Decision-Making Styles Among Norwegian Soccer Coaches: An Analysis of Decision-Making Style in Relation to Elite and Non-Elite Coaching and Level of Playing History

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ABSTRACT

The purpose of this study was to investigate soccer coaches' decision-making styles in relation to elite and non-elite coaching experience and level of playing history. A basic assumption was that leader efficiency in soccer is heavily dependent on the quality of the coach's decisions. Efficient decisions are related to experience, and it is not unreasonable that involvement in the soccer context is associated with differences in decision-making style. In this study, decision-making style was defined as a learned habitual response pattern exhibited by an individual when confronted with a decision situation. To assess coaches' decision-making style, we used the General Decision-Making Style (GDMS) scale. Ninety-nine male football coaches in Norway with a mean age of 41 and mean coaching experience of 13.26 years volunteered to participate in the study. The results show that soccer coaches tend to be predominantly rational or intuitive in their decision-making style, with almost no evidence of the avoidant decision-making style. Experts in a domain are characterised by greater use of intuition in their decision-making than non-experts. The results support this assumption, showing that coaches with elite coaching experience seem to have a greater preference for intuitive or rational decision-making style than do other coaches. Soccer coaches with elite-level player experience also use intuitive or rational decision-making styles significantly more often than coaches lacking such experience, suggesting a connection between involvement in a community of practice and soccer coaches' decision-making style. Further research should expand our scientific knowledge about how soccer coaches make decisions in different contexts and clarify strategies for facilitating decision-making in coaching.

Key words: Association Football, Coach Decision-Making Style, Expertise, Heuristics

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INTRODUCTION

Early writing about decision-making and social processes in coaching described leader practices and values as dehumanising, insensitive, and autocratic[1]. The autocratic orientation among coaches was ascribed to personality[2, 3], but since the 1970s this normative and often negative personality description in the coaching literature has been replaced by greater emphasis on context. According to Chelladurai[4] there are three main approaches. One line of inquiry is based on the Multidimensional Model of Leadership, and the second approach follows a Mediational Model of Leadership. The third approach is based on Vroom and Yetton's [5] seminal work on decision styles and Chelladurai and Haggerty's [6] proposal of a normative model of decision styles in coaching. In this approach, decision-making is defined as the process of selecting one option from several alternatives to achieve a desired goal, and it is based on the assumption that coaching efficiency is heavily dependent on the quality of decision-making. Chelladurai and Haggerty[6] describe three different decision styles – autocratic, participatory, and delegating – and suggest that the best decision style in any situation depends on the configuration of the attributes of the problem. One basic assumption implicit in this approach is that the coach is capable of changing decision style according to the task and situation[7]. The existence of this flexibility in decision style in coaching has not been tested empirically, to the best of our knowledge. In a review of the literature on leadership in coaching, Chelladurai[4] questions whether the current framework on decision styles and associated research have extracted all relevant knowledge related to decision styles in coaching.

A soccer coach faces many decisions every day; some decisions are complex and made under time pressure, while others are simpler and made with sufficient time. For example, there are decisions related to *whether* the team should have training matches at the beginning of the season and decisions about *which* teams should be met. Team selections and collective tactics are other typical related decisions. Decisions about *whether* require responses such as yes/no or either/or, whereas decisions about *which* involve a choice of one alternative from a set of possibilities. *Contingent* decisions are those that have been made but not implemented until certain conditions are met: *If* the team falls behind, *then* we change the formation from 4:5:1 to 4:4:2. Under practical conditions, many decisions are probably non-linear recursive processes, meaning that the decision is made by moving back and forth between the choice of criteria and identification of alternatives. The selection and recruitment of highly qualified players to the squad might be a recursive decision process.

