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Running head: COUNTERFACTUALS IN ELITE SPORT

ACCEPTED by THE SPORT PSYCHOLOGIST as an Applied Research article

Title: Exploring the Nature of Counterfactual Thinking and Their Perceived Consequences in an Elite Sporting Context: An Interpretative Phenomenological Analysis.

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Abstract

This study explored the characteristics, contextual factors and consequences of counterfactual thoughts in seven elite athletes using Interpretative Phenomenological Analysis (IPA). Counterfactuals were experienced regularly with self-directed and upward counterfactuals (cognitions about how things could be better) being most frequent. These upward counterfactuals typically occurred following performance that was below participants’ goals and expectations. These thoughts were perceived by participants to have a negative affect initially, and that they then led to facilitative behavioral consequences around learning and development. Some elements of counterfactual thinking could be used as a useful reflective tool to encourage elite athletes to problem solve and motivate cognitive, emotional and behavioral change to enhance future performance.
Introduction

Success when defined by outcome is often determined by small margins. This is accentuated in elite sport where athletes’ continual search for peak performance often means that the differences between competitors’ performances are minimal. It is therefore unsurprising that imagining how a performance could have been different is a common occurrence. These thoughts about what might have been or alternatives of what has happened in the past are labelled as ‘counterfactuals’ (Mandel, Hilton, & Catellani, 2005). Counterfactual thinking is defined as “mental representations of alternatives to past occurrences, features and states” (Roese, Sanna, & Galinsky, 2005, p.138). Counterfactuals can be both evaluative and reflective in nature and alternatives can either be notably better or worse than actuality. Better alternatives are labelled upward counterfactuals; whereas worse alternatives are labelled as downward counterfactuals (Epstude & Roese, 2008; for reviews, see Bryne, 2016).

Research has typically shown that counterfactual thoughts are experienced in situations that are unusual and unexpected and that do not reflect previous experience (Kahneman & Miller, 1986). Counterfactuals are also generated where there is a closeness between of the actual outcome and a desired outcome such as losing a match to an opponent’s last minute score (Meyers-Levy & Maheswaran, 1992; Roese & Hur, 1997; Sanna & Turley, 1996; Sanna et al., 2003). Violation of personal expectation and norms can elicit sensations of surprise or frustration and lead to counterfactual thoughts that focus individuals’ attention on what could have been done differently (Kahneman & Tversky, 1982; Mandel, 2003). In accordance with the norm theory, the primary cognitive role of counterfactuals in this sense is to facilitate the learning from mistakes or underperformance by producing achievable alternatives (Kahneman & Miller, 1986; Roese, 1994).

Recognizing the potential value of counterfactual thinking, the functional perspective (Epstude & Roese, 2008) emphasizes the usefulness and beneficial impact of counterfactuals
for behavior change. The functional theory suggests counterfactuals are closely related to goal
directed thoughts (Epstude & Roese, 2008). This approach suggests that when a goal is not
achieved, athletes will form alternatives about what could have been done to achieve said goal.
Similar to norm theory, the primary role of counterfactuals is problem solving. Specifically,
performance below a reference value drives intention for corrective behavior change to address
underperformance, forming a regulatory loop.

Epstude and Roese (2008) describe two mechanisms underlying the consequences of
counterfactuals: Contrast effects are where the factual outcome seems worse or better than the
alternative outcome (e.g., Roese, 1994), and causal inference effects are where counterfactuals
may emphasize causal links between antecedent behaviors and outcomes (Roese, 1997). This
led to a distinction between content-specific and content-neutral pathways regarding the goals
and intentions to inform behavior change.

In sport, previous research has sought to characterize counterfactual thinking in terms
of its direction, structure and content (Dray & Uphill, 2009). Following a close competitive
event, individuals tend to gravitate towards upward counterfactual thoughts directed at how
things could have turned out better compared to downward counterfactual thoughts directed at
how things could have turned out worse (Summerville & Roese, 2008). The structure of
counterfactual thoughts can differ in terms of the addition (e.g., if only I had given that pass)
or subtraction (e.g., if I hadn’t had given that pass we would have failed; Dray & Uphill, 2009).
Sanna and Turley (1996) suggest that additive counterfactuals are a product of unexpected
failure, whereas subtractive counterfactuals are a product of success.

Additionally, the content or target of counterfactual thoughts refers to what is being
altered that results in a change of the factual outcome. This can include the environment and
behaviors, thoughts or emotions experienced by athletes themselves and others (Dray & Uphill,
2009). In relation to improving performance through behavior change, it would be
straightforward to say that counterfactuals focused on one’s own actions as opposed to others or the environment may more likely be functional and self-improving. However, counterfactuals focused on others might inform one’s behavior change through vicarious learning (Epstude & Roese, 2008). Accordingly, individuals utilize counterfactuals to identify and alter thoughts, emotions and behaviors that are atypical to expectation and norms (Kahneman & Tversky, 1982) as well as goals (Markman, Gavanski, Sherman, & McMullen, 1995).

