Decision making and decision communications in elite rugby union referees: An inductive investigation

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Abstract

The application of law, combined with contextual judgment and communication have been shown to be essential skills of the elite sports official (Mascarenhas, Collins & Mortimer, 2005). Further, the behaviours that officials demonstrate to communicate decisions to sport participants have important implications on match outcomes and perceptions of fairness (Mellick, Bull, Laugharne & Fleming, 2005; Simmons, 2010). The purpose of the present study was to explore the higher-order decision making and decision communication processes of three international rugby union referees. Semi-structured interviews were conducted to explore the routines, psychological strategies and processing skills they utilise to meet the decision making demands of the game. Interview data were analysed by means of thematic content analysis providing four core themes related to expert decision making processes and decision communications: corporate theatre, pre-game preparation and post-game analysis, refereeing philosophy and approach, and within-game psychological skills. The results of this investigation will provide practice-based information to inform training interventions as a pedagogic tool to assist pre-elite sport officials in developing higher-order understandings of decision making processes and communication patterns.

Key words: referee, decision, communication, corporate theatre.
Decision making and decision communication in elite sport officiating have been recognised to be critical characteristics to the maintenance of expert performance (Catteeuw, Helsen, Gillis & Wagemans, 2009; Mascarenhas, Collins & Mortimer, 2005; Mellick, Bull, Laugharne & Fleming, 2005; Mellick, Fleming & Davies, 2007). In many sports, an elite official is subject to performance appraisal by players, coaches and league management as well as stadia and television audiences, media commentators/journalists and peers. Thus, these sport officials are required to function to the expectations of a range of ‘stakeholder’ groups particular to their professional practice community (Dickson, 2000; Mellick et al.).

In rugby union, with the advent of open-microphone communication systems between referees, assistant referees and television match officials, much of what referees verbalise between one another is also available for public consumption. Managing an elite sport contest in a noisy stadium, whilst being broadcast by multiple television cameras, creates conditions of high physiological and cognitive workloads. In order to perform effectively, demonstrating accurate and acceptable decisions and communicate them effectively, in this unique environment, referees are required to filter voluminous amounts of information (Nevill, Balmer & Williams, 2002; Unkelback & Memmert, 2010). These types of match official performance characteristics require skilled communication patterns, psychological strategies and processing skills to cope effectively with such decision making demands (Mascarenhas, O'Hare & Plessner, 2006; MacMahon & Plessner, 2008).

The performance demands inherent to elite refereeing have been identified to involve a number of key areas that include fitness and positioning, law
knowledge and application, contextual judgement, personality and game
management (Mascarenhas, Collins & Mortimer, 2005). These essential
performance characteristics particular to elite refereeing, are overarched by
psychological skill sets (e.g., distraction control, arousal regulation, imagery,
performance planning) and as such contribute to the development and
maintenance of refereeing expertise and performance effectiveness. Crucially,
referee effectiveness is often evaluated by perceptions of fairness (Simmons,
2011). This heuristic, to be perceived as fair and professionally credible, involves
both decision making and decision communication, where decision communication
is defined as the causal account of the decision that is made (Mellick, 2005;
Simmons, 2010). Given this scrutiny, there appears to be an inter-relationship
between communication skills, fairness and perceived effective decision
performance and practice (Mellick, 2005).

This process involves three stages; the decision outcome – for example,
who the penalty was awarded to; the reason – the point of law (or rule) that has
been infringed; and the explanation – the characteristics of the event that
determines the prescribed sanction (Mascarenhas & Smith, 2011). Both decision
making and decision communication are used at all three stages. However, the
novelty and consequence of decisions act as mediators to this process. For
example, if the decision is more novel (in terms of frequency of occurrence across
games) there is likely to be an increased importance upon the communication
(Folger & Cropanzano, 2001). Similarly, if a decision has major consequences
(e.g., a red card) this will require more emphasis on the account given, both
verbally and non-verbally.

