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Psycho-Behavioral Momentum: Golf Matchplay Players' Perspectives

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Abstract

This study employed a qualitative in-match recording technique to understand how A-grade amateur golfers ($N = 8$) experience psycho-behavioral momentum during competitive matchplay. The aims were to capture, in real-time, thoughts and emotions associated with perceived changes to psycho-behavioral momentum, to understand what high-standard golfers perceive as significant triggers for both positive and negative psycho-behavioral momentum, and what strategies they might employ during a competition to maintain positive psycho-behavioral momentum and to overcome negative psycho-behavioral momentum. To complement the matchplay data, semi-structured group interviews were conducted to corroborate interpretive findings from the matchplay data and to discuss participants' beliefs regarding momentum in the matchplay environment. Thematic analysis of both data sets revealed four themes to emerge from the participants' statements pertaining to the genesis and maintenance of their experience of psycho-behavioral momentum: Unexpected Events (discrepancy between players' expectations and reality, either positive or negative); Control (feeling in control: cognitions, emotions, behaviors, and outcomes; and appearing in control); Temporality (a perception that psycho-behavioral momentum cannot occur early in matches, sufficient match pressure and intensity is required to generate psycho-behavioral momentum); and Pressure (application and maintenance of psychological pressure upon opponent, and the management of pressure applied by opponent). Findings support existing conceptual models of momentum and extend the knowledgebase regarding how individuals experience momentum in competitive skill-based sports such as golf. Several strategies are suggested that could assist in building awareness of and managing psycho-behavioral momentum fluctuations.

54 **Keywords:** Golf; Momentum; Matchplay; Unexpected events; Control; Pressure;
55 Temporality.

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57 **Lay Summary**

58 Information from competitive Australian matchplay golfers during interviews and
59 matches revealed four key contributors to experiencing positive and negative psycho-
60 behavioral momentum during rounds of matchplay golf. These key contributors are
61 unexpected events, feeling and appearing in control, how far the game has progressed, and
62 applying and coping with pressure.

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64 **Implications for Practice**

- 65 • Psycho-behavioral momentum is an important aspect of applied sport psychology
66 instruction and intervention.
- 67 • Sport psychology interventions aiming to enhance psycho-behavioral momentum, and
68 thus performance, should support athletes to develop strategies that enhance feeling
69 and appearing in control, along with skills to effectively manage psycho-behavioral
70 momentum consequences of unexpected events.
- 71 • Sport psychology interventions should aim to build psycho-behavioral momentum
72 early in competition, ideally building from training prior to events.

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**Psycho-Behavioral Momentum: Golf Matchplay,
Players' Perspectives**

Athletes, coaches, and spectators all appear to recognize the existence of momentum (Crust & Nesti, 2006; Iso-Ahola & Dotson, 2014) and the importance it can have in competitive environments (Briki, 2017; Briki, Den Hartigh, Markman, Micallef, & Gernigon, 2013). Despite momentum's purported salience within sport, and that momentum is considered one of the most frequently referred psychological phenomena in sport, our understanding of momentum as participants, spectators, and psychologists, still deserves substantial development (e.g., Briki, 2017). Despite recent advances in the conceptualization and understanding of proposed performance determining momentum mechanisms (e.g., Briki, 2017; Iso-Ahola & Dotson, 2017), key limitations to the current body of understanding remain. Two such limitations include that previous data have mostly been recollected (i.e. participants attempt to remember or recall their in-competition experiences after the conclusion of the event) and that our understanding of the genesis and maintenance of momentum remains incomplete. These limitations in the current body of knowledge regarding momentum in sport impair the evidence based design of efficacious interventions purposed to manipulate momentum (or perceived momentum) to effect performance enhancements.

Momentum, in its simplest conceptualization where early success affects subsequent success, has been explored from psychological and behavioral perspectives (Hubbard, 2016). Vallerand, Colavecchio, and Pelletier (1988) suggested that positive psychological momentum involved enhanced psychological power that can influence performance and is bi-directional. Positive psychological momentum associates with psychological empowerment along with positive related changes in cognition, emotion, behavior, and potentially performance, whereas negative psychological momentum can be considered the converse

99 (Burke, Aoyagi, Joyner, & Burke, 2003; Kerick, Iso-Ahola & Hatfield, 2000; Perreault,
100 Vallerand, Montgomery, & Provencher, 1998). Psychological momentum has been defined as
101 an altered state of mind that enables extraordinary performance (Iso-Ahola & Dotson, 2014),
102 while behavioral momentum, according to Hubbard (2015), is the tendency to persist with
103 reinforced behaviors until extinguished or satiated by an opposing force. Briki (2017)
104 contend that psychological momentum and behavioral momentum represent different
105 perspectives of the same phenomenon: “correspond[ing] to an impetus expected to entail
106 changes in performance” (Briki, 2017, p. 39). Briki noted three core principles that direct his
107 perspective of momentum: Firstly, psychological and behavioral momentum characterize
108 psychological and behavioral facets of the same phenomenon termed psycho-behavioral
109 momentum (PBM) that mediates how initial success relates to subsequent success. Secondly,
110 PBM reflects a composite phenomenon associating psychological, physiological, and
111 behavioral elements. Thirdly, PBM is a complex phenomenon that while variable, is
112 historically embedded and likely to develop and present at different temporal scales. Thus
113 PBM can be considered as an altered state of mind that enables extraordinary performance
114 with a tendency to persist with reinforced behaviors until extinguished or satiated by an
115 opposing force. Due to the inconsistent use of terminology within existing literature and to
116 reduce potential confusion, we adopt the term PBM henceforth.