Research has shown that coaches in elite sports may suffer from extensive cognitive overload and strain[8] ; in a review of decision-making in sport, Tenenbaum and Bar-Eli[9] argue that such conditions often lead to non-optimal decisions. Coaching in soccer includes leadership during training and matches, and it is reasonable to expect that this will give different situational antecedents for the leadership. It is suggested that traditional models of decision-making do not take into account several critical aspects of operational settings[10]. In soccer, both the training field and matches may be defined as operational soccer coaching settings. Janis and Mann[11] reported that there is an increased likelihood that a decision-maker working under time pressure implements a hypervigilant decision strategy, characterised by: 1) non-systematic or selective information search, 2) consideration of limited alternatives, 3) rapid evaluation of data, and 4) selection of a solution without extensive review or reappraisal. Johnston et al.[12] showed that hypervigilance could be more effective than vigilance under conditions of time pressure and expertise. Time pressure may limit the problem statement and restrict the generation of new alternatives. The decision-maker develops an understanding of the specific situation at hand; a plausible course of

action suggests itself in the mind. This type of process is sometimes referred to as 'matching'[13]. The decision-maker is able to match the situation with his or her knowledge and experience, even though situations are never exactly the same. This size-up of the situation is one basic assumption in both theory of the situation awareness [14] and the recognition–primed decision model[10] which also emphasis that more experienced decision makers in operating settings recognize which course of action is likely to succeed in the same process. These assumptions seems to be supported by a study using stimuli-recall interviews among Norwegian international soccer players who were shown their performance on video and questioned about their thinking and actions during a match against Germany[15]. For example, deliberating consciously about options before acting (which is a vital element in traditional decision theory) while playing was almost totally absent. We must also consider that in competitive sports, cognitive and emotional variables interact and might impair the decision-making process. Match situations and unsatisfactory results might be the circumstances or uncertain environments that create the conditions that impair decision-making. In conclusion, it is apparent that decision-making in soccer coaching is of great complexity and includes a variety of contextually divergent influences.

Scott and Bruce[16] point out that a substantial amount of theorising and empirical research has been focused on decision tasks (problems) and decision situations that affect the decision process, but little attention has been directed towards characteristics of the decision-maker that might influence decision outcomes. Thunholm[17], providing a similar description of decision-making research, claims that this research seems to presuppose that there are no individual differences among decision-makers. Decision-making style refers to the unique manner in which an individual approaches, responds to, and acts in a decision-making situation[18]. Based on the work of Driver[19] and Driver et al.[20] , Scott and Bruce[16] defined decision-making style as the learned, habitual response pattern exhibited by an individual when confronted with a decision situation. They claim that it is not a personality trait but a tendency to react in a certain way in a specific decision context, and acknowledge that situations can influence the choice of decision style. Spicer and Sadler-Smith[21] emphasise that the concept of decision-making style, with links to cognitive style, is associated with the more consistent and stable dimensions of personality. Harren et al.[22] identify three decision-making styles: *rational decisions* are characterised by strategies such as systematic appraisal and logical deliberation; *intuitive decisions* rely on fantasy, feelings, and emotional self-awareness, frequently in an impulsive manner; while features of *dependent decisions* include denial of responsibility for choices and conformity to the authority of others. Scott and Bruce[16] postulated *a priori* a fourth *avoidant* decision style, characterised by attempts to avoid decision-making whenever possible. A fifth style emerged when they analysed a sample of military officers, which they named *spontaneous* decision style, described by feelings of immediacy and a desire to complete the decision-making process. Scott and Bruce[16] conclude that decision-making styles are not mutually exclusive and that individuals do not rely on a single decision style, but probably use a combination of styles when they make important decisions.

The concept of decision-making style is closely related to the concept of cognitive style and is usually related to individual 'thinking practice', which is fundamental in the understanding of the decision process[17]. Research into problem-solving suggests that there are at least three distinct dimensions underlying the perceived problem-solving process, and that individuals react differently to these dimensions. Individuals who perceive themselves as effective problem-solvers 1) report more confidence in their problem-solving ability, 2) seem to approach, rather than avoid, problematic situations, and 3) exhibit a sense of

personal control. Interestingly, the self-assessed better problem-solvers report being more intuitive, cautious, serious, and systematic in making decisions, while the less effective problem-solvers are characterised by avoidance and impulsiveness[23].