Expert referee decisions are considered to be governed by advanced
organisation of task information into knowledge structures that, through critical
thinking skills, allow for a more rapid response to decision making conditions
(Mascarenhas, Collins, Mortimer & Morris, 2005). Due to the fast paced nature in
which referees make and communicate decisions, reasons to decide and act rely
on stored knowledge representations that serve decision making through
associations to patterns of environmental cues (Ericsson & Kintsch, 1995;
MacMahon & Ste-Marie, 2002; Plessner, Schweizer, Brand, & O’Hare, 2009).
Applied researchers outside sport who have examined expert decision making in
real-world settings characterised by time-pressured circumstances (e.g., fire-
fighting, airplane cock-pit crews) show that experts demonstrate superior context-
dependent, cognitive strategies and skills including pattern recall (Klein, 1993;
North, Ward, Ericsson & Ward, 2011) and situational assessment (Endsley &
Garland, 2001; Lipshitz, Klein, Orasanu & Salas, 2001). Naturalistic decision
making models would suggest that experts adapt to their real-world environments
by developing a greater comprehension for relevant decision cues (Rasmussen,
1993; Stokes, Kemper & Kite, 1993), use imagery skills to apply knowledge
structures and predict future events (Lipshitz, 1993), as well as demonstrate more
efficient working memory function through knowledge-based filtering of task-
emphasises that to compensate for limitations in information processing capacity,
expert sport referees appear to use certain decision rules and elaborate
knowledge structures that allow them to cope with broad bands of perceptual
cues.

Three studies have investigated the interpersonal interactions between
referees and players that illustrate the relationship between decision making and
decision communications. First, Mellick and colleagues (2005) explored the verbal
and non-verbal communication practices that elite rugby union and football
referees use to increase players' acceptance of decisions. Seven interpersonal
actions were shown to be the most effective, comprising of (a) whistle, (b) gaze,
(c) posture, (d) hand/arm signals (non-verbal explanation through illustration of
offence), (e) verbal explanation (account giving), (f) control, (g) composure, and
(h) time management. In communicating decisions to players, Mellick, Fleming,
and Davies (2007) suggest that an elite official must first engage the offender's
attention following the infraction, project confidence concerning the decision being
presented, and foster the perception of a fair and just decision to the sport
participant though the verbal and non-verbal decision account provided. In another
investigation, Simmons (2006) concluded from interviews with highly-experienced
Australian football umpires that officials should be explicitly trained in effective
verbal and non-verbal communication strategies and how to deal with player
behaviours. Their findings further suggest that referees should understand how to
depersonalise abuse and criticism from players, recognise player, coach, and
spectator behaviour that creates uncertainty about their decisions, and develop
reflective learning strategies and resilience to mistakes in decision making. Finally,
communication patterns have been shown to be used by referees to manage the
tenor of player behaviours during competition in order to promote continuity of
game play (i.e., preventative communication; Mascarenhas, 2005).

Given such evidence supporting the importance of the relationship between
decision making and decision communication in elite refereeing (e.g.,
Mascarenhas, O’Hare & Plessner, 2006; Mascarenhas, Collins & Mortimer, 2005;
Mellick et al., 2005; Mellick et al., 2007), the purpose of the present study was to
explore the perceptions of elite referees in these topic areas. From a theoretical
perspective, we expect to contribute to existing frameworks of elite refereeing
performance (i.e., Mascarenhas, Collins & Mortimer, 2005) by exploring the
interaction between suggested performance factors (i.e., law application,
contextual judgement, and communications) not previously examined. From a
practical perspective, the results provided by this investigation will offer insight into
crucial higher-order knowledge to inform the design of deliberate training activities
as a pedagogic tool for pre-elite referees to develop their decision making and
decision communication practice (Ericsson, 2003; Mascarenhas, Collins, Mortimer,
& Morris, 2005; MacMahon, Helsen, Starkes & Weston, 2007, Mellick et al.).