117 To date, the majority of previous research considered how either psychological or
118 behavioral momentum separately affected performance. Examples of psychological
119 momentum based approaches that attempt to explain performance effects include the
120 antecedents-consequences model (Vallerand et al., 1988), the multidimensional model
121 (Taylor & Demick, 1994), and the dynamical model of PM (Gernigon et al., 2010). More
122 recently Briki’s (2017) in his integrative perspective of PBM, considering both psychological
123 and behavior momentum elements, presumes that “success could trigger psychological and

124 neurological processes (e.g., self-confidence, internal causal attribution, reinforcement,
125 automatic processing) enabling to give to rise to optimal motivational and behavioral patterns
126 (e.g., self-determination, persistence, high coordination), thus fostering the occurrence of
127 another success” (Briki, 2017, p 41). Briki’s consideration of PBM has utility in explaining
128 why for some individuals in some contexts early success does facilitate later success, but for
129 other individuals or in different contexts, early success does not facilitate later success.

130 Despite these conceptual advances offered by Briki (2017), and respectful of Briki’s
131 proposal that PBM “is a complex and self-organized phenomenon that is irreducible to the
132 sum of its components and that emerges spontaneously from the multiple interactions
133 between its components” (p. 41), further understanding of how sports participants experience
134 PBM and what triggers the genesis of PBM is still needed. In a comprehensive review of the
135 literature, Crust and Nesti (2006) called for more qualitative investigations into how
136 individuals and teams experience PMB. Crust and Nesti reported that individual experiences
137 of PBM (i.e., cognitions and emotions) were missing and that exploring individual beliefs and
138 subsequent perceptions would help build a clearer picture of PBM. Such knowledge would
139 aid evidence-based development of practical strategies for coaches, athletes, and
140 psychologists to potentially manage PBM more effectively.

141 Jones and Harwood (2008) and Willis (2015) responded by exploring how athletes in
142 team contexts experienced PBM, what they perceived as significant triggers for, and
143 strategies used during competition to manage the ebbs and flows of PBM. Both studies
144 contributed valuable information to the overall picture of PBM by providing insight into how
145 athletes experience PBM. However, participants in both studies were not competing at the
146 time of data collection, and therefore, the authors were relying on potentially unreliable recall
147 accuracy (e.g., Schwarz & Sudman, 2012). Acknowledging the strengths of both the Jones
148 and the Willis papers, it may well be that in alignment with the Projected Performance Model

149 of PBM (Cornelius, Silva, Conroy, & Petersen, 1997), where momentum is likely to be the
150 result rather than the cause of performance changes, that their reported accounts of PBM may
151 be merely ‘glow’ effects of the recall of inferior or superior performances post event.

152 In light of limitations to previous research, specifically those related to a dependence
153 on recollected data and team-sport participants, the purpose of this current study was to
154 understand how high-standard golfers experience PBM during a competitive matchplay
155 situation. Specific objectives were to understand what high-standard golfers perceive as
156 significant triggers for both positive and negative PBM, and what strategies they might
157 employ during a competition to maintain positive PMB and to overcome negative PBM.

158 **Methods**

159 **Methodology**

160 The choice of methodology for this research was guided by the empirically elusive
161 nature of the phenomenon and the philosophical viewpoint adopted by the research team
162 (Savin-Baden & Major, 2013). The researchers’ pragmatic philosophy regarding research
163 demands that the research question should guide the methods used. The research question is a
164 necessary component in deciding the most appropriate methods and an essential ingredient
165 for methodological rigor (Roy & Słowiński, 2013; Williams, 2007). Hence, qualitative
166 methods were deemed the most appropriate to answer the initial questions raised regarding
167 the human characteristics of the phenomenon with the most depth and subtleness. An
168 inductive, constructionist approach was utilized as the researchers’ primary interests were the
169 experiences of participants devoid of being guided by any designated theoretical position.
170 Constructionism represents the inductive method of research in which knowledge is created
171 upward from the data (Saldaña, 2011). Members’ of the research team prior knowledge,
172 experience, and biases regarding PBM were considered when analyzing the data to concur
173 with Saldaña’s (2011) comments which suggest most contemporary qualitative researchers

174 take the constructivist view that knowledge is created within the individual and contingent on
175 numerous factors pertaining to that person. Hence, thorough cross-checking of the data and
176 interpretations of data by ‘non-golfing’ research team members ensured minimal
177 contamination.

