



Communication in elite team sports.

Gaute Sørensen Schei

Communication in elite team sports

Gaute Sørensen Schei

Communication in elite team sports

An investigation of identity leadership, intrateam communication, and
cohesion in team sports

Dissertation for the degree philosophiae doctor (ph.d.)

University of Agder

Faculty of Health and Sport Sciences

2023

Doctoral dissertations at the University of Agder 430

ISSN: 1504-9272

ISBN: 978-82-8427-147-7

© Gaute Sørensen Schei, 2023

Print: Make!Graphics

Kristiansand

Acknowledgements

I would like to start by thanking the two most important persons for managing to complete this doctoral thesis, my supervisors Rune Høigaard and Tommy Haugen. Your guidance, expertise, and social skills has been essential from day one. I have truly appreciated working together with both of you on this project, and it has been a great privilege being part of the same team as the two of you for the past four years. I look forward to future collaborations.

Further, I want to thank Rune Giske for convincing me to start as a PhD-student at the University of Agder. Your mentorship has been vital throughout my master studies, my coaching practice, and this PhD-thesis. Your presence is deeply missed.

Working at the University of Agder has been a great pleasure the last four years. I want to thank all my colleagues for making it a fun and interesting ride. A huge thanks to all my fellow PhD-students who have helped me during the way.

I want to thank clubs, players, and coaches for participating in the present work. It was a pleasure traveling around in Norway collecting data and visiting all of you.

Lastly, to family and friends, thanks for all the good times the last years helping me to sometimes focus on something else than this research project. Thank you for all the support and providing me with some perspective on life.

Summary

Introduction: Performance in elite team sport involves a range of interrelated factors, where team members need to coordinate their efforts toward collective goals in training and in match situations. Communication is one central factor associated to teamwork in elite team sports. Communication in team sports is closely attached to how team members work together towards task-related demands, and in addition influence social interactions between team members. Awareness regarding the importance of communication in team processes is provided by several researchers. However, more research is needed to examine and explore communication in elite team sports.

Purpose: The overall purpose of the present work was to investigate aspects of communication in elite team sports. This was addressed through three different research aims, involving three separate scientific papers: PI) investigating the relationship between identity leadership, intrateam communication and task cohesion in elite team sports, PII) understanding and measuring humor communication in team sports, and PIII) investigating communication processes in and between teams prior and during a collective collapse in an elite football match.

Methods: Two different methodological approaches were used to answer the overall purpose of the present work. Study 1 and study 2 was conducted with a primarily quantitative research design, while study 3 was conducted with a qualitative research design. Study 1 involved 441 participants from handball and ice hockey teams, while study 2 consisted of 776 participants from handball, ice hockey and football teams competing in Norway, that were divided into two different samples due to their division level. Structural equation modeling was conducted, including mediation analyses (study 1), exploratory factor analysis (study 2), independent cluster model confirmatory factor analyses (study 2), and exploratory structural equation modeling (study 2). Participants in study 3 was three players, the head coach, and the sporting director from the football club IK Start in Norway. Individual semistructured interviews were conducted where participants were exposed to a structured video-recall review to enlighten the phenomenon under investigation. Data triangulation was performed through sampling of data from three different sources (i.e., semistructured interviews,

objective match statistics, and video recordings of the investigated match). Analysis of the semistructured interviews followed recommendations for thematic analyses.

Results: Findings in PI identified a positive association between identity leadership and task cohesion, mediated by the intrateam communication dimension acceptance. Conversely, the intrateam communication dimension distinctiveness did not mediate the relationship between identity leadership and task cohesion. Overall, results regarding associations between identity leadership, acceptance, and task cohesion offer support for the theoretically informed performance-related benefits of identity leadership in elite team sports.

Findings in PII supported a three-factor structure of humor climate in team sports including positive humor (e.g., players do funny things), negative humor in-group (e.g., players and coaches use negative humor about each other to be funny), and negative humor out-group (e.g., players use hostile humor about people outside the team). Testing latent variable correlation revealed that positive humor was positively related to group integration social, and negatively related to social conflict. Further, negative humor in-group and out-group were both positively related to social conflict.