An extensive body of literature has outlined the consequences of counterfactual thoughts for affect and subsequent behavior (for reviews, see Epstude & Roese, 2008; Sanna, Carter, & Small, 2006; Roese & Olson, 1995). Early research around counterfactual thinking tended to focus on the contrast effect of counterfactuals (e.g., Roese, 1994; Boninger, Gleicher, & Strathman, 1994). This is where imagining how things could have been better is associated with negative emotions (e.g., anger, frustration, guilt, worry) and imagining how things could have been worse is associated with positive emotions (e.g., happy, relief, satisfaction). This led to a view of downward counterfactuals serving a functional purpose to regulate emotions (Markman et al., 1993; Roese, 1994). However, McMullen and Markman (2002) suggest that both upward and downward counterfactual thoughts are also associated with assimilation effects where upward counterfactuals can be associated with positive emotions and downward counterfactuals can be associated with negative emotions. Thus, the Reflection and Evaluation Model (REM: Markman & McMullen, 2003) suggests that reflective upward counterfactuals (i.e., where one imagines the better alternative) lead to positive affect, whereas evaluative upward counterfactuals (i.e., where one contrasts the actual – worse – reality with the better alternative) lead to negative affect. This pattern is reversed for downward counterfactuals where reflection is associated with negative affect and evaluation with positive affect (Markman & McMullen, 2003).
In terms of behavioral consequences, previous research has found that upward counterfactuals lead to greater intention to prepare, greater task effort and improved performance as the functional perspective predicts (Markman et al., 1993; Markman, McMullen, & Elizaga, 2008; Roese, 1994). Thus, counterfactuals identify key behaviors that are required to improve (Epstude & Roese, 2008; Roese, 1994; Roese & Olson, 1993; 1995) and this results in more motivation to improve (Markman & McMullen, 2003; Markman et al., 2008). Sherman and McConnell (1995) summarize these consequences into three broad categories: Affect regulation, preparation for the future, and feelings of controllability.

Besides some positive affects associated with counterfactual thinking, there might also be some less helpful implications. For example, more intense and excess upward counterfactual usage is associated with greater distress and depression (Davis et al., 1995; Gilbar & Hevroni, 2007; Lecci, Okun, & Karoly, 1994; Markman & Miller, 2006). With elite sport having so much at stake (i.e., funding, sponsorship, medals) and with outcomes being determined by small margins, excessive use of counterfactuals might occur and mental health issues might arise.

Although literature points to a range of factors influencing the incidence, characteristics and consequences of counterfactual thinking, understanding of athletes’ experience and use of counterfactual thinking is currently limited in several respects. First, the majority of the counterfactual research demonstrating emotional, motivational and behavioral consequences has primarily focused on non-sporting populations in a laboratory setting. Second, although there is previous research exploring counterfactuals in Olympic athletes (e.g., Medvec, Madey, & Gilovich, 1995; McGraw, Mellers, & Tetlock, 2005), studies exploring counterfactuals experienced by competing elite athletes and their perceived consequences is scarce. Third, vignette methodologies that use hypothetical scenarios to elicit and measure the production of counterfactuals are typically employed. This method can serve to constrain the counterfactuals
reported and has ecological validity (Uphill & Dray, 2009). It is therefore important to explore
counterfactuals that are generated from real world environments and are recently experienced.

In sum, generating counterfactual thoughts about learning experiences has been found
to motivate behavioral intention and hence facilitate task performance (e.g., Chan, Caputi,
Jayasuriya, & Browne, 2013). As elite athletes are required to perform within a goal orientated
environment, how they experience and utilize counterfactuals might provide an insight into
their importance in enhancing and maintaining high levels of performance, and/or contributing
to experiences of distress. For example, counterfactuals might be integrated into reflective
practice processes and allow the athlete and psychologist to build an effective working alliance
through empathetic understanding (Dryden, 2006), or help practitioners develop interventions
to manage disappointment associated with a “near miss”.

To redress limitations in the extant literature, this study used a phenomenological
approach to explore elite athletes’ experiences regarding a) the nature, content and
characteristics, b) the contextual factors associated with counterfactual thinking, and c) the
consequences of counterfactuals.