178 **Participants**

179 Following institutional ethical approval, various golf clubs in the Sunshine Coast,
180 Australia region were contacted to gain permission to approach their A-grade pennant golfers
181 regarding participation in this study. A-grade players are amongst the top echelon of golfers
182 at their home clubs and are at the highest standard of non-professional competitive golf (Golf
183 NSW, 2014). Subsequently, 37 male A-Grade golfers were approached during a round of the
184 Sunshine Coast Golf Zone (SCGZ) pennant season. This competition was selected as it
185 represented a significant competition in the region, therefore helping ensure ecological
186 validity of data collected and the inferences that the authors drew from the data. Eight
187 participants (henceforth referred to as golfers) provided informed consent and volunteered to
188 participate in this research ($M_{\text{age}} = 26.5$ years, $SD_{\text{age}} = 3.7$ years, $M_{\text{experience}} = 15.0$ years,
189 $SD_{\text{experience}} = 5.0$ years, $M_{\text{GA handicap}} = 0.9$, $SD_{\text{GA handicap}} = -2.6$, $\text{Range}_{\text{GA handicap}} = + 4$ to -5.3 ; GA
190 handicap was Golf Australia handicap at time of recruitment. GA handicaps for males can
191 range from -36 through 0 [scratch] to positive numbers, with the best amateur players having
192 a positive handicap).

193 **Design**

194 The pennant matchplay competition was chosen as the format for this study as players
195 were representing their home clubs; therefore, winning was a high priority. This was
196 confirmed by players’ self-rated importance of the round on a scale from 0 to 10 ($M = 8.5$, SD
197 $= 1.0$). Data were collected in two phases: Phase 1: In-game during matchplay; Phase 2:
198 Group interviews. Matchplay data collection involved providing players with a hand-held

199 recording device prior to a fixture of the SCGZ pennant matchplay competition. Players were
200 asked to provide a commentary on what happened during each hole, how they felt about what
201 happened and if they considered it important for PBM. This format was chosen because
202 players were able to provide thoughts and observations “in the moment” and therefore did not
203 have to rely on recollected events. Similar ‘think aloud’ protocols have been successfully
204 used in other recent sport psychology research (e.g., Samson, Simpson, Kamphoff, &
205 Langlier, 2017).

206 The research team in designing this study did consider the ethical question of would
207 asking players to provide a commentary on what was happening real-time during matchplay
208 stimulate an increased awareness of specific outcomes and processes which could lead to
209 potential performance decrements in a meaningful competition. This challenge had to be
210 balanced with the need to access data that realistically represented competitive rather than
211 recreational golf experiences. We reconciled this risk of damaged performances by
212 highlighting to prospective participants the potential risks, the voluntary nature of their
213 participation, their right to withdraw (stop providing data) at any time, and the potential
214 benefits that this research could afford. The research team also committed to providing a
215 presentation of findings back to the participants and the wider Sunshine Coast Gold
216 community.

217 Group interviews were later conducted to complement the matchplay data by
218 gathering additional information regarding PBM to determine whether players’ existing
219 knowledge and beliefs confirmed or contradicted what was found within the matchplay data.
220 Group, rather than individual, interviews were considered most appropriate. We considered
221 that to complement the individual data analysis of the first phase, the group based interviews
222 with the opportunity for the participants to interact with each other would give a more
223 ‘complete’ approach and could provide a richer source of data than that of one-on-one

224 interviews (Onwuegbuzie, Dickinson, Leech, & Zoran, 2009). Dividing players into two
225 smaller groups for the group interviews was ideal as participants were members of two golf
226 clubs in the Sunshine Coast region; therefore, a level of trust already existed which would
227 promote a more intimate setting in which players would be more likely to express their views
228 (Rabiee, 2004). The interviews were conducted following the matchplay data analysis to
229 maximize validity by reducing the potential for the group discussions to influence the
230 players' instincts during the collection of matchplay data. The interview schedule consisted
231 of 29 questions with the flexibility to alter and add as needed, for example to pursue themes
232 raised by the participants that had not previously been considered by the research team during
233 question setting, or to follow-up on participants' statements to check understanding, or seek
234 further detail. Example questions included: Why do you think the tide turns in matches, why
235 does momentum swing your way? Can you describe the gaining of the upper-hand as a
236 process? How do you respond if the run of play is going against you? It was developed using
237 Jones and Harwood's (2008) interview schedule as a guide, with refinements limited to
238 altering the language to produce a golf-specific version with easily understandable
239 terminology. The interview schedule addressed four general domains of momentum:
240 experiences of positive momentum; experiences of negative momentum; strategies to
241 maintain positive momentum; and strategies to overcome negative momentum. All interviews
242 were moderated by the first author.

243 **Procedure and Data Analysis**

244 Each participating golfer was provided with a hand-held recording device before a
245 fixture of the SCGZ pennant season. Players were provided with written instructions on how
246 to use the recording device and a uniform example; Players were asked to use the device to
247 provide a commentary on what happened during each hole, how they felt about what

248 happened, and if they considered it important for PBM. The following example was provided
249 to all players before the round:

250 Just played the 14th, hit a cracking drive, was short of the green on the approach but
251 made a long putt off the green for birdie. Feel a bit lucky after that because he missed
252 his short birdie putt. Probably feel more confident after that because I can see that he
253 is angry at himself.