Findings in PIII revealed that the first IK Start goal generated a positive momentum in IK Start which involved positive cognitive, emotional, and behavioral reaction chains. In contrast, for Lillestrøm (LSK) it was perceived as a critical incident which led to a negative momentum in LSK, including counterproductive emotional and behavioral outcomes. The next two goals by IK Start further increased the negative behavior and counterproductive communication within LSK, thereby influencing team coordination. Results highlight that intrateam contagion of negative (LSK) and positive (IK Start) emotions were prevalent during in-game processes after the 4–1 goal. Further, our findings indicate that interteam contagion was occurring, where IK Start players gained belief and energy when observing the increase of negative communication and change of behavior in the LSK team, strengthening the belief within IK Start that they could win the qualification match.

Conclusion: Our results highlight the importance of communication in elite team sports, and expand our understanding of identity leadership, intrateam communication (i.e., acceptance, distinctiveness, humor), cohesion, and in-game communication. Coaching behavior is identified as one essential influencer of communication in team processes (PI), while momentum and contagion influence communication during in-game processes within and between teams (PIII). Our findings emphasize that the coach and the specific situation are important factors to understand communication in team sports (PI, PIII). Moreover, the content and form of communication (i.e., humor, acceptance, in-game communication) influence outcomes such as cohesion (i.e., task and social), conflict, contagion, momentum, and performance (PI, PII, PIII). In summary, our findings expand our understanding regarding some of the underlying mechanisms that are prevalent within communication processes in elite team sports.

Sammendrag

Introduksjon: Prestasjoner i eliteidrett inneholder en rekke sammenkoblede faktorer, der teammedlemmer må koordinere innsats i treningsarbeid og i kampsituasjon, mot kollektive mål. Kommunikasjon er en sentral faktor som er relatert til teamarbeid i eliteidrett. Kommunikasjon i elitelag er sterkt knyttet til hvordan teammedlemmer samarbeider for å løse oppgave-relaterte krav, og er samtidig med å påvirke de sosiale interaksjonene mellom teammedlemmer. Viktigheten av kommunikasjon i team prosesser har blitt fremhevet av flere forskere. Det er likevel behov for mer forskning som undersøker og utforsker kommunikasjon i elitelag i idrett.

Formål: Det overordnede formålet med dette arbeidet var å undersøke aspekter av kommunikasjon i elitelag i idrett. Det overordnede formålet skal belyses gjennom å svare på tre forskjellige forskningsspørsmål, som inkluderer tre ulike forskningsartikler: PI) relasjonen mellom identitetsledelse, intrateam kommunikasjon, og oppgavekohesjon i elitelag i idrett, PII) forstå og måle humor kommunikasjon i lagidrett, og PIII) kommunikasjonsprosesser i og mellom lag, før og underveis en kollektiv kollaps i en fotballkamp.

Metode: To forskjellige metodiske tilnæringer ble brukt for å svare på det overordnede formålet i denne avhandlingen. Studie 1 og studie 2 ble utført med et primært kvantitativt forskningsdesign, mens studie 3 ble utført med et kvalitativt forskningsdesign. I studie 1 deltok 441 utøvere fra håndball og ishockey lag. I studie 2 deltok 776 utøvere fra håndball, ishockey og fotball lag i Norge, som ble delt inn i to ulike utvalg utfra hvilken divisjon de konkurrerte i. Strukturmodellering ble gjennomført som inkluderte blant annet mediasjonsanalyser (studie 1), utforskende faktoranalyser, bekreftende faktoranalyser, og utforskende strukturmodellering (studie 2). I studie 3 deltok tre spillere, hovedtreneren, og sportsdirektøren fra fotballklubben IK Start i Norge. Individuelle semistrukturerte intervjuer ble gjennomført der deltakerne ble eksponert for en strukturert video-gjennomgang av den undersøkte kampen. Data triangulering ble utført gjennom å samle inn data fra tre ulike kilder (dvs., semistrukturerte intervju, objektiv kampstatistikk, videoopptak av den undersøkte kampen). Intervjuene ble analysert etter anbefalinger for tematiske analyser.

Resultater: Resultatene i artikkel 1 identifiserte en positiv relasjon mellom identitetsledelse og oppgavekohesjon, mediert av intrateam kommunikasjon-dimensjonen aksept. Intrateam kommunikasjon-dimensjonen særpreg medierte ikke relasjonen mellom identitetsledelse og oppgavekohesjon. Samlet sett gir funnene fra artikkel 1 støtte for de teoretisk forankrede prestasjonsrelaterede fordelene ved identitetsledelse i elitelagsidrett.