Method

Participants
Three elite rugby union referees\(^1\) with experience of officiating full senior international test matches were purposively selected to participate in the present study. All research participants were current members of a national elite referee unit and had been or were current members of the International Rugby Board’s International Referee Panel. Referees were deemed expert by the management team within their national-level training group based on their national and international performance experiences as elite rugby union referees.

Semi-structured interviews

Three independent semi-structured interviews were conducted with the referees to explore their psychological strategies, processing skills, and communication patterns used during their performance (see table 1). In addition, question probes were used to help referees’ elaborate on their answers within these discussion themes. Using the guidelines recommended by Patton (2002), three types of probes were used that included: *detail probes* (e.g., "Could you give an example of one of those phrases that you are ready to use if necessary?"), *elaboration probes* (e.g., "Can you just expand on that and talk through what that sequence of events is?") and *clarification probes* (e.g., "So you’re checking for understanding by looking at the visual cues?"). Questions posed to referees were designed to be sufficiently open-ended to allow a frame of reference for referees’

\(^1\) Given the high profile nature of the referees, detailed information on each referee has been withheld in order to try and maintain their anonymity.
to base their answers. Interviewers' subsequent questions could then be 
improvised in a critical and theorised manner (Kerlinger, 1970).

(Insert table 1 here)

Procedures

Referees were contacted and requested to participate in an exploratory 
study examining elite referee decision making and decision communications. 
Following participants' agreement, interviews were scheduled independently and 
conducted jointly by a referee development professional who had extensive 
experience as a Sport Psychologist working with match officials, and a highly 
experienced interviewer and qualitative research scholar who was also a 
practising rugby union match official. The interviews were conducted in November 
2009; two in a quiet corner of the foyer of a city-centre hotel, and the other in the 
empty bar of a sports club of which the participant was a member. Participants 
were assured of anonymity and rapport had been established previously. Each 
interview took between 60 and 90 minutes and was recorded using a digital 
dictaphone and later transcribed verbatim.

Data analysis

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2 As with the previous footnote, details of the ways in which rapport had been developed would compromise the participants' anonymity.
Interview data was examined through a thematic content analysis. First, all transcribed interviews were categorised into raw data points represented as meaningful units (i.e., a part of the interviewee's response reflecting an idea, wording, definition, or phrase that stand as a distinguishable moment within the data set; Tesch, 1990) in relation to (a) decision making and (b) decision communications. Those particular meaning units that showed subject similarity were then clustered together and tagged as raw data themes and given a label to represent their thematic content. Second, all raw data themes that provided a common grouping were identified as higher order themes and each were further divided into sub-themes. The higher-order themes and their sub-themes derived from the raw data were then re-assessed by another member of the research team for: (a) the representation of the interaction between decision making and decision communications within each core theme and; (b) the interdependent relatedness between core themes in relation to the investigated concepts. Themes provided by the analysis were subsequently established and assessed through other members of the research team. Finally, the research team sent the categorisation of themes to the participants to confirm the trustworthiness of the analyst's interpretation of the interview data.

*Trustworthiness*

Maxwell's (2002) guidelines for enhancing the trustworthiness of qualitative research design were considered. The validity criteria proposed by Maxwell (2002) include descriptive validity, interpretive validity, and theoretical validity. Descriptive validity was supported through dictaphone audio recording to avoid missing data
and allow for later transcription. Interviews were reviewed prior to transcription, translated verbatim, and subsequently hardcopy transcripts were compared to the audio recording for accuracy. Interpretive validity, or attempting to understand the concept under investigation from the vantage point of the participants, was enhanced through an ongoing collaboration between research team members and referee development professionals within the referee training group. Theoretical validity was considered through analytic generalization (i.e., evaluating the transferability of results to a theory of the phenomenon being studied; Yin, 2003) to a scientifically-based conceptual framework of elite refereeing performance (i.e., Mascarenhas, Collins & Mortimer, 2005).