254 To ensure that players' self-reports were not overly contaminated by preconceptions
255 of what PMB may represent, only limited explanations of PMB were provided in Research
256 Participant Information Sheet materials (e.g., "an altered state in which one can perform at an
257 extraordinary level marked by perceived superiority over an opponent),

258 Recordings were transcribed verbatim and the data organized and analyzed using
259 qualitative analytical computer software NVivo (version 11). Thematic analysis was utilized
260 as it was considered the most appropriate method to systematically capture the critical aspects
261 of the phenomenon. Thematic analysis has been defined by Braun and Clark (2006) as: "a
262 method for identifying, analyzing, and reporting patterns (themes) within data" (p.79).

263 Following matchplay data analysis, the participants were contacted to take part in one of two
264 group interviews. Group interviews were conducted within two weeks of the matchplay at a
265 local golf club in a private setting. The participant numbers of the interviews were equal. The
266 interviews were transcribed immediately following their conclusion. Throughout this process
267 notes, memos, and ideas were generated, which served as a preliminary form of data analysis.
268 Ezzy (2002) considers this process a systematic approach to facilitate the interpretive process.
269 A thorough analysis of the initial group interview data were conducted before the second
270 interview being conducted; this information helped to direct questioning in the second group
271 interview. During the analysis of the second interview, it became clear that data saturation
272 had been achieved. According to Fusch and Ness (2015), data saturation is reached when no

273 new information is likely to be uncovered through further data collection. Additionally,
274 Guest, Bunce, and Johnson (2006) discuss the detrimental impact on content validity should
275 saturation not be reached. Integrating data collection and analysis in a continuous approach
276 facilitated the identification of data saturation in the current study. This approach is consistent
277 with the constant comparison method (Dye, Schatz, Rosenberg, & Coleman, 2000; Goetz &
278 LeCompte, 1981). By using this method, additional information could be drawn from the
279 matchplay data following analysis of the interview data, generating more informed and robust
280 themes.

281 **Results and Discussion**

282 Thematic analysis of matchplay data yielded 79 data extracts. Following further
283 refinement, four themes were found to effectively capture the most important aspects of those
284 initial data extracts: Unexpected events, Feeling in control, Temporality, and Pressure. Group
285 interview data both confirmed and built upon the themes found within the matchplay data.
286 The group interviews were 43 and 51 minutes in duration. Analysis of interview data yielded
287 188 data extracts. Data extracts were organized into 16 codes that were related to PBM. No
288 new discrete themes were uncovered indicating data saturation had been reached. Thus
289 following refinement of the two phases of data collection and analysis, four themes were
290 found to effectively capture the integral facets of PBM: Unexpected events, Control,
291 Temporality, and Pressure (see Table 1).

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Themes	Descriptors
Unexpected events	The discrepancy between players' expectations and reality. Either positive or negative unexpected events.
Control	Feeling in control: Cognitions, emotions, behaviors, and outcomes. Appearing in control.
Temporality	Psycho-behavioral momentum cannot occur early in the match. Sufficient match pressure and intensity is required to generate psycho-behavioral momentum.
Pressure	Application and maintenance of psychological pressure upon opponent. Management of pressure applied by the opponent

299 Table 1

300 *Golfers' Perceptions of Psycho-Behavioral Momentum Triggers: Themes and Descriptors*

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303 **Theme 1: Unexpected events.**

304 Unexpected events or outcomes experienced as a discrepancy between a players'

305 expectations and reality, either positive or negative, affected PBM. When players believed

306 specific outcomes were likely, expectations were created. If the actual outcome was

307 unexpectedly contrary to the expectation, PBM was affected. For example, Golfer 5 had just

308 hit a "great drive" and a "solid second shot" into the 5th green; his opponent was in the trees.

309 Walking up to the green, Golfer 5 expected to win the hole and may have even calculated

310 what the score would have been as a result. However, contrary to the expected outcome, his

311 opponent made a “great shot” out of the trees and squared the hole (i.e., no winner) leaving
312 Golfer 5 to wonder what went wrong: “He shouldn't have made up-and-down but he did and
313 halved the hole”. This finding is consistent with Taylor and Demick’s (1994)
314 multidimensional model of momentum in sports which conceptualized momentum as the
315 result of altered cognitions and affect in response to a perceived discrepancy between current
316 performance and subjective norms (Crust & Nesti, 2006). Golfer 1, in particular, recorded an
317 incident that illuminated the essence of this theme: “13th hole, I hit it on the back edge of the
318 green I thought, but I was in the back trap, got a horrible lie, ended up 3 putting for bogey
319 when I should have halved the hole to go back to 2 down”. The important thing to note here
320 are the words he used; firstly, he said he “thought” his ball was in a better position than it
321 turned out to be. Secondly, that he “should” have won the hole. Both words indicate certain
322 expectations during this hole. The emotional and cognitive consequence of falling short of
323 those expectations was interpreted as a negative PBM contributor. Consequently, Golfer 1 did
324 not win another hole for the match and went on to lose 3 and 2 (3 behind with 2 to play). This
325 finding is consistent with Decision Affect Theory (DAT) that proposed that people feel
326 displeasure when the outcome does not meet expectations (Shepperd & McNulty, 2002; Van
327 Dijk, Zeelenberg, & Van der Pligt, 2003). The theory predicts that not only do adverse
328 outcomes feel worse when unexpected but positive outcomes will elicit a higher positive
329 affective response when the outcome exceeds expectations.