Methodology

Participants

Seven athletes (4 male, 3 Female) were recruited to take part in the study. They
represent a range of different sports (Rifle Shooting, 3; Athletics, 1; Football, 1; Fencing, 1;
Swimming, 1) and have all competed at professional, national or international level (including
Woman’s Premier South, World Championships, World Cups, European Championships,
British Championships, Commonwealth games, and Paralympics games). In accordance with
Swann and colleagues (2015), participants therefore represented competitive-elites and
successful-elites athlete populations. Participants were aged 20 – 68 years (M=33.29, SD=
16.40) and were selected from a range of sports to provide and explore different contexts of
counterfactuals. To provide free recollections of counterfactuals, participants were also required to be involved in regular training and have recently competed.

Design

A qualitative interview methodology was used to explore the nature of counterfactuals and their perceived consequences in elite athletes. Semi-structured interviews were conducted to gather participant data underpinned by a phenomenological perspective, which aims to understand the athlete’s personal lived experience of a phenomenon (Smith & Osborn, 2003).

In relation to the phenomenological approach, an Interpretative Phenomenological Analysis (IPA; Smith, 1996) was used to analyze the data obtained as it “offers psychologists the opportunity to learn from the insights of the experts – research participants themselves” (Reid, Flowers, & Larkin, 2005, p. 20).

Interview Schedule

The semi-structured interview schedule was constructed to suit the use of IPA and follow the guidelines set by Smith (1995) and Smith and Osborn (2003). The interviews were designed to allow the interviewer to frame questions in a broad and open manner and to prompt for more detail if needed. Using suggestions by Smith and Osborn (2003), the first section of the interview was designed to build rapport with participants, through the discussion of their history in their particular sport, their season so far and then a discussion of a recent competitive event to explore the use of counterfactuals and their perceived consequences.

Participants were asked to recall their personal experience of counterfactuals and their perceived consequences around a recent event. A general open question ‘Tell me about your personal experience of a recent positive/negative event that you thought could have turned out differently...’ was used to get a detailed outline of the event and the counterfactuals experienced. From this, the interviewer used probing questions to get more details on the counterfactual’s type (e.g., upward or downward), content, direction (e.g., self or others),
structure (e.g., additive or subtractive), controllability and their perceived consequences (e.g., thoughts, behaviors and emotions). These probing questions were designed to be a ‘gentle nudge from the interviewer’ (Smith & Osborn, 2003) to reduce researcher bias and avoid leading the participant to a pre-determined conclusion. As most of the initial counterfactuals were of an upward nature, the process was repeated to explore downward counterfactuals during the specified events. A draft of the interview schedule was piloted in an interview carried out with a novice squash player. This informed the final draft of the interview schedule.

Procedure

Following institutional ethical approval, participants were recruited opportunistically via email through relevant gatekeepers and from previous professional contact. Prior to the interviews, the participants were given an information sheet about the study, a copy of the Institution’s Research Code of Ethics along with a consent form. The interviews took place at the research institution (N=3) or another location suitable to the participant that ensured comfort and anonymity (N=4). The beginning of each interview involved the participant filling out a demographic sheet which allowed the interviewer to chat and build rapport with the participant before recording. The interviews were then carried out and recorded using the ‘Voice Memo’ App on the iPhone. Interviews lasted between 32 and 48 minutes (M= 44.39, SD= 6.01) during which participants gave their personal accounts on the use of counterfactual thinking and their perceived consequences.

Analysis

All interviews were transcribed verbatim by the first author to allow for detailed analysis. Interpretive phenomenological analysis (IPA) was conducted as it takes into account the idiographic nature of participants’ experiences and perspectives (Reid et al., 2005). Although IPA aims to gain the unique perspective of participants through their verbalizations, these are often not obvious and require a degree of interpretation from the researchers (Smith, 1995). To ensure interpretation was an accurate reflection of participants’ experiences as they
were described, the researchers utilized active listening techniques (e.g., paraphrasing, summarizing) to outline their understanding and sense of the participant’s perspective to which the participant agreed or elaborated in more detail until an agreed understanding was reached (Reid et al, 2005).

As recommended by Smith, Jarman, and Osborn (1999), the transcripts were read and reread several times which allows for in-depth familiarization with the data before analyzing themes and collating quotes. On the left margin, statements from the transcript were reworded, summarized and commented upon to ensure the researcher had understood the accounts provided by the participants. Using these preliminary notes, the right margin was used to document themes and associations of the use of counterfactuals and their perceived consequences. Counterfactuals and their themes were identified as the number of times an athlete refers to any possible alternative to what happened in reality. These themes were then grouped and categorized into similar constructs which were later labelled master themes. These were then divided further into subthemes. These themes were collected and analyzed using the first transcript, which then informed the analysis of the subsequent transcripts. Any new themes in subsequent transcripts where then added and all transcripts were then revisited with the full set of master themes and subthemes.

Results and Discussion

Interviews with participants focused on gathering information in three key areas: The content and characteristics of counterfactual thoughts they have experienced, the context surrounding their elicitation and the consequences of these thoughts. Once master themes were identified in the analysis, sub-themes were determined and key examples were drawn from the transcripts. Data were then organized and presented in a hierarchical tree structure to demonstrate the process of analysis.