Results and Discussion

The aim of the present investigation was to explore higher-order decision making and decision communications used by elite rugby union referees. A thematic content analysis of semi-structured interviews with three elite rugby union referees with international experience provided four core themes and 23 sub-themes that included: (A) corporate theatre, (B) pre-game preparation and post-game analysis, (C) refereeing philosophy and approach; and (D) within-game psychological skills. Table 2 highlights the core and sub-themes established with the referees that were interviewed.

(Insert table 2 here)

Corporate theatre
The core theme, corporate theatre, was identified by referees as an aspect of the decision communication environment that requires behavioural strategies to manage the perceived image of their refereeing performance to others inter-linked with match proceedings. Sub-themes were shown to include: (a) impression management; (b) punctuation; (c) shared decision making; and (d) role clarity. One of the referees [R3] explains the process of corporate theatre and the effect on decision communications:

[Corporate theatre] is about the delivery of the message so that it's clear to all those audiences. And you haven't just got the players' audience, even the conversation we're having as three officials is no longer, a private conversation. So therefore you are making a decision that is clear and obvious to everybody who's in those audiences. The audiences being the players, the TV audience, the coaches who analyse the game, the members of the officiating brotherhood who will then look at the game afterwards and it has to be clear and it has to be reasoned decisions...people are watching it because it's public, it's a piece of theatre.

Impression management (a type of self-presentation) was a sub-theme identified by referees that involves deliberate efforts to self-monitor the display of their public image to meet the expectations of players, spectators and the media. Impression management is an aspect of high-performance refereeing that has been previously shown to be a source of negative role stress (Thatcher, 2005). According to Leary and Kowalski (1990), impression management is influenced by two contributing processes that are impression motivation (i.e., the need to create particular
impressions to a real or imagined audience) and impression construction (i.e.,
selecting an impression to convey and then using certain tactics to express it).
Referees identified an understanding of the necessity to manage the impressions
they display during decision communication episodes with players and with other
game officials and how this required certain methods to 'sell' the accuracy and
fairness of a decision through positioning, presence, tone, non-verbal cues, and
clear, explanatory language in verbal phrasing. This was linked to the desire to
establish credibility as an official:

... It's things like the tone that you use, it might be key words you use, it's
certainly about your facial pressures, you know, that you're under. It's like the
old swan effect isn't it, you're paddling like crazy underneath but you're nice
and calm and I think the best officials in the world regardless of what sport it
is that they've got the swan effect, they can sell their decision, they're cool,
they're calm under pressure and that's how we relate corporate theatre as
being able to sell the decision even if you're not quite in the right position or
you may have perhaps perceptually missed something happening previously.
That's how we address it... [R2]

How elite referees make decisions and communicate with players was identified
as requiring a preservation of judgment criteria throughout game events in order to
guide game activities. This was further associated with maintaining consistency in
one's refereeing approach. One referee explained how a narrative ultimately
unfolds in the interactions with players where decision episodes are punctuated
through certain communication patterns:
... It's about verbalising, communicating, when you've made your decision if you don't want to have to make that decision again, the way you give the decision, the way you apportion responsibility to whoever's broken it and the way you then let everybody else around you know why, whether it's what they agree with, but it's that you're then going to be consistent with that which will help you in the story, if you like, of the game. [R3]

Other sub-themes of corporate theatre included clarifying the scope of one's refereeing responsibilities and shared exchanges in decision making with other game officials (i.e., assistant referees, television match officials). Previous research has identified that referees and assistant referees demonstrate clear differences in their role-specific decision making responsibilities in an elite football setting (Catteeuw et al., 2009). Although referees and their assistants perform varied primary duties in a rugby union environment, the decision making requirements involved in certain match situations can overlap both roles such as in identifying foul-play. How the theatrical nature of refereeing occurs in relation to assistant referees' role functions was identified by one referee as involving a common understanding concerning public displays and adaptive communications such as in reporting foul play:

    We didn't know what the words were going to be but we knew where we stood. We knew when it was your cue, and at one point I spoke, and then I spoke to the other touch judge and he came in with what he had seen and then he actually went like this [respondent leaning forward in seat] to the other touch judge and it was like "I've spoken and now it's your turn"... [R3]
Pre-game preparation and post-game analysis