Blustein and Phillips[24] investigated the relationship between ego identity statuses and decision-making styles related to career development. Their results indicate that individuals who have attained a stable identity tend to apply rational and systematic decision-making strategies, while individuals with a foreclosed identity count on dependent strategies and do not approve of systematic and internal strategies. Individuals with a diffusion ego status depend on intuitive and dependent styles and display non-appearance of systematic and internal styles. This seems to be in line with Thunholm's [17] comments that a decision-making style also involves basic self-evaluation and the general ability to initiate and maintain intentions. Generally, research has shown that experienced decision-makers are more capable of defining the problem and balancing the alternatives, while less experienced decision-makers develop arbitrary goals and are less structured during the decision-making process[25]. On the other hand, Klein[26] argues that expertise can also get us in to trouble because it can lead us to view problems in a stereotyped way. With coaching and player experience we learn more and more patterns which let us size up situations quickly and accurately. Pattern or mind sets which frame the cues in front us and enable us to make sense are not perfect and can mislead us. Lack of tactical flexibility against opponents, traditional team selection and high turnover among players might be a result of misleading mind-sets.

Despite all the leadership research in sports coaching (see Chelladurai[27], for a review) and the growing acknowledgement of the cognitive nature of coaching have so far not led to an expected empirical interest in decision-making in coaching[27]. More recently, Abraham et al.[29] found that expert coaches report that performing and coaching experience are the biggest sources of knowledge. Vergeer and Lyle's[30] telephone survey of gymnastic coaches used hypothetical scenarios about injured athletes' participation in a competition and revealed that more experienced coaches had greater cognitive complexity and deeper knowledge structures. However, we know less in what way these knowledge sources influence decision-making and it might be that we learn the wrong lessons from experience[26]. We have not been able to identify publications that illuminate the influence of soccer player and soccer coaching experience on decision-making in sport. In sport science, most of the empirical studies on decision-making styles have been directed towards the influence members of the team have and Chelladurai[7] argues that this perspective on decision-making can be described as a social process. We have less knowledge about decision-making as a cognitive process, which is the second perspective suggested by Chelladurai[7]. The aims of the current study are two fold. First, to investigate which decision-making styles are present in a sample of Norwegian soccer coaches. Second, to examine differences in decision-making styles associated with level of player experience and stage of soccer coaching experience. Based on knowledge from the literature and informal communication with the players and coaches in the soccer community we expected relatively low values on the avoidant and dependent decision style and high values on the spontaneous, rational and intuitive style.

METHOD

PARTICIPANTS

Ninety-nine male football coaches in Norway with a mean age of 41 ± 9.5 years (range 19–69 years) volunteered to take part in this study. Mean coaching experience was 13.26 ± 8.8 years and 30% of the coaches had coaching experience with Norwegian national teams

or the Norwegian Premier League (mean experience at this level was 4.9 ± 4.1 years). All participants had played league football and mean playing experience was 19.9 ± 8.4 years. Of the participants, 29% had played in the Norwegian Premier League and First Division, and 15.2% had played in national teams (18 years, 19 years, Under 21s), or the Norwegian national team.

PROCEDURE

The data were collected during the Norwegian Cup Final Seminar in 2009. In the first session of the seminar, all participants were informed about the purpose of the study, and that participation was voluntary, the survey was anonymous and all information would be treated confidentially. It was emphasised that experience in coaching soccer was necessary in order to complete the questionnaire.

During the first coffee break, coaches who wanted to participate obtained the questionnaire with an information letter from a stand at the convention centre. To maintain anonymity, coaches were asked to put their completed questionnaires in a separate envelope that was enclosed with the questionnaire, and to seal the envelope before returning it either to the stand at the convention centre or by posting it to one of the authors in the stamped, addressed envelope provided. Even though this is a sample of convenience, we consider this coaching event nationwide representative of the total soccer coaching population in Norway. Institutional ethics approval was obtained according to the University of Agder institutional procedures.

INSTRUMENTS

The first section of the questionnaire required coaches to provide demographic information (country, age, gender) and details of their main coaching experience, sport education, current coaching level, and level of their career as a footballer. *Coaching performance experience level* was assessed from the following item: 'What is the highest level of football you have coached at?' with seven possible response categories (national team coach; Norwegian Premier League; Norwegian 1st, 2nd, 3rd, 4th Divisions; junior level). Coaching experience was then dichotomised into: 'Elite soccer coaching experience' (national team; Norwegian Premier League; 1st and 2nd Divisions) and 'Non-elite soccer coaching experience' (3rd and 4th Divisions, junior level soccer). *Playing experience as a footballer* was assessed from the following item: 'What is the highest level you have played at as a soccer player?' with six possible response categories (international top league; Norwegian Premier League; Norwegian 1st, 2nd, 3rd Division, or lower at senior level; junior level). Playing experience was then dichotomised into: 'Elite player experience' (International top league, Norwegian Premier League, and Norwegian 1st Division) and 'Non-elite player experience' (2nd Division to junior level).