330 Similarly, Golfer 2 drew attention to the perception that he played the hole better than
331 his opponent but still lost: “1 down after the 1st, couldn't have played the hole any better but,
332 ah, he made birdie out of the trees”. The adverse effects were apparent on the following hole:
333 “2 down after the 2nd hole. It was a pretty bad hole by me, bad tee shot, bad chip, bad putt”.
334 The unexpected event was that, despite Golfer 2’s perception that he played the better 1st
335 hole, his opponent won the hole with a stroke that was particularly unlikely to be successful.

336 Golfers' comments suggested they were not aware of the emotional and cognitive
337 effects of such unexpected events upon PBM. For example, Golfer 6's verbal response to his
338 opponent's unexpected chip in appeared slightly frustrated but mostly unaffected, although
339 his subsequent performance suggested otherwise: "10th hole, he holed it off the green to win
340 the hole, and I felt like I was a bit unlucky.... Then on the 11th par 3 I lost it way right and
341 lost the hole after a couple of bad chips". His previous comments may have been a deliberate
342 (unsuccessful) attempt to retard the potential negative effects. The subsequent affective
343 response, according to Isen (2001) and Loewestein and Lerner (2003), will have an influence
344 on future decision making which, in turn, informs behavior, ultimately reinforcing players'
345 PBM state (Briki, 2017). Research by Isen (2001) found that positive affect could enhance
346 problem solving and decision making, leading to more flexible, innovative, and creative
347 cognitive processing, ultimately benefiting performance. Conversely, Lazarus (2000) claimed
348 that negative affect negatively influences cognition and future behavioral performance.

349 Some golfers demonstrated an ability to withstand the potentially harmful effects of
350 unexpected events by limiting their expectations and adopting a more pragmatic and adaptive
351 mindset, captured in the everyday expression "Don't get your hopes up". Van Dijk,
352 Zeelenberg and Van der Pligt (2003) found that managing expectation is an effective strategy
353 to avoid disappointment and associated negative emotions. Golfer 3 demonstrated an ability
354 to adopt this pragmatic mindset when confronted with an unlikely up-and-down by his
355 opponent: "halved the 5th, I got a bit unlucky really, I played the hole really well and he
356 played it terribly, made up and down from about 100 meters so still 2 down but my game is
357 looking OK". Hence, rather than dwelling on his opponent's good fortune, he chose to focus
358 on the elements of his game that were pleasing, thus preventing an adverse reaction. This
359 apparent self-regulation of cognition by Golfer 3 can be explained as a function of
360 metacognition. According to Efklides (2008), various facets of metacognition are essential

361 components of the self-regulation process. Whether or not self-regulation as a defense
362 mechanism against negative PBM was a conscious or nonconscious process was not
363 investigated in this study; future research should explore this.

364 When elaborating on the findings from the matchplay data, the focus-group interview
365 data revealed unexpected events fundamental to how positive and negative PBM is created.
366 Golfers discussed how things out of the ordinary could “kick start” momentum, such as
367 chipping in from a distance or discovering their ball fortuitously bounced off a rock instead
368 of rolling into the water like first thought. For example, Golfer 6 said:

369 The worst is when you think you are going to win the hole and then something
370 random happens.... like he drains a massive putt and you are thinking about how that
371 shouldn't have gone in and you end up missing yours and losing the hole.

372 The affective response can be twofold. Firstly, the player who made the unlikely putt
373 probably felt like things were going his way and secondly, the opposition player would have
374 felt like everything was going against him. Combined, players believed this could create
375 dramatic shifts in perceived PBM. Golfer 3 discussed a scenario that highlighted this shift:

376 I know when I played my match, I was 1 up after 9 and I hit a stupid chip in from the
377 back of that par 3 and my opponent hit a really good shot and did nothing wrong and
378 lost the hole that he really should have won. He seemed shocked a bit and there was
379 nothing he could do about it and he should have had the momentum go his way but
380 from there it was like well I've got this momentum somehow and everything just
381 became easier from there.

382 The data indicated that it did not have to be a discrete event *per se* that could trigger
383 perceived PBM, only that a player felt like things were going their way as a consequence of
384 something unexpected. For example, Golfer 8 recalled a match where he believed he had just
385 lost the match after losing a hole to his opponent:

386 I was sure the match was over, like I had lost the match. But the guy I was playing
387 told us I had the score wrong and I apparently was still in the match. Anyway, I went
388 on to win the match in a playoff so I won the next 2 holes.

389 **Theme 2: Control.**

390 This theme encompasses the notion that a feeling in control (cognitions, emotions,
391 behaviors, and outcomes) appeared to permeate all aspects of PBM. The matchplay data
392 demonstrated that feeling in control served as a buffer against instances of negative PBM and
393 consequently, helped build positive PBM. For example, Golfer 3's comments suggested he
394 felt in control despite losing the hole and consequently being down in the match: "Hit a bad
395 chip on the 2nd and lost the hole, still feeling ok.... Hit a good putt, and it didn't go in for the
396 half so, that's how it goes, moving on to the next". We, the research team, interpreted his
397 ability to accomplish this by attributing his missed putt and subsequent loss of the hole to
398 other factors (e.g., the way the grass was cut, wind, and air density) rather than his ability. He
399 eventually won his match 3 and 1. Golfer 6 experienced a comparable scenario: "Even
400 though he won the hole I feel like I am still in control".