A second core theme provided by the rugby union referees was pre-game preparation and types of post-game analysis that referees undertake to further develop and maintain their expertise. Sub-themes included: (a) template building; (b) game review and self-analysis; and (c) mental rehearsal (visual and verbal). Preparing for match day involved a range of practice activities for referees including fitness training, DVD game review, assessor and referee coaching sessions, peer learning groups, and pre-game briefings with assistant referees. All referees supported the notion that game review is primarily a video-driven process, emphasising reflection to help build higher-order refereeing knowledge.

Previous studies with elite football referees examining their deliberate training activities has shown high self-ratings for the relevance of technical refereeing skill, video training, and game-playing tactics (MacMahon et al., 2007; Catteeuw et al., 2009). However, referees in these studies identify a lack of available decision making training resources to supplement their on-field learning. The rugby union referees in the present study identified game review as an integral training activity to help build familiarity between decision making practices and game outcomes as well as to foster understanding of the philosophical and intuitive elements to their refereeing approach. Psychological skills training was aimed at building mental templates of anticipated scenarios and involved other awareness-raising techniques such as routine planning, visualisation, and gathering information about trends of previous matches and player tendencies. Pre-match briefings with
the referee's assistants were also recognized as a key period for discussing procedures related to decision communications:

... I do think pre-match is important to get everybody on the same wavelength, even people you work with the whole time, that you would just talk through, if we get foul play and in my briefing I will say if you get foul play what I'd like you to do is to put your flag out. If it's foul play, tell me about the foul play, I need to know as early as possible it's happened. So I will say that, is it white, is it blue. If it's the side who've got the ball and it's blue then tell me until you get some sort of acknowledgment from me. So that's the first thing. Don't come on until I ask you to come on, when you ask to come [gesturing towards him with arm and hand outstretched] so it's enter side, entrance door, theatre, in you come...it's reinforcing the process. [R3]

Mental rehearsal was considered a customary aspect of pre-performance that supported within-game decision making demands of elite refereeing. Prioritising decision cues at phases of play, re-assessing one's decision criteria, increasing awareness of scenarios that can take place between particular teams were all part of referees preparation and review practices. Rehearsal of explanatory verbalisations or 'stock' phrases for certain decision communication episodes were also important factors related to how referees prepared. Referees identified engaging in both first (internal) and third-person (external) perspectives as part of visualization processing skills to engage in proper positional viewing angles and elaborate their mental 'picture' of possible decision-making situations. One referee
described a simulation exercise they use to increase their awareness of visual and verbal cues for an upcoming refereeing performance:

... What I'm visualising is, I'm using the colours, the colours of the teams that I'm refereeing that weekend, so it might be white and red and next week it might be blue and black. So I'm using those specific terms I'm going through, I'm rehearsing what I'm going to say and for us because we're obviously micro-phoned up unlike other elite match officials, what we say is part of that corporate theatre that sells the decision to people watching the game. [R2]

Refereeing philosophy and approach

The third theme provided by the referees was their philosophy and approach to elite refereeing. Subthemes of this construct included (a) experience; (b) laws of the game; (c) fairness; (d) decision making accuracy and style; (e) personality and game management; (f) prioritising; and (g) instinct. Referees discussed their philosophy as an attribute built on extensive experience and held within a view of fairness and complex understanding of the framework of the law. All referees shared the same underlying beliefs of 'fair contest' and rewarding physical skills (team or player techniques/tactics). One referee commented:

... There's also a mental side where your head is clear as you approach that situation, that you're expecting to see a certain number of things happen or in a certain pattern, if you like. If you get that pattern right, then you start to be consistent but as I said at the beginning, you have to believe in what you're trying to do which I think comes down to almost a vision of the game that you
want to see happen. Now that vision to me is about something called fair
play, not maybe the fair play that people conceive when they're watching
sport in a big way, but there should be a fair contest going on where you're
trying to reward both sides, both teams in what they're trying to do. [R3]