Content and Characteristics of Counterfactuals
When discussing upward and downward counterfactuals experienced by the participants, four main themes emerged: Comparing oneself to a previous self (including physical and technical abilities, psychological skills, and performances), others’ actions (including competitors and support staff), situational demands (including environmental demands, equipment, and organizational demands) and personal performance (see figure 1).

Although master themes were similar between both upward and downward counterfactuals, themes and content did vary due the difference in their possible function.

**Contextual Factors Prompting Counterfactual Generation**

When discussing experience surrounding counterfactuals and the possible contextual factors influencing them, four main themes emerged for both upward and downward counterfactuals: Goals set prior to competition, their expectations going into the competition, their experience (whether it was their first exposure to issue/competition or not) and personality (see figure 2).

**Consequences of Counterfactuals**

When discussing participants’ experienced consequences for both upward and downward counterfactual thoughts, several main themes emerged: Personal growth, emotional change and behavioral change (see figure 3). Personal growth refers to participant’s development as a person and athlete through learning, sharing and reflection to aid problem solving and motivation. The emotional influence of counterfactuals included emotions directed to self and others including competitors and support staff as well as regulation strategies to cope with emotional demands of competition. Behavioral influences were identified by how counterfactuals influence behavior change to enhance competition and training practices. Other key themes include cognitive change where the participants discussed how counterfactuals retrospectively influenced cognition. For example, attentional change where counterfactuals
led to a shift in their attention and attitude change where participants displayed favor or disfavor to a person, event or object.

**Narrative Results**

To facilitate the reporting of a clear and accurate reflection of the counterfactuals experienced and their perceived consequences, participants were asked to reflect on a recent competitive event. During these reflections, participants demonstrated and expressed generalized counterfactuals, for example: “Things could have turned out differently had I approached the fight somewhat differently” (Participant 6).

**Content and characteristics of counterfactuals.** During these reflections, participants discussed various characteristics regarding the key themes around content of counterfactuals as well as when and where these counterfactuals took place. Traditionally, counterfactuals are retrospective thoughts as demonstrated by participant 1: “After the competition is the time to look back”, and participant 6: “Immediately it was there, it was sort of I knew what had happened straight away so I was able to reflect on that”.

These also took place when athletes had the appropriate time and space to reflect deeply on these thoughts: “Cool down is when you relax and just work through everything then you go back and have a chat with your coach no more than an hour after” (Participant 7). However, participant 7 reflected on how these thoughts are short lived and are forgotten when they have fulfilled their purpose: “I think about them after when I’ve done the race and I’m done when I don’t have to think about it anymore”.

One common theme regarding the generation of the counterfactuals was following poor performance outcomes. In the study, this is represented by the master theme of ‘underperformance’ and supports research suggesting counterfactuals are most common following a negative interpretation of an event (Epstude & Roese, 2008). When asked to reflect on outcomes, many counterfactuals referred to how performance could have been ‘better’, for
example: “I shot 625.5 and I’d shot 626 so another point five what I had already shot, I would have been selected to go to Poland” (Participant 3).

Another common theme for both upward and downward counterfactuals was comparing oneself in relation to a previous self, for example: “I’ve noticed how my game is so different to back then” (Participant 5). Participants had also reflected on recently significant events such as traumatic injury and how they might influence the frequency and severity of counterfactuals: “Before that accident I was a player that never gave up. If I went down, it was straight back up” (Participant 5). However, reflecting on a previous self might be used as a coping mechanism in adverse situations:

I was able to win a particular fight, I can take that experience forward [...] I would be able to use that experience and say ‘hey come on you can do it, you can do it’ and take that forward from there. (Participant 6)

When reflecting on a particular event, participants not only generate counterfactuals directed at oneself but also towards or in relation to others who directly influence their performance including coaching decisions:

Put me in my position and I’ll show you what I can do, don’t put me in a position I never play in [...]. If I’m not going to get that then I’ll be selective about how much I put myself through you know stress in terms of travel you know. (Participant 5)

Counterfactuals directed towards the self in relation to others were common among elite athletes. This includes comparing oneself to other competitors and the standard they are competing at:

Before a race er... (I) think, well have my competitors had that, have they, are they going to be able to have the edge because they know I’ve had time out of the water so I let that sit on my mind a little bit. (Participant 7)
In addition to this, reflection on others’ capabilities allows athletes to adapt their behavior for strategic reasons:

*I always look back at my previous races and think... I always look at the winner of the race and think where they positioned throughout and then over time it becomes ingrained in me the winner is normally positioned here during the race.* (Participant 4)