401 There appeared to be psychological processes consistent with feeling in control, such
402 as feeling both calm and positive and having a clear direction of thought. For example, Golfer
403 5 demonstrated these processes in his match: "So first couple of holes, [I] had a win on the 1st
404 and halved the 2nd so 1 up still feeling pretty calm and collected". A few holes later, Golfer 5
405 again demonstrated feeling in control: "Hit a good drive down the fairway, good second and
406 made the birdie putt and won the hole, 'just cruising' now 3 up, in a 'pretty comfortable'
407 spot".

408 Whether a golfer felt in control or not was interpreted to be an integral part of
409 controlling PBM; however, another aspect of control was deemed just as necessary. Overtly
410 expressing emotion to your opponent that communicate control was interpreted to influence

411 how PBM is experienced. The data suggested exhibiting signs that one is in control can retard
412 instances of negative PBM and alternatively, demonstrating behaviors that communicate
413 emotions associated with losing control, such as frustration and helplessness, can serve to
414 reinforce positive PBM for their opponents. For example, Golfer 3 mentioned on numerous
415 occasions how he perceived his opponent was demonstrating behaviors consistent with losing
416 control: “You can tell he is starting to lose it, he is starting to whine about everything... He
417 is getting a bit frustrated so, good sign.... [the] Match is over; he imploded on the last”. He
418 mentioned that it was a “good sign” that his opponent was reacting in this way suggesting he
419 gained confidence because of this perception. Golfer 3 also noted that he kept “his head in it”
420 when he was under pressure early in the match: “Pretty happy with the result after the rushed
421 start, but ah kept my head in it”. This is important because it suggested he retained a sense of
422 control over his emotions when the alternative of descending into a negative PBM state was
423 possible.

424 Feeling in control appeared to provide a resilient line of defense against negative
425 PBM by reducing responsiveness to outside influences, including the opposition player. In
426 contrast to Golfer 3, Golfer 4 appeared unable to accomplish this, evidenced by comments he
427 made regarding his opponent’s positive response to losing a hole: “10th hole, he has hooked
428 his tee shot and hit his second in the hazard, I feel like he is over getting angry at himself, I
429 end up winning the hole”. Despite playing poorly and losing the hole, his opponent (Golfer 3)
430 demonstrated a shift in attitude that was observed by and responded to by Golfer 4.
431 Interpretation of this scenario was that Golfer 4 was not feeling comfortable, could perceive a
432 shift in PBM and did not feel he could control the developing situation. Golfer 4 may have
433 been able to prevent his downfall by employing cognitive strategies to regain a sense of
434 control over the situation. For example, focusing his attention on himself and the positive
435 outcome of winning the hole rather than his opponents’ attitude adjustment could have helped

436 Golfer 4 regain a sense of control and potentially defend against the perceived shift in PBM.
437 Research exploring the relationship between locus of control, sense of coherence and sports
438 performance supports this interpretation (Charbonneau, Barling, & Kelloway, 2001; Fallby,
439 Hassmén, Kenttä, & Durand-Bush, 2006). Fallby et al. (2006) explain how individuals that
440 believe events and consequences are of their own making (internal locus of control) are at a
441 competitive advantage in many sporting contexts. Potentially, and noting that it may be a
442 tentative conclusion, his opponent's positive response to losing the hole confused Golfer 4,
443 resulting in reduced predictive capabilities and feelings of control. Consequently, reduced
444 perceived control left him vulnerable to outside influences and situated in a negative PBM
445 state, losing the next two holes and eventually the match.

446 Findings from the group-interviews confirmed all golfers agreed that it was vital to
447 control PBM during a match. For example, Golfer 2 said: "I think it is very important to
448 control momentum if you can because if you are not then it is more likely that your opponent
449 is and that will inevitably be bad for you". The group-interviews provided further refinement
450 to the theme of Control, in that players noted several factors relating to control that could
451 potentially influence how PBM is experienced: Feeling in control and Appearing in control.

452 ***Feeling in control.*** Players' comments led us to infer feeling in control was an
453 essential aspect of PBM because it appeared to have a relationship with positive PBM and act
454 as a buffer against negative PBM. This finding supports the ACM's conceptualization of
455 personal control (Vallerand et al., 1988) which suggests maintaining a high level of perceived
456 control is critical for enabling an individual to perceive PBM. For example, Golfer 8 said:

457 he was saying all day how he couldn't believe he had to play us and I was like
458 well you're not going to beat me if you're thinking like that and it was like he gave
459 me momentum before we even started.

460 Golfer 3 recalled a situation where he was down in the match but still felt in control:
461 “In the match that we recorded I was down early but I felt like I was playing well, and you
462 know he had a little bit of luck go his way to start off, but I felt ok”.