Resultatene i artikkel 2 støttet en tre faktor struktur for humorklima i lagidretter som inkluderte positiv humor (f.eks., finner spillere på humoristiske påfunn), negativ humor inn-gruppe (f.eks., bruker spillere og trenere negativ humor om hverandre for å være morsom), og negativ humor ut-gruppe (f.eks., bruker spillere fiendtlig humor om personer utenfor laget). Videre viste korrelasjonsanalyser at positiv humor hadde en positiv relasjon til sosial gruppe integrasjon, og en negativ relasjon til sosial konflikt. I tillegg viste resultatene at negativ humor inn-gruppe og ut-gruppe hadde en positiv sammenheng med sosial konflikt.

Resultatene i artikkel 3 viste at den første scoringen til IK Start skapte et positivt momentum i IK Start som inkluderte positive kognitive, emosjonelle, og atferdsmessige reaksjoner. Deltakerne fra IK Start oppfattet at denne scoringen var en kritisk hendelse for Lillestrøm, som startet et negativt momentum i Lillestrøm, som omfattet blant annet kontraproduktive emosjonelle og atferdsmessige utfall. De to neste scoringene til IK Start forsterket den negative atferden og kontraproduktive kommunikasjonen i Lillestrøm, og dermed påvirket koordineringen i spillet. Resultatene fra artikkel 3 fremhever at intrateam smitte av negative (LSK) og positive (IK Start) emosjoner var utbredt underveis i kampen etter 4–1 reduseringen til IK Start. I tillegg indikerer funnene fra artikkel 3 at det oppsto interteam smitte, hvor IK Start spillere observerte endring av atferd og negativ kommunikasjon innad i Lillestrøm, noe som førte til en økt tro og forsterket energi innad i IK Start om at de kunne vinne kvalifiseringskampen.

Konklusjon: Resultatene fra denne avhandlingen fremhever viktigheten av kommunikasjon i elitelag, og utvider forståelsen vår av identitetsledelse, intrateam kommunikasjon (dvs., aksept, særpreg, humor), kohesjon, og kampspesifikk kommunikasjon. Treneratferd er identifisert som en sentral faktor som påvirker kommunikasjon i team prosesser (PI), mens momentum og smitte

er med å påvirke kampsesifikk kommunikasjon innad og mellom to konkurrerende lag (PIII). Resultatene understreker at treneren og den konkrete situasjonen er viktige faktorer for å forstå kommunikasjon i elitelag i idrett (PI, PIII). Videre kan vi konkludere med at innholdet og formen av kommunikasjonen (dvs., humor, aksept, kampsesifikk kommunikasjon) påvirker gruppedynamiske uttak som kohesjon (dvs., oppgave og sosial), konflikt, smitte, momentum og prestasjon (PI, PII, PIII). Oppsummert bidrar resultatene fra denne avhandlingen til å øke forståelsen for noen av de underliggende mekanismene som er utbredt innenfor kommunikasjonsprosesser i elitelag i idrett.

Contents	
Acknowledgements	v
Summary	vi
List of papers	xv
List of appendices	xvi
1.0 Introduction	1
1.1 Purpose of the present work	4
2.0 Theory	5
2.1 Theoretical framework	5
2.2 Communication in team sports	6
2.2.1 Contagion in sport	11
2.2.2 Humor communication in teams	13
2.3 Leadership in sport	15
2.3.1 Social identity leadership	17
2.4 Cohesion in sport	19
2.5 Momentum in team sport	22
2.6 The working model and aims for the current thesis	24
3.0 Methods	27
3.1 Research philosophy	27
3.2 Quantitative methods – Study 1 and study 2	29
3.2.1 Participants – Study 1 and study 2	29
3.2.2 Procedures – Study 1 and study 2	29
3.3 Measures – Study 1 and study 2	30
3.3.1 Identity leadership (study 1)	30
3.3.2 Intrateam communication (study 1)	30
3.3.3 Task cohesion (study 1)	31
3.3.4 Humor climate (study 2)	31
3.3.5 Social cohesion (study 2)	33
3.3.6 Social conflict (study 2)	33
3.4 Data analyses – Study 1 and study 2	33
3.5 Qualitative methods – Study 3	35

3.5.1 Participants – Study 3	37
3.5.2 Procedures – Study 3	37
3.5.3 Interview guide – Study 3	37
3.5.4 Thematic analysis – Study 3	38
3.6 Ethical considerations	41
4.0 Summary of results	43
4.1 PI	43
4.2 PII	43
4.3 PIII	44
5.0 Discussion	45
5.1 Communication in team processes	46
5.2 Communication during in-game processes	52
5.3 Methodological considerations	55
5.4 Applied perspectives	59
5.5 Future directions	61
6.0 Conclusion	63
References	65
Papers I-III	
Appendices	