In response, these counterfactuals aim to achieve cognitive and behavioral change to overcome the issue or problem behaviors that leads to underperformance:

*I’d get better at thinking, right, I can’t get scared of this or go practice the event before so I’ve done it in a training session when it didn’t matter and then come into a race knowing that I was going to make it to the end and not let any thoughts or anybody else’s opinions get into my race progress or my race plan.* (Participant 7)

The final theme includes situational factors that were not ideal and had a perceived effect on performance and outcome. Some situational factors related to others’ decisions such as a coaching decision based on formation and positioning:

*One, I didn’t know what I was doing in my position anyway [so my positioning], two, I wasn’t really in it motivation wise and three I haven’t got a cracking clue what is going on with this formation right now, who’s doing what?* (Participant 5)

However, counterfactuals directed solely at the situation can be unhelpful:

*I try not to blame the equipment and I try not to blame like the rifle, me stuff, my frame because to me if you start blaming all those sorts of things that just makes you a bad shooter all together.* (Participant 3)

It is evident from the analysis of the interviews that the frequency of upward counterfactuals is higher than downward counterfactuals. However, the key themes are relatively similar in their content outlined above. Those who perceived to over achieve in reference to their expectations experienced downward counterfactual thoughts (Epstude &
Roese, 2008). The difference of downward counterfactuals seems to depend on the outcome and significance of others (e.g., competitors) as suggested by participant 4: “I managed to get second so I wouldn’t have been able to do that if it wasn’t for the person behind me who was there” and the contextual factors associated such as the goals and expectations set prior to competing, for example: “I ended up finishing with a Bronze but I was happy with and I wasn’t. I’d hit the score but it didn’t feel like a good shoot” (Participant 3).

**Contextual factors prompting counterfactual generation.** Participants were asked about their prior goals and expectations to gather contextual information linked to the generation and content of counterfactuals. As Epstude and Roese (2008) suggest, mental simulations such as counterfactuals are deeply connected to goals and expectations. Following analysis of interviews there seemed to be a strong association between the goals they set and the content and characteristics of counterfactuals. For example, thinking too much affected participant 1’s perceived ability to achieve his outcome goal of attending the Paralympics: “I wanted to hit my MQS there [...] but, obviously my, I was thinking about it too much and that altered my performance as well [...] then I probably would have got selected for Paralympics”.

Goals were individualized with some participants focusing more on the process of performing: “I’ve got the strength to stay up and I can keep going and keep working harder... that’s really the focus I kept for that game.” (Participant 5).

Expectations are different to goals as they are the belief that something will or should happen rather than the desire for something to happen. Expectations can come from what one experiences in the lead up to competition: “I was doing well in training, I thought, kept thinking to myself I’m going to hit this score the way I’m shooting” (Participant 1). However, most of the expectations participants had prior to competition seemed to be based on previous outcome and performance measures related to goals, for example: “Well I know what my PB’s are... Er,
at the international I was just below MQS for both events which was a shame […] I didn’t do half as well as I thought I would” (Participant 2).

As predicted, elite athletes seemingly have a high expectation of their abilities and in turn performance which means they would be more likely to experience performance that does not meet their expectations, eliciting more upward compared to downward counterfactual thoughts (Kahneman & Tversky, 1982; Epstude & Roese, 2008). From this study, expectations seem to be based on previous experience or others’ (e.g., coaches, family and individuals within the organization) views on how they should be performing. Goals are set in the context of how an athlete could be performing in relation to a desired performance. These inform the generation, direction, intensity, content and characteristics of counterfactuals experienced hence the resulting master themes.

Another contextual theme that emerged from the analysis was an athlete’s prior experience of a situation. Counterfactuals were less frequent and resulted in reduced consequences when the athlete had prior experience of the situation, as suggested by participant 4: “I’d been in that situation one hundred times before where you’re looking around thinking these are the people I’m up against I beat them before, I’ve raced them before, it wasn’t anything new”. Whereas, upward counterfactuals were more frequent and had more impact following a situation the athlete had little to no experience with:

I couldn’t see where my groups were to sight in. And, anyway it completely threw me because I wasn’t expecting it […] everything that an experienced shooter will probably just take in their stride but […] I was a virgin to these things. (Participant 2)

Recent research suggests that personality dimensions such as extraversion, neuroticism and openness are related to the direction and intensity of counterfactuals (Allen, Greenlees, & Jones, 2014). When asked to describe themselves as an athlete, participant 2 stated: “I’m quite analytical so I like to think back over and say right what did I do right or wrong there as well”.
Although this example suggests conscientiousness may be associated with the content and consequences of counterfactuals, participant 3 reflected on how a neurotic personality might affect his perception of events and their associated counterfactuals: ‘I’m quite down on myself anyway even if I was to shoot fantastically’. In relation to personality, he went on to explain how perception of past and future seems inherent and stable: ‘I can’t tell you why, I just started thinking ‘ah well if I don’t hit this score then I’m not going to do well’ and all this that and the other’.