Other sub-themes identified were decision making accuracy and style that
referees' applied including the dynamic ways that they manage game situations
through preventative communication and the application of personality attributes.
This was associated to prioritizing within-game decision criteria and establishing
expectations of how game events potentially unfold through fair contest. Conflict
management style (e.g., compromising, collaborating, avoiding) is an important
skilled communication displayed by the elite official that has been shown to vary in
preference of use by professional coaches for managing team conflicts (Laios &
Tzetzis, 2005). However, presently there is limited research available that explores
when or in which situations referees should express a particular communication
style for managing such conflict (MacMahon & Plessner, 2008; Mascarenhas et
al., 2006). The various ways that referees identified managing a game involved a
personalised style that was informed by a weighting of particular decision cues, a
consistency in one's approach and the use of communication patterns to establish
and maintain rapport with players:

It's about seeing how players react, you know when you've penalized a prop
three times in a row and then you go and penalize him a fourth time, you've
lost him probably for the game whereas if the ball goes on the floor, the
scrum goes on the floor and you say come on scrum half get it away and you
don't penalize him and then you speak to him at the next stoppage, “Look I
know you're under trouble but you've got to do x, y and z.” [R1]

Referees all shared the belief that *instinct* - a sub-conscious, intuitive feel - for
decision-making accuracy acted as a primary source of feedback that supported
the referee's philosophy and approach. This was believed by referees to be further
enhanced through game experience and on-going post-game feedback and review
processes.

It's back to the clear and obvious point isn't it? I want to see things which
are clear and obvious, if they're clear and obvious they should be right, and
that's belief in your ability and trusting your gut instinct. And that's by trial
and error. [R1]

The instinct comes from again watching a huge amount of games ... but by
being under the spotlight the whole time I think you sharpen your, your
instinct is sharpened, it has to be sharpened. [R3]

Within-game psychological skills

The final theme was the types of within-game psychological skills that
underlie refereeing performance. Contextual judgment (i.e., an awareness of game
tenor and ability to adjust one's referee approach to meet the nuances of the
game; Mascarenhas, Collins & Mortimer, 2005; Unkelback & Memmert, 2008) was
considered by all referees as an important factor to game understanding and
comprehension that informed decision making and decision communications. This
was developed through an appreciation for what players and teams are trying to
achieve, empathy for the verbal and non-verbal behaviours of players, establishing
rapport with players and accounting for the affects of decisions on the game. All
referees identified that at the elite-level, while accuracy in decision making is
crucial, a particular underlying decision motivation is to become increasingly
outcome-driven in applying the law (i.e., making perceived ‘acceptable’ versus
‘unacceptable’ decisions). How referees filter large amounts of perceptual
information as part of their decision making performance was recognized to
include decision heuristics such as satisficing (Simon, 1955), where rather than
comparing decision options, a solution is chosen that meets some minimum
criteria (i.e., ‘take the first option’) to fulfill a desired outcome goal:

... It goes back to that making the decision on who’s had the most material
impact on the game, from a negative point of view and I guess that’s what
we’re looking for isn’t it, we’re looking for players who aren’t playing the game
as it should be in our opinion. So if two blue made a tackle from an off side
position and then four blue continued to carry on and then six blue comes
into the side, for me, the start of the process is two blue because he’s made
the initial [infringement]. So I guess part of my mind, it is filtering the
lesser...my decisions based on who I think has had the most impact. [R3]