*Decision-Making Styles***.** To assess the coaches' decision-making styles, we used the General Decision-Making Style (GDMS) scale[16]. Based on the recommendations of Kvamme et al.[31] for translating questionnaires, we translated the GDMS into Norwegian. The GDMS contains 25 items measuring five decision styles, with five items in each category. Unfortunately, during the translation and printing process, one statement ('I rarely make important decisions without consulting other people') was omitted from the Dependent subscale. Therefore, in the present study, the Dependent subscale was computed from four items. The five decision styles were as follows: 1) *Rational decision style* (RDS) (e.g., logical and structured approach to decision-making). An example of an item is: 'I make decisions in a logical and systematic way.; 2) *Intuitive decision style* (IDS) (e.g., reliance on

hunches, feelings, and impressions). An example of an item is: 'When making decisions, I rely upon my instincts.'; 3) *Dependent decision style* (DDS) (e.g., reliance on the direction and support of others). An example of an item is: 'I use the advice of other people in making important decisions.'; 4) *Avoidant decision style* (ADS) (e.g., postponing or avoiding making decisions). An example of an item is: 'I postpone decision-making whenever possible.'; 5) *Spontaneous decision style* (SDS) (e.g., impulsive and prone to making snap or spur of the moment decisions). An example of an item is: 'I generally make snap decisions.'

Participants were given the following instructions: 'Listed below are statements describing how individuals go about making *important decisions*. Please indicate whether you agree or disagree with each statement when you make important decisions as a soccer coach.' The items were scored on a five-point, Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The mean scores for each subscale are derived independently but higher scores indicate more frequent use of the particular decision style. The subscales of the GDMS have been shown to be reliable with military officers, students, engineers, and technicians[16, 17, 32].

Reliability of the subscales was confirmed by acceptable levels of Cronbach's alpha for all except the dependent scale: (RDS a = .83; IDS a = .80; DDS a = .65; ADS a = .84; SDS a = .74). The five-factor model of the decision-making styles was also evaluated through confirmatory factor analysis (CFA) using SPSS·AMOS. The main purpose was to test how well the data fitted the hypothesised structure, as well as to examine whether the items were good measures of underlying constructs. CFA provides goodness-of-fit tests and allows alternative models to be tested. CFA models were tested for each of the five subscales and all 24 items with five correlated factors according to the model.

The results of CFA showed that for each of the subscales *rational decision style*, *intuitive decision style*, *avoidant decision style* and *spontaneous decision style*, the goodness-of-fit (GFI), Tucker–Lewis (TLI) and comparative fit (CFI) indices were above .98, and the root mean square error of approximation (RMSEA) values were < 0.05, indicating close fit[33,34]. However, fit indices for the four items in the *dependent decision style* subscale indicated a poor fit to the data. Further, the results from CFA based on all 24 items with five correlated factors showed that RMSEA values indicated a fair fit (0.08), but the GFI, CFI, and TLI indicated a poor fit to the data. Further studies are needed to examine this in more depth.

RESULTS

When dichotomizing coaching experience, 32 participants were grouped as 'elite soccer coaching experience' and 65 participants as 'non-elite soccer coaching experience' Further when dichotomizing playing experience, 31 were grouped as 'elite player experience' and 66 participants as 'non-elite player experience'. When investigated the covariance between the two independent variables, playing experience significantly predicted coaching experience; more specifically higher level of player experiences was related to higher level of coaching experiences ($\chi^2(df) = 8.1(1)$, $p < .01$, Cohen's $d = 0.58$). The mean values, standard deviations, and correlations for the five decision styles are shown in Table 1. As can be seen in the table, the rational and intuitive decision styles were the most used and the avoidant decision style was least used.