When discussing consequences, these contextual factors seem to influence the impact of consequences associated with growth and development. Although counterfactuals are mostly generated from negative outcomes, counterfactuals that elite athletes experience are aligned with problem solving and the attainment of future goals, consistent with a functional perspective. Along with the goals set prior to competition, another contextual influence surrounding the generation of counterfactuals and the functional consequences is the athlete’s previous experience of the counterfactual or more specifically lack of experience. Thus, counterfactuals generated after a novel experience aid the learning and development of robust behavioral and cognitive coping mechanisms to guide performance enhancement. This relates to the literature suggesting counterfactual reasoning develops early in childhood as this is where most of the early experiences in life occur and most of our learning takes place (Harris, German, & Mills, 1996; Baillargeon, Scott, & Bian, 2016). However, prolonged exposure and negative experiences where upward counterfactuals are generated can lead to negative longer term emotional consequences if learning does not occur.

**Consequences.** In discussing the perceived consequences of counterfactuals, several key themes emerged describing the emotional, behavioral and cognitive change experienced by participants. However, in line with the functional perspective, there was an underlying consequence of development and growth of one’s abilities that seemed most prominent
(Epstude & Roese, 2008; Markman et al., 1993; Markman et al., 2008; Roese, 1994), for example:

Looking back on a bad race, looking back on a good race I always think what made me, what made me do that, how do I not do that again sort of thing. So, that influences how I train which then influences how my race is going to go. (Participant 4)

Once a lesson is identified, it can then inform specific changes in emotion, behavior and cognition to enhance performance in training and competition, for example:

I knew back then just relax and if anyone goes in front of me just let them go in front and hang back on them, saving energy, so that race there speaks volumes for me because it’s all about learning from that and not being able to make that mistake again and I definitely, I’ve definitely put that into my running and my training all the time. (Participant 4)

Learning seems to occur not only after but during the competition to problem solve and overcome obstacles when performing. Participant 5 reported identifying what happened and then using counterfactuals to change behavior:

‘Why did I miss that goal?’ and I’ll play it through my mind ‘I missed it because I didn’t open up my body’ or ‘I missed it because I didn’t think about placement or I didn’t look to where I was kicking it or kicked and didn’t see myself, surroundings’ so then when I get the ball again I’m like ‘focus, placement, relax’.

Elite athletes seem to use their extensive network of professionals (e.g., coaches, psychologists) to facilitate the learning and reflective process through collaboration following competition (Ferraro, 2000). For example, sharing her counterfactuals with her coach to inform future coaching decisions, participant 7 remarked:
We go to coach feedback and have a chat then we go to cool down and it normally happens in cool down so about twenty minutes after I start to think through and you start to think about what you did and how you could do it better and what effected it.

This development through learning and sharing provide motivation to improve and perform (Markman & McMullen, 2003; Markman et al., 2008): “Well, you always know you can do better and you push yourself to do better. Well, that’s why we’re here isn’t it [and] It’s quite exciting” (Participant 2).

Along with developmental consequence, themes included counterfactuals directed toward the self or others and mediation of emotional change experienced by the participants. Athletes mentioned several negative emotions previously linked to counterfactuals in the literature including guilt, regret and disappointment (Niedenthal, Tangney, & Gavanski, 1994; Zeelenberg et al., 1998) as well as anger, frustration, sadness, happiness, gratitude, pride and relief: “The emotion I actually felt after that competition was gutted [...] ‘oh you should have done better because I would have been going abroad’” (Participant 2). The majority of the emotional effects were self-directed, for example: “Frustration and annoyance because you can’t get it right” (Participant 6). However, athletes do experience emotional effects directed at others too: “You know anger in me it’s like why am I doing this for you?” (Participant 5).

When discussing emotional change experienced for upward counterfactuals, participants expressed a contrast effect (e.g., Roese et al., 2005; Roese, 1994; Boninger et al., 1994). Indeed, the most prominent emotion experienced was anger and frustration in the aftermath of competition: “I’d be angry with the way it was sort of, maybe defeated if I’d run terrible in myself” (Participant 4).