Anticipating certain orders of behavioural actions by players, recognising patterns
and templates of game play and expecting alternatives of what might occur
throughout game progress were identified as other key aspects of referees’
decision making processes. Pattern matching, or pattern recognition, has been
shown to be essential processing skill used by experts in real-world decision-
making environments characterised by high speed-accuracy trade-offs, multiple
goals, and acute stress (e.g., airplane pilots; Stokes et al., 1997). These decision processes identified by referees were linked to a range of psychological skills including a self-belief in one’s decision making ability as an elite referee that was gained through experience as a player, assistant referee and referee. Other psychological skills identified by referees included concentration and use of narrow and broad attentional styles, visualization, and recall of earlier game incidents and past game experiences. Coping with decision mistakes, player reactions, media interpretations and self-appraisal of communication effectiveness was identified to be managed through self-talk strategies that were also considered an asset to elite refereeing. Referees further identified these within-game psychological skills as being informed through priority check-lists, consistent application of their philosophy, and further developed by game experiences, game analysis, and peer and coaching advice.

Conclusion

The present inductive investigation explored the topics of decision making and decision communications in elite refereeing. Elite rugby union referees in this investigation identified four core themes related to their decision making and decision communications that included: (a) corporate theatre, (b) pre-game preparation and post-game analysis, (c) refereeing philosophy and approach, and (d) within-game psychological skills. The implications of these findings inform the development of training practices to assist pre-elite referees as a pedagogic framework and elite referees in maintaining standards in their expertise.
Possible practical applications could consider types of communication skills training (e.g., conflict management and resolution, language practice, role playing decision account giving) coupled with decision making training tools and practices aimed at enhancing meta-recognition skills (e.g., video-based infraction detection tasks with immediate performance feedback; scenario building through video-based discussion, reflective journals/diaries). A key advantage of incorporating such psychological skills training into deliberate practice behaviours is to allow referees to improve critical thinking skills and accumulate the necessary experience in key performance areas to support their on-field skill development (e.g., Brand, Plessner, & Schweizer, 2009; MacMahon, Starkes & Deakin, 2007; Mascarenhas, Collins, Mortimer & Morris, 2005; Schweizer, Plessner, Kahlert & Brand, 2011). Establishing meaningful terms such as 'corporate theatre' can be helpful for referees to further understand how their performance may be perceived.

In a similar vein, terms and phrases such as 'contextual judgement', that are labeled by participants from within the practice community can assist in the further development of these skills and make them easier to understand and manage. Future research should further examine the association between characteristics of decision making and decision communications in other sport settings characterised by varying referee role responsibilities and rule structures.

Longitudinal research designs with referee populations should be further employed to increase our understanding of the interaction between decision making and communications over time as many studies generally adopt a cross-sectional view (i.e., comparing differences between expert and novices).
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Table 1: Interview schedule – Discussion themes

A. What constitutes a successful/acceptable refereeing decision and what role does communication play in the process?

B. How would you describe the concept of 'materiality' and can you describe its application using examples from your recent refereeing performance?

C. How would you describe the concept of 'contextual judgement' and can you describe its application using examples from your recent refereeing performance?

D. What strategies/techniques do you use in order to filter information that can both aid and interrupt your decision making processes?

E. How do you train/monitor and develop your decision making and decision communication skills (i.e., specific psychological skills training practices)?
Table 2: Summary of Core Themes and Sub-themes of Decision-Making and Decision Communications in Elite Rugby Union Refereeing.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Sub-themes</th>
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<tbody>
<tr>
<td>Corporate theatre</td>
<td>Impression management</td>
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<td>Punctuation</td>
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<td>Shared decision-making</td>
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<td>Role clarity</td>
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<td>Pre-game preparation and post-game analysis</td>
<td>Template building</td>
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<td>Game review and self-analysis</td>
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<td>Mental rehearsal (Visual and verbal)</td>
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<td>Refereeing philosophy and approach</td>
<td>Experience</td>
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<td>Laws of the game</td>
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<td>Fairness</td>
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<td>Decision-making style and accuracy</td>
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<td>Personality and game management</td>
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<td>Instinct</td>
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<td>Within-game psychological skills</td>
<td>Contextual judgment</td>
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<td>Pattern matching</td>
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<td>Anticipation</td>
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<td>Memory – recall</td>
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Visualization
Confidence in decision making
Concentration
Coping

Authors' notes

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