliment” (60%)	Annoyed (70%) Appreciative (60%) Happy (50%) Excited (50%)

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976 *Figure 6.* Exemplar TAS from participant B. The first three columns were completed during session three and between sessions three to eight of
 977 phase III. The fourth column was completed during sessions four to eight and between sessions five to eight of phase III. The fifth column was
 978 completed during and between sessions five to eight of phase III.

APPRAISAL OPTIMIZATION IN SPORT

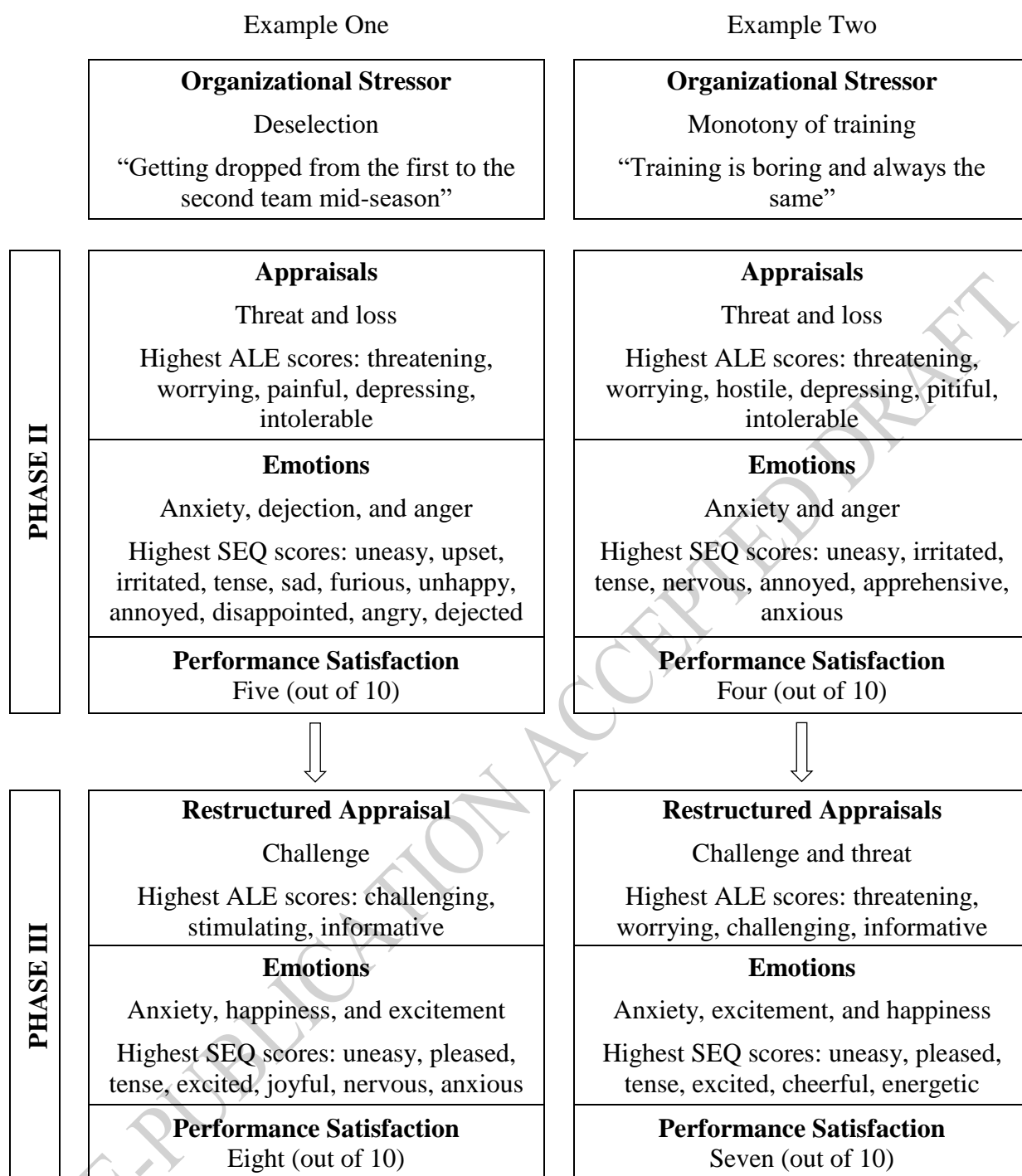


Figure 7. Illustrative flow charts showing examples of the organizational stressors encountered and exemplar appraisal, emotion, and performance satisfaction data from the baseline and intervention phases. Verbatim quotes about the stressors are taken from the ALE scale where participants were asked to record the most recent organizational stressor that they had experienced during training or competition. The appraisals with the highest score from the ALE scale and the emotions with the highest scores from the SEQ are reported at each stage.