463 Several participants noted the “honor” as an important factor in feeling in control. The
464 honor refers to the right of one player to hit first off the tee and is gained because of winning
465 the previous hole; it is stipulated in the rules and considered an important part of golf
466 matchplay etiquette. It appeared to represent a tangible aspect of control and of positive PBM
467 that could have psychological implications for individuals’ experiences of PBM. The honor is
468 perceived as a reward that permits an individual to set and control the pace of play. For
469 example, Golfer 5 explains: “You have the chance to hit a good tee shot and he has to follow
470 up with a good shot to match you.... if you continually have the first shot the other guy will
471 be feeling the pressure”. Golfer 2 made an explicit link between the honor and PBM: “I think
472 that is the first hurdle to getting any sort of momentum back is to win the honor”.

473 *Appearing in control.* Demonstrating to your opponent that you are in control
474 appeared to be just as important as feeling in control in the matchplay environment. This
475 finding provides partial support for Taylor and Demick’s (1994) momentum chain, which
476 proposed a link that suggested that negative behaviors of one player can enhance positive
477 PBM for the other player (in head to head sports). Players continuously search for feedback
478 on how they perceive the situation, and their performance, to determine how their current
479 situation fits in relation to their goal (Kluger & DeNisi, 1996). One primary source of
480 feedback for a player in the matchplay arena is his or her opponent. Golfer 3 provided a
481 comment that highlighted the impact a player’s overt behaviors can have on their opponents’
482 perception of a situation:

483 Sometimes if you’re up and you can tell that your opponent is showing signs of
484 feeling the pressure then that kind of reinforces your feelings of momentum but if you

485 are up but your opponent seems all calm and collected then that may influence how
486 you feel momentum even though you should be feeling positive you don't, even
487 though you might have momentum.

488 **Theme 3: Temporality.**

489 While based on relative few golfers' comments, golfers' comments during the
490 matchplay lead us to infer they believed PBM could not occur early in the match and they
491 needed sufficient pressure or intensity in the match for PBM to be experienced. From the
492 golfers' perspective, sufficient pressure and intensity appeared only possible when the match
493 was nearing its conclusion. For example, Golfer 5 said: "3rd hole, my opponent hits it in the
494 water, I win the hole, still too early for any momentum swings or pressure to be built".

495 Temporality also featured heavily in the group-interview discussions regarding how
496 PBM is experienced was. Temporality in this context refers to a player's perception of how
497 far into the match they were, or more specifically, how far players felt they were from the end
498 of the match. It appeared that players did not perceive potential shifts in PBM early in a
499 match. For instance, equivalent scenarios during a match seemed to elicit very different
500 responses depending on which hole it occurred on. For example, Golfer 3 explained:

501 It's like you have so long to go that you could be playing the front 9 and be 3 up
502 through 5 holes or even 3 down and you still might not realize if there has been any
503 momentum shifts. I think that momentum plays a bigger part when you're running out
504 of time.

505 Similarly, Golfer 4 said: "It's hard to feel any momentum before at least the back 9".
506 It appeared that a match had an intensity threshold that needed to be surpassed before a player
507 would perceive any meaningful shifts in either positive or negative PBM. For example, when
508 recalling the recorded match, golfer 4 said: "I think it was at least the 8th hole that I felt any

509 (momentum), that may not be true for the other guy but I know I didn't feel anything before
510 that".

511 When players were asked about strategies they might employ in various situations, the
512 response differed as a consequence of temporality. For example, if a player was down early
513 in the match, the popular response was to stay patient and wait for an opportunity. However,
514 if the same scenario were to occur later in the match then the likelihood of taking riskier shots
515 increased as the end approached. For example, Golfer 6 said:

516 In the final when I was down I was forced into going for too much, like I had 230 into
517 the wind with a back right flag and tried to go straight at it. But if it was the 4th or 5th
518 hole I wouldn't have done it. I would just try and stay patient.

519 **Theme 4: Pressure.**

520 A golfer's ability to apply and maintain psychological pressure on their opponent, and
521 to handle pressure themselves appeared to be influential in preventing negative PBM and
522 acquiring positive PBM. According to the ACM (Vallerand et al., 1988) perceived pressure is
523 a situational variable that is interpreted and perceived, and therefore, its effect on individual
524 performance will vary considerably. Golfer 6 believed that if he made his opponent putt out
525 all day, the pressure of continually making putts would eventually force his opponent into
526 making a mistake: "So on the 1st hole, I lost it way right and lost the opening hole, was
527 feeling a bit unsettled and not at ease, but made him putt to keep the pressure on him".

528 Research has demonstrated that a player's ability to maintain pressure on their opponent can
529 cause their opponent's attention to be disrupted leading to substandard performance (Hill &
530 Shaw, 2013; Otten, 2009). In his previous comment, Golfer 4 made a note of having to build
531 pressure on his opponent before PBM would be experienced: "... too early for any
532 momentum swings or pressure to be built". Conversely, players who feel no pressure from
533 their opponent will be less likely to make mistakes as a result. For example, Golfer 7 began

534 his match conservatively with five straight pars, whereas his opponent made four straight
535 birdies, leaving Golfer 7 feeling pressure to come up with something extraordinary to get
536 back into the match: “3rd hole, he made birdie, rolled in a 30 footer, 3 down, need to find
537 something very quickly”.