List of papers

Paper I

Schei, G. S., Høigaard, R., Erikstad, M. K., Ivarsson, A., & Haugen, T. (2023). Identity leadership and cohesion in elite sport: The mediating role of intra-team communication. *Heliyon*, *9*, e17853.
<https://doi.org/10.1016/j.heliyon.2023.e17853>

Paper II

Schei, G. S., Haugen, T., Stenling, A., Grøtting, A., Peters, D. M., & Høigaard, R. (2021). Development and initial validation of the humor climate in sport scale. *Frontiers in Psychology*, *12*, 692892. <https://doi.org/10.3389/fpsyg.2021.692892>

Paper III

Schei, G. S., Haugen, T., Jones, G., Sæther, S. A., & Høigaard, R. (2022). A qualitative exploration of collective collapse in a Norwegian qualifying premier league soccer match - the successful team's perspective. *Frontiers in Psychology*, *12*, 777597. <https://doi.org/10.3389/fpsyg.2021.777597>

List of appendices

Appendix I	Approval by the Norwegian Centre for Research Data
Appendix II	Informed consent study 1 and study 2
Appendix III	Questionnaire study 1 (condensed)
Appendix IV	Questionnaire study 2 (condensed)
Appendix V	Approval by the Norwegian Centre for Research Data
Appendix VI	Interview guide study 3
Appendix VII	Informed consent study 3

1.0 Introduction

Performance in elite team sport involves a range of interrelated psychological, physiological, technical, and tactical factors (Collins & Collins, 2011; Glazier, 2017; Hodge et al., 2014). To perform optimally, elite teams seek, explore, and build on relations between team members to create and maintain adaptive interactional patterns (Ribeiro et al., 2017). Performance is closely attached to teamwork, and obtaining competitive outcomes is often the most important objective (MacPherson & Howard, 2011; McKay et al., 2022). Teamwork in sport can be defined as “a dynamic process involving a collaborative effort by team members to effectively carry out the independent and interdependent behaviors that are required to maximize a team’s likelihood of achieving its purposes” (McEwan & Beauchamp, 2014, p. 233). In particular, interactive team sports (e.g., ice hockey, handball, football) require coordinated efforts in training and in match situations, and involve processes that influence how team members interact and how the group environment develops (Eys et al., 2015).

Common amongst several models regarding teamwork is the adaption and modification of a systemic framework of input-process-output in team processes (Marks et al., 2001; Mathieu et al., 2008; Rousseau et al., 2006). Inputs in these models (see figure 1) refer to antecedents of individual team member characteristics, team-level factors, and environmental factors which subsequently affect teamwork and outcomes (McEwan & Beauchamp, 2014).

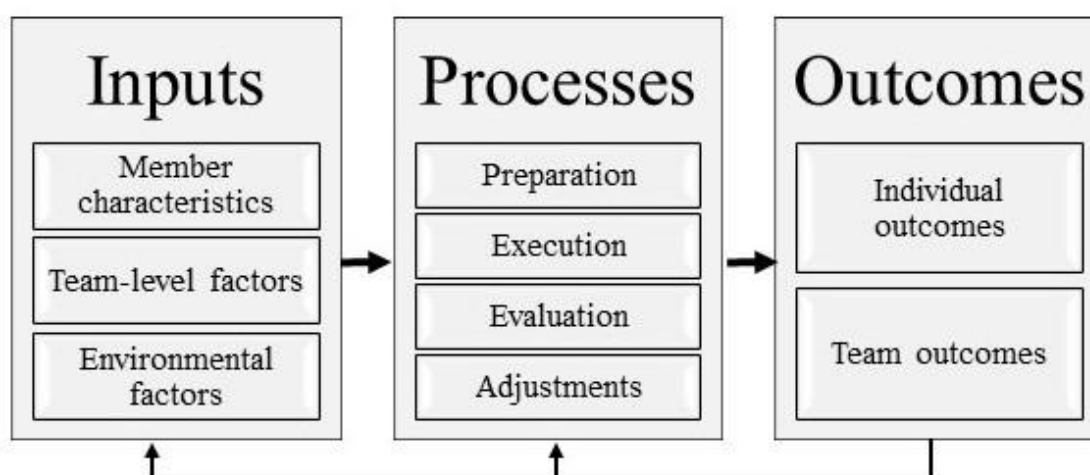


Figure 1. Teamwork in sport (based on Carron & Eys, 2012; McEwan & Beauchamp, 2014; Rousseau et al., 2006).