The pattern of correlations among the five styles revealed that the rational scale was significantly positively correlated with the intuitive scale and negatively correlated with the avoidant scale, while the intuitive decision style was positively correlated with the spontaneous scale. The dependent style was positively correlated with the avoidant style.

Table 1. Descriptive Statistics and Bivariate Correlation Between Decision Subscales (n = 98)

	M	SD	2	3	4	5
1. Rational decision style	3.71	0.76	.35**	.19	–.40**	–.03
2. Intuitive decision style	3.31	0.73		.14	–.08	.26*
3. Dependent decision style	3.16	0.68			.24*	–.04
4. Avoidant decision style	2.19	0.85				.00
5. Spontaneous decision style	2.91	0.61				

Note. *$p < .05$ **$p < .01$

Table 2. Descriptive Statistics and the Differences Between Decisions in Relation to Level of Coaching Experience

	Non-elite coaching experience (*n* = 65)	**Elite coaching experience (*n* = 32)**	
Variable	***M (SD)***	***M (SD)***	***t***
1. Rational decision style	3.60 (.82)	3.96 (.55)	–2.23*
2. Intuitive decision style	3.16 (.73)	3.60 (.64)	–2.87**
3. Dependent decision style	3.13 (.72)	3.20 (.59)	–.47
4. Avoidant decision style	2.25 (.91)	2.04 (.73)	1.14
5. Spontaneous decision style	2.90 (.61)	2.93 (.62)	–.29

Note. *p < .05 **p < .01

Independent sample t-tests indicate that participants with no elite coaching experience reported significantly lower mean values than coaches with elite experience on rational style (3.60 ±.82 vs. 3.96 ± .55, $t = 2.23$ p<.05, eta squared = .05) and intuitive decision style (3.16 ±.73 vs. 3.60 ±.64, t = -2.87, p < .01, eta squared = .03) (Table 2). Furthermore, the independent t-tests show that participants with non-elite playing experience had lower means than those with elite experience on the rational decision style (3.60 ± .79 vs. 3.92 ± .65, t = -1.98, p < .05, eta squared = .02) and intuitive decision style (3.20 ± .72 vs. 3.52 ± .71, p < .05, eta squared = .02) (Table 3).

Table 3. Descriptive Statistics and the Differences Between Decisions in Relation to Level of Soccer-Playing Experience

	Non-elite coaching experience (*n* = 66)	**Elite coaching experience (*n* = 31)**	
Variable	***M (SD)***	***M (SD)***	***t***
1. Rational decision style	3.60 (.79)	3.92 (.65)	–1.98*
2. Intuitive decision style	3.20 (.72)	3.52 (.71)	–2.05*
3. Dependent decision style	3.11 (.69)	3.29 (.64)	–1.19
4. Avoidant decision style	2.15 (.86)	2.23 (.85)	–.42
5. Spontaneous decision style	2.91 (.64)	2.92 (.56)	–.07

Note. *p < .05 **p < .01

DISCUSSION

The purpose of this research was to investigate what kind of decision styles are evident in a sample of Norwegian soccer coaches and clarify if there are differences in decision-making styles associated with level of player experience and stage of soccer coaching experience. As can be seen in Table 1, the rational decision-making style was the most used and the avoidant decision-making style, which also is related to negative stress[35], the least used. The low use of the avoidant style may not be surprising; indeed, a similar finding is reported among military officers[17]. Among soccer coaches, consistent use of avoidant decision-making is probably not possible because of the behavioural expectations of team members and management. The description of decision-making in soccer coaching provided in the introduction indicates that there are both a large number of and great variation in decisions in different contexts. Hence, coaching could be described as a stream of more or less continuous decision-making[29], and a lack of this characteristic is incompatible with functioning in the role. If it were to happen, other members of the group (players, staff) would take the necessary decisions to secure training and match activity. There is also a significant positive relationship between the avoidant and dependent decision-making styles (Table 1). This result is in line with previous research[16] and supports the assumption that dependent decision-makers can be quite passive and seek to avoid decision-making[22]. The results (Table 1) indicate that among Norwegian soccer coaches, the rational decision-making style is clearly evident and is the predominant decision style. The rational decision-making style has been connected with greater decisional certainty and satisfaction[22] and more persistence in efforts to execute plans[36]. The average rational decision score (3.71) is in line with other studies[16, 17, 21, 35]. Furthermore, the bivariate correlation shows a significant negative relationship between the rational and avoidant decision-making styles (Table 1). This negative correlation is consistent with earlier research[16, 21] and supports the view that rational decision-makers approach, rather than avoid, problems.