538 Group interviews did confirm that maintaining psychological pressure upon the
539 opponent was considered to be a key element in developing and maintaining PBM, no new
540 perspective were ventured in these forums. The extent to which a group based environment
541 limited players’ openness to discuss such aspects, or whether data saturation had occurred in
542 the first phase, was unclear.

543 **Conclusion**

544 The purpose of the present study was to explore how high-standard amateur golfers
545 experience PBM during competitive matchplay. Specifically, the aim was to gather
546 qualitative information on player perceptions of significant triggers, development and
547 management strategies, and to understand the cognitive and affective components of PBM in
548 the context of competitive matchplay conditions. An especially novel aspect of this study was
549 the recording of real-time data, which were then corroborated in subsequent group interviews.

550 **Practical Implications**

551 The inference drawn from the results included that there was a high level of consensus
552 between participants regarding beliefs about PBM during competitive golf matchplay.
553 Unexpected events, or outcomes experienced as a discrepancy between a player’s
554 expectations and reality were interpreted to affect PBM. Despite all golfers expressing an
555 awareness of the effects of unexpected events on PBM, few appeared to use strategies to
556 manage expectations during competition while others demonstrated a lack of awareness.
557 Consequently, golfers that were able to manage expectations were interpreted as less likely to
558 experience negative emotions associated with negative PBM.

559 Two facets of control were found to be important for perceptions of PBM; feeling in
560 control and appearing in control. If an individual feels in control, they will be more inclined
561 to attribute success to oneself and failure elsewhere thereby increasing the likelihood of
562 perceiving positive PBM and defending against negative PBM. From a practical standpoint,
563 individuals may be able to be taught and encouraged to use cognitive strategies, such as
564 mindfulness, to increase perceived control, which will help them respond adaptively to the
565 demands of their environment (Pagnini, Bercovitz, & Langer, 2016). Appearing in control
566 can influence how PBM is experienced, as it either reinforces or contradicts the opposing
567 player's PBM perceptions. Hence, in practical terms a player can potentially reduce their
568 opponent's positive PBM perceptions (and his or her own negative PBM perceptions) by
569 communicating happiness and a positive attitude (e.g., smiling, laughing, head up).

570 The notion that temporal location could influence PBM perceptions was a novel and
571 unexpected finding. There was a perception that PBM could not occur early in a match and
572 that there had to be a feeling that the end was near before any meaningful shifts in PBM were
573 perceived. The idea that there needed to be sufficient intensity within a match before it was
574 experienced could not be found within the available literature perhaps because the innovative
575 during-matchplay data collection method has not been attempted prior to this study. While
576 this finding may be exclusive to the matchplay golf environment, future research could
577 explore this in other sports. From a practical perspective, if a player believes he or she can
578 create PBM from the beginning of the match (if not before) and not have to react to PBM
579 perceptions when the match is potentially in the balance, this would provide a competitive
580 advantage.

581 Golfers experienced and discussed pressure within the context of the acquisition of
582 PBM within the competitive matchplay environment. The data suggested a player's ability to
583 build and maintain pressure on his opponent was associated with building positive PBM and

584 the ability to handle pressure from his opponent was associated with the prevention of
585 negative PBM. Similar to PBM, the pressure is perceived within an individual and if a player
586 feels he or she can control the flow of pressure and how he or she responds to it, they would
587 benefit from strategies designed to enhance perceived control.

588 **Limitations and Future Research**

589 This study was limited to A-grade amateur golfers in the context of matchplay, and
590 therefore it should be noted that it might not be representative of golfers of other levels of
591 ability or other formats, such as stroke play. A strength of the current study was the use of the
592 in-match data collection method to discover thought and observations in real-time; however,
593 there are also noteworthy limitations. For example, although participants suggested having
594 the recording device did not impede or influence their performance and experience of PBM,
595 it is possible that they were not fully aware of the influence it might have had. Having to
596 remember to record thoughts and emotions while playing a competitive round of golf was
597 novel to the participants, possibly leading to a diversion of attention away from what they
598 would typically be thinking during a similar matchplay scenario. Furthermore, asking golfers
599 to comment following each hole might have altered the natural emotional and cognitive
600 response and unintentionally halted, or transformed any PBM perceptions. The golfers
601 suggested it might have been less intrusive to ask them to comment while walking up the
602 fairway so they could prepare for their tee shot normally. Additionally, they might have been
603 more inclined to comment on how their opponent might be feeling had they not nearby.

604 Despite these limitations, findings from this study offer support for existing models of
605 PBM (Taylor & Demick, 1994; Vallerand et al., 1988) and provide valuable knowledge of
606 how PBM is experienced in an individual sport during actual matchplay conditions. As PBM
607 is a complex, dynamic, and multidimensional phenomenon (Briki, 2017) and although this
608 study separated elements into themes for analysis, the critical components that contribute to

609 PBM perceptions are intrinsically related, and any intervention to enhance PBM awareness
610 should consider this.

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