Processes in figure 1 contains of four recurring phases that is characterized by independent and interdependent behaviors (Marks et al., 2001). The first phase, preparation is where coaches and team members devote time to specify outcome goals and process goals through the planning of strategies that they intend to invest their efforts toward. The second phase, execution consists of three task-related collaborative behaviors: coordination, cooperation, and information exchange (McEwan & Beauchamp, 2014). Coordination includes the interdependent actions team members engage in to manage task-related demands (Marks et al., 2001). Cooperation involves team members collaborating with each other to ensure collective task execution in pursuit of team goals and objectives (McEwan & Beauchamp, 2014). Information exchanges that occur verbally and nonverbally is central in coordination and cooperation, and subsequently influences team performance (Eys et al., 2017). The third phase, evaluation is where coaches and team members monitor their progress toward team objectives (McEwan & Beauchamp, 2014). It includes performance monitoring and system monitoring of team processes, which subsequently provide feedback about areas for improvement (Rousseau et al., 2006). The fourth phase, adjustment is a process that occurs in the evaluation of performance and influences future teamwork behaviors and inputs (McEwan & Beauchamp, 2014). Outcomes in figure 1 point to individual and team behaviors, cognitive states, and affective states, that in a cyclical process are interconnected to new teamwork behaviors and inputs (Carron & Eys, 2012; McEwan & Beauchamp, 2014; Rousseau et al., 2006).

While the aforementioned phases of teamwork are influenced by several factors within team sports, they all rely on communication to function (Eccles & Tenenbaum, 2004). Accordingly, communication is situated as a vital factor for models that aim to explain and understand teamwork in sport (Eys et al., 2017). Communication can be viewed as a dynamic process that emphasizes the reciprocal involvement of two or more participants (Peters, 2020) and involves how verbal and nonverbal messages are applied to create, share, and understand meaning (Frey et al., 1999). Drawing inspiration from Theory of Human Communication by Watzlawick et al. (1967), they highlight that all behavior has a communicative contribution; “all behavior, not only speech, is communication, and all communication – even the communicational clues in an impersonal context – affects behavior” (p. 22). Holding this perspective, communication may become

an inherent part of the independent and interdependent behaviors in teamwork (Eys et al., 2017).

Communication within competitive team sports are closely linked to developing shared knowledge related to task demands through transfer of information during pre-, in-, and post-process coordination (Eccles & Tenenbaum, 2004). Moreover, Eccles & Tenenbaum (2004) position communication as the central factor that influences all stages of action in their conceptual framework of coordination in team sports. Notably, team members should communicate in a way that optimize interpersonal relationships and increase the efficiency of teamwork (Yukelson, 2015). Moreover, the social and emotional elements of communication processes have the potential to strengthen the collective unit (e.g., cohesion, positive feelings, motivation) by providing the right word or action at the right time (Halldorsson et al., 2017).

Awareness regarding the highly influential role communication plays in teamwork is provided by several researchers within sport psychology (Eccles & Tenenbaum, 2004; Eys et al., 2017; Ishak, 2017; Sullivan & Feltz, 2003). Following the lines of Carron & Eys (2012), communication is fundamental to teamwork in sport, affecting team performance. However, Ishak (2017) pinpoint in his review that the field of communication relating to teamwork in sport is understudied. Still, more research on communication in team sports, that contribute to the development and maintenance of sport performance is warranted in group dynamics research (Beauchamp et al., 2020; Carron et al., 2012; Slater et al., 2020; Sullivan & Short, 2011).

Importantly, one challenge when investigating the complex and multifaceted phenomenon of communication in team sports, is to capture and include all aspects of interest. Situating this challenge in a pragmatic worldview, investigating different aspects of the research problem can provide a more complete and overall understanding (Creswell & Creswell, 2023; Robson & McCartan, 2016). Therefore, the following factors are of particular interest in the present work; identity leadership, intrateam communication (i.e., acceptance, distinctiveness, humor), cohesion, and in-game communication. These factors will be presented in the theoretical chapter (2.0).