In contrast, downward counterfactuals resulted in more positive emotions such as gratitude, “That was pretty much looking back on it now kind of joke about it” (Participant 4),...
Athletes also experience both positive and negative emotions close together in short space of time. This suggests emotions switch back and forth rapidly based on their perception of the situation (Apter, 1989; Uphill & Jones, 2007):

I didn’t do what I thought I could do, I thought I was capable of, what my coach thought I was capable of so a lot of disappointment but I was quite pleased with the way I executed my better events and the way the race progressed. (Participant 7)

Within the elite population, this study suggests emotions are short lived and fleeting. However, these can be long lasting if the issue identified from counterfactuals are not resolved through learning. Emotion experiences were largely self-focused, but external-focused (e.g., person or equipment) experiences were present when the social and physical environment was appraised as being influential (Lambie & Marcel, 2002). Subsequent emotions in relation to contextual goals around growth and development lead to an assimilation effect suggested by Markman and McMullen (2003) whereby upward counterfactuals in the context of learning can lead to positive emotions. This supports the Reflection and Evaluation Model (REM; Markman & McMullen, 2003) that explains that reflection on an event and what could have been different will lead to an assimilation consequence whereas evaluating an event through thoughts on how things could have been different will yield a contrasting consequence. For example, upward counterfactuals lead to more positive emotions when attention is focused on the potential of future performance rather than the outcome (McMullen & Markman, 2002).

In discussing the emotions associated with counterfactuals, athletes outlined how the emotional consequences lead to the learning of coping mechanisms aimed at regulating future emotion (McMullen & Markman, 2002). For example: “I think to myself like that, the game is done, next game, focus, I don’t [want] to feel like that again and I don’t want to experience
those emotions” (Participant 5). Other participants reflected on how coping mechanisms are based on a reflection of previous experience or self: “I shouldn’t have let myself be scared of swimming, I’ve done it my entire life” (Participant 7).

Part of emotion regulation is the cognitive change that comes from counterfactuals and learning (Kahneman & Miller, 1986; Roese, 1994). Upward counterfactuals were found to have a negative effect on thoughts when evaluated in relation to their goals and expectations. For example, participant 3 stated: “If I don’t hit the scores then I will be in that frame of mind of thinking ‘well what’s the point’ which leads to thoughts of [...] ‘are you sure you’re this good? You should be better...’”. However, these negative thoughts led to the learning of further coping mechanisms to overcome these thoughts:

Don’t kick yourself if you don’t have a good game because of anxiety, so it’s just a lot of self-talk, encouraging myself to keep going, keep working hard and believing you know like how strong you [are] and so a lot of self-talk. (Participant 5)

Whereas, downward counterfactuals result in positive cognitive change where it allows athletes to gain perspective (Davis, Conklin, Smith, & Luce 1996) on what has happened within context of the past and the environment:

I made it through, I didn’t give up, not giving up was quite a, like, I give up quite easily when I don’t want to do something so yeah not giving up was quite a prominent thing that I thought about. (Participant 7)

Counterfactuals were also found to facilitate behavior change to impact performance. Upward counterfactuals regarding the physical demands of performance were found to influence training behaviors to improve and develop: “I’m going to do a bit more training on my last six hundred meters and I’m really going to hit that harder” (Participant 4).
Upward counterfactuals were also found to influence change in competitive behaviors before competition, for example: “Go through my race plan and go through my pre-race prep instead of gossiping about things I can’t change” (Participant 7).

Analysis of interviews suggested that counterfactuals have both a direct and indirect influence on behavioral consequences associated with performance enhancement. In accordance with the functional perspective (Epstude & Roese, 2008), elite athletes utilize counterfactuals to identify and reflect on causal inferences relating to the outcome of the event using the content-specific pathway which in turn influences intention to perform corresponding behaviors. The content-neutral pathway accounts for the contrast and assimilation effects as it explains how elite athletes utilize the intellectual information of counterfactuals to influence behavior through cognitive strategies to regulate emotions and behaviors associated with performance. This is reflective in the problem solving and regulation themes that correlates to Epistude and Roese’s (2008) term ‘mind-set’ where athletes utilize cognitive and attentional shifts to enhance performance behaviors and motivational effects to drive intention and change in behavior. Athletes who think about what could have turned out differently create intentions to participate in training activities that will improve future performance. In turn, this intention helps athletes prepare for the future by influencing their decision making in similar subsequent situations (Byrne, 2016).

Conclusion

This study has presented an interpretive phenomenological analysis of elite athletes’ personal experiences of counterfactual thoughts and their perceived consequences. The analysis revealed that counterfactuals are prevalent in the sporting domain as previously found (e.g., Dray & Uphill, 2009). However, the frequency of downward counterfactual thoughts was far fewer than upward counterfactuals (Summerville & Roese, 2008; Allen et al., 2014). Thus,
the counterfactuals explored and reflected upon gave a greater representation of the content
and nature of upward counterfactuals than downward counterfactuals.