Harren[37] suggests that the intuitive decision style, which rely on hunches, feelings, impression, and fantasy is less effective. Dreyfus and Dreyfus [38], Endsley[14] and Klein[10] describe decision-making among experts as derived more from intuition and established on a deep tacit understanding or experience. The results in Table 1 reveal that soccer coaches reported that the intuitive decision-making style is employed, but not as much as the rational decision-making style. Most participants in this study have extensive soccer coaching experience and the extent of intuitive decision-making seems to be consistent with the stage skill theory of Dreyfus and Dreyfus[38]. The explanation of Harren[37] of why the intuitive decision-making style is ineffective is one interpretation, applied in an area where the decision-maker has little experience, while Dreyfus and Dreyfus[38] describe how experts in a domain use intuition in their decision-making. However, the items in the GDMS measure only whether the individual uses intuition *per se* and do not explicate the reasons or background for use of intuition. The positive significant relationship between the rational and intuitive subscales might indicate that these are not polar opposites, but rather are two complementary variables. The positive correlation between the Intuitive and the Rational style has not been reported earlier and it seems to counter the theory on Cognitive Style. One possible explanation of this finding is that the participants are asked how they make decisions as coaches and not how they make important decisions in general which is normal in other studies with the GDMS.

When Dreyfus and Dreyfus[38] explicated their theory, they used the expert domains of chess, surgery, and car driving as exemplars, among others. In our opinion, these domains appear more restricted; by comparison, soccer coaching is broader and more faceted or

complex with often irreconcilable goals[39, 40, 41], thus requiring a combination of rational and intuitive decision-making. The correlation analysis revealed a weak positive significant relationship between the intuitive and spontaneous subscales; this result is in line with previous research[17,21] . The correlation between these two subscales might indicate that a decision is processed with little conscious access and this immediate response is best described as a hypervigilant or high speed intuitive style used in a decision situation with time pressure[11, 12, 17].

Scott and Bruce[16] view the dependent decision-making style negatively and state that when it occurs, the individual is unable to act without others confirming his or her conclusion. Phillips et al. [42] indicate that individuals with dependent decision-making career strategies report low confidence in their problem-solving abilities and, according to Thunholm[17], the dependent decision-making style is related to problems in carrying out a deliberate thinking process without being disturbed. The mean value in our study for the dependent decision-making style (3.16) seems to be lower than in earlier research[16, 21]. This difference, however, must be interpreted with caution because one statement was missing from this subscale.

In line with the work of Endsley[14] and Lipshitz [13], it is not difficult to support the assumption that a spontaneous decision-making style in combination with low levels of rational, dependent, and avoidant decision-making styles is preferable in military operations[43]. The spontaneous style is related to lower stress levels and higher levels of coping skills[35]. Based on the assumption that both training and match conditions in soccer may be understood as operational settings, we expected high values for the spontaneous decision-making style. The results in Table 1 show, however, rather low levels of spontaneous decision-making and lower mean values than those obtained by Thunholm[17, 35] and Spicer and Sadler-Smith[21]. One possible explanation for these low values for the spontaneous decision-making style is that coaches do not directly consider behaviour during practice and matches as presupposing decision-making.