Counterfactuals regularly occur following performance that fell below athletes’
expectation or their predetermined goals. These thoughts may elicit negatively valenced
emotions (contrast effect; e.g., Roese, 1994; Boninger et al., 1994), but within the context of
goals lead to facilitative behavioral consequences around learning and development and hence
positive emotion (assimilation effect; e.g., McMullen & Markman, 2002). Thus,
counterfactuals seem to be a useful reflective tool to encourage elite athletes to problem solve
and motivate cognitive, emotional and behavioral change to enhance future performance in
accordance with the functional perspective (for reviews, see Epstude & Roese, 2008; Markman
et al., 1993; Roese, 1994).

Although there was a rich quality of data collected, due to its non-experimental design
causality cannot be determined. In addition, ambiguities are inherent in language and some
examples drawn from the analysis were interpreted as ‘implied’ counterfactuals (e.g., ‘I did not
do what I wanted’) compared to clearly stated counterfactuals (e.g., Ziegeler, 2000). Different
“types” of counterfactuals other than conditional “if…then…” counterfactuals have been
identified and are often implied through language (Byrne, 2016). Further exploration of how
counterfactuals are represented in athletes’ language may help the identification and potential
modification of such thinking. It is also important to note that from a philosophical stand point,
a participant’s view on ‘facts’ about an event or historical self could be questionable as this
would also be a subjective interpretation on reality.

It is acknowledged that the small sample size limits its generalizability. The study
aimed to gather similar numbers of both male and female athletes to ensure both populations
were represented. However, gaining an equal number of participants depending on type of sport
(e.g., individual vs team, closed vs open skills) was not a priority. In this study, one athlete
participated in a team sport and there was evidence that counterfactuals would be influenced by contextual factors such as being part of a group. For example, a team athlete might experience more counterfactuals directed at others’ behaviors that influence outcome. This might be seen as less controllable and might influence the consequences associated with the counterfactuals experienced. Future research might aim to explore these differences and the possible gender differences in the generation and experience of counterfactuals and their perceived consequences regarding elite athletes.

In using semi-structured interviews to explore athletes’ counterfactuals, it is plausible that memory decay and poor reconstructive processes may have influenced participants’ responses (Brewer, Van Raalte, Linder, & Van Raalte 1991; Smith, Leffingwell, & Ptacek, 1999). Reporting on significant past events or capturing in the moment counterfactual thoughts, think out loud protocols could be applied in future (Nicholls & Polman, 2008). However, both think out loud and semi-structured interview protocols are researcher prompted. Alternative methods such as archival methods might be used to capture self-generated counterfactuals.

Despite the limitations, the use of currently competing elite athletes provided ecologically validity to the representation of counterfactuals experienced and their perceived consequences. Findings from this study could be of value for those in the applied settings working with both elite athletes and less experienced athletes. Upward counterfactuals present themselves when performance does not reach a certain level set by expectations or goals. It is therefore important to monitor each athlete’s expectations and ensure the athlete’s goals are flexible to alleviate negative emotional consequences that could be debilitating to performance or motivation. This may be shaped by the cultural environment and their goals. Goals around process and development may lead to an assimilation effect where motivation and performance can be enhanced. In relation to the REM (Markman & McMullen, 2003), upward counterfactual thoughts would be best used in a reflective process following an event to inform
goals and intention for future practice and competitive behavior change. These could also be
useful for significant others (e.g., coaches, physiotherapist, support staff) to inform how they
might deal with issues brought up by the athlete that they might influence. For example, if there
is conflict between two athletes then a coach might use each athlete’s counterfactuals using
reflective practice to come up with a management strategy to overcome the issue. Also,
counterfactuals could be used to gain perspective on these goals and protect an athlete’s self-
esteem following failure (McCrea, 2008). Beyond the scope of elite athletes, individuals who
participate in performance related activities (e.g., business, sport & exercise practitioners,
health services) would benefit from lessons learned from elite athletes to understand and
suitably utilize counterfactuals to facilitate cognitive, emotional and behavioral change to
enhance their practice.

This study taps into the experiences elite athletes have of counterfactuals. It also
provides an insight into how elite athletes cope with the negatives effects of counterfactuals as
well as utilize the positive effects of counterfactuals to improve and sustain high performance.
Future research on elite athletes’ counterfactual thoughts using experimental and longitudinal
studies would be beneficial to investigate the antecedents and consequences of counterfactual
thinking on training and performance. The use of an elite population could be a useful source
for understanding high performance athletes and how they experience thoughts, emotions and
behaviors. By understanding how elite athletes generate, experience and reflect on
counterfactuals, it is hoped other athletes can utilize counterfactuals to identify causal
inferences and deploy accompanying changes to enhance both performance and motivation to
succeed making sport more fulfilling and enjoyable.
Reference


Footnote

1 We would like to thank an anonymous reviewer for alerting us to the retraction of a number of articles by Lawrence Sanna. To date, we are not aware of any proceedings around retraction of the articles we cite.