The results reported in Table 2 show that there are significant differences in decision-making styles between coaches with and without elite soccer coaching experience. First, soccer coaches with elite coaching experience score significantly higher on the rational scales. Performance development in an elite soccer team is largely related to decisions of the leader (usually the coach), and it would be strange if this was not related to a rational decision-making style. It was therefore expected that coaches with elite coaching experience would be more likely to demonstrate a rational decision-making style. Second, coaches with elite soccer coaching experience are significantly more likely to demonstrate an intuitive decision-making style than coaches without that experience. This difference confirms a basic assumption of Dreyfus and Dreyfus'[44] stage skill theory, which states that an expert in a domain is characterised by greater reliance on intuition in his or her decision-making than a non-expert. However, in a soccer group, leadership decisions based primarily on intuition may be problematic because of insufficient access to the course of action. Participation in the decision-making process will be difficult and the coach may be perceived as autocratic. Some intuitive decisions will also be difficult to understand and, as a consequence, not accepted by the players. This may apply particularly to decisions related to team selections, where it is critical that the coach can explain decisions and communicate belief in a player's ability.

Most soccer coaches at elite level in Norway have had player experience at elite level. The effect of player experiences in soccer coaches are not fully understood, but there seems to be an agreement that learning opportunities might stem from player experience[45] and it might

be a significant source of coaching efficacy. An examination of the differences between coaches with elite-level player experience and those without reveals similar mean values for the spontaneous, dependent, and avoidant decision-making styles. Soccer coaches with elite-level player experience seem to prefer the intuitive and rational decision-making styles compared with coaches lacking such experience and the differences are significant. For the coach who is a former elite player, soccer experience from training and matches may be considered as contextual background and a part of the situational understanding that facilitates intuitive decisions. This result also seems to be in line with the assumption that expertise allows the immediate intuitive situational response [46]. Coaches with elite soccer player experience have also been exposed to one or several coaches during their playing careers, and it may be that they have experienced coaches using an intuitive decision style and they adopt this style themselves. The experience of being a player and/or coach at the elite level assumes there has been soccer engagement and information sharing, which can be taken as criteria for participation in a community of practice[47]. The results of this study indicate that there is a connection between involvement in a community of practice and soccer coaches' decision-making style. However, the cross-sectional design used in this study prevents confirmation of causality and further longitudinal studies are needed to clarify what learning takes place during participation in a soccer community of practice.

Although the results of this study offer preliminary support for the multidimensional GDMS scale, further investigation of the validity and reliability of the GDMS in a sport context is warranted. This is especially important because one item was missing in the present investigation. Furthermore, the covariance between the two independent variables can be considered as moderate, but it must be taken into consideration when interpreting the results. Even if there was a significant difference between playing and coaching experiences on rational and intuitive decision making styles, the effect size (e.g., eta squared) was small and should also be taken into consideration when interpreting these results, and future research with a different design should explore the practical implication of different decision making styles in the coaching content. Finally, the selection of coaches was not done systematically; a convenience sample was used, which implies that generalisation of the results may be debatable.

Scott and Bruce[16] summarised their study by suggesting that decision-making styles are different but not mutually exclusive, and people seem able to apply a combination of different styles when they make decisions. This seems to be comparable with the discussion about learning styles and learning skills in pedagogical literature [48]. Learning styles as fixed characteristics are questioned, and an alternative perspective is suggested where the learners can differ and improve based on a suite of malleable learning competencies. The results in this study indicate that Norwegian soccer coaches prefer the rational and intuitive decision-making styles, which might indicate that soccer coaches mix styles when they make decisions. Generally, people use heuristics or rules of thumb when they make decisions in uncertain environments[49]. The main function of heuristics is to reduce complex judgements to simpler ones. Heuristics are usually effective, but research has shown that they lead to predictable and systematic errors. Decision-makers seem to consider only a few alternatives and do not consider all the consequences of the alternatives. They ignore some options and focus on others. In a study based on a perspective of maximising decision accuracy and decision autonomy, Dalal and Bonaccio[50] examined decision-makers' reactions to three types of advice, namely a recommendation concerning which alternative not to choose, information about alternatives, and a recommendation about how to make the decision along with social support. The results revealed that decision-makers respond very positively to

information and less positively to social support and disparagement.

CONCLUSION

When we coach or educate coaches about decision-making styles, knowledge of heuristics and types of advice are fundamental for comprehensive guidance. Further research should expand our scientific knowledge about how soccer coaches make decisions in different contexts and clarify strategies for facilitating efficient decision-making in coaching. Moreover, studies including variables such as coaching efficacy, personality traits, and varied information (success, satisfaction) related to the players and team may be important in order to expand our knowledge of decision-making processes and styles.

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