1.1 Purpose of the present work

The present thesis is based on the theoretical framework of pragmatics of human communication (Watzlawick et al., 1967) and empirical literature that has investigated teamwork (e.g., Kozlowski & Ilgen, 2006; Mathieu et al., 2008; McEwan & Beauchamp, 2014; Rousseau et al., 2006). Thus, the overall purpose of the present work was to investigate aspects of communication in elite team sports. As previously noted, communication is highlighted as an important factor in teamwork. However, certain gaps are limiting our understanding, and consequently requires further exploration. First, leadership research that focuses on identity has increased rapidly the last decade (Haslam et al., 2022). Still, the theoretical benefits of coaches communicating in line with principles of identity leadership is thus far not investigated empirically in elite team sports (Stevens et al., 2021). Further, even though humor is established as an important part of communication and interpersonal relationships in organizational literature (Robert & Wilbanks, 2012), limited attention has been given to humor communication in sport science (Ronglan & Aggerholm, 2014). Accordingly, our understanding of content, form, and direction of humor that coaches and athletes use is sparse (Høigaard et al., 2017). Lastly, while communication has been investigated in many varieties in sport (e.g., coach-athlete relationship, intrapersonal, and interpersonal communication), in-game communication has to a lesser degree received the same attention (Blaser & Seiler, 2019). Thus, how communication unfolds in and between teams during competition at the elite level remains an area in need of more research (LeCouteur & Feo, 2011). Based on the overall purpose of this thesis, and the specific gaps outlined above, the purpose is addressed through three specific research aims, which are manifested into three separate scientific papers (PI, PII, PIII):

1. Investigating the relationship between identity leadership, intrateam communication and task cohesion in elite team sports (PI)
2. Understanding and measuring humor communication in team sports (PII)
3. Investigating communication processes in and between teams prior to and during a collective collapse in an elite football match (PIII)

2.0 Theory

Based on research aims and included factors, the theoretical chapters are divided into six sections. First, the theoretical framework for the current thesis is introduced. Next, communication in team sports is elaborated. Following, leadership and more specifically identity leadership is presented. Further, cohesion and momentum in sport are introduced. Lastly, the working model and the aims for the current thesis is elaborated.

2.1 Theoretical framework

Central for the current thesis is the theoretical framework published in *Pragmatics of human communication* by Watzlawick et al. (1967), known as the interactional view on communication. Watzlawick et al. (1967, p. 22) defines communication as that which affects behavior, stating that all behavior is communication, and all communication affects behavior. In this perspective, communication is exchanged through several channels and combinations of channels, and through the context the interaction occurs, not limited to verbal productions (Watzlawick & Beavin, 1967). Watzlawick et al. (1967) outline five tentative axioms of communication that have fundamental interpersonal implications. The first axiom entails that *one cannot not communicate*. Their argument builds on that behavior has no opposite, and consequently non-behavior does not exist. Thus, all behavior in an interactional situation has a certain degree of message value and should therefore be considered communication. Even if one may try, the impossibility of not communicating make all interactions interpersonal communicative (Watzlawick et al., 1967). Following these lines, humans are communicating whether they intend to or not, as long as another human witness that behavior in an interactional situation (Neuliep, 1996).

The second axiom suggest that “every communication has a content and a relationship aspect such that the latter classifies the former and is therefore a metacommunication” (Watzlawick et al., 1967, p. 54). Accordingly, communication impose behavior and take place at two different levels, the report and the command level. The report aspect conveys the content of the message, while the command aspect refers to the relationship between the communicants (Watzlawick et al., 1967). Consequently, humans not only communicate the content of the message, but also communicate the relationship between the communicants. The third axiom propose that “the nature of a relationship is contingent upon the punctuation of the communicational sequences between the

communicants” (Watzlawick et al., 1967, p. 59). In more detail, interactions have no clear start or end, but the message exchanges are rather subjectively punctuated into sequences (Høigaard, 2020). Thus, a message is “(a) a stimulus for another message, (b) a response to a previous message, and (c) a reinforcement of the overall interaction” (Neulip, 1996, p. 296). Consequently, all behavior in interpersonal sequences is communication, concurrently being a stimulus, response, and reinforcement (Watzlawick & Beavin, 1967).

The fourth axiom entails that humans communicate both digitally and analogically, where digital communication represents verbal communication, while analogic communication represents all nonverbal communication (Watzlawick et al., 1967). These two modes of communication complement each other in every message, with the content aspect being conveyed digitally, while the relationship aspect more often will be analogic in nature (Watzlawick et al., 1967). Lastly, the fifth axiom suggest that all communication is either symmetrical or complementary, depending on whether the relationship is based on equality or difference (Watzlawick et al., 1967). Symmetrical interactions are based on equal power, while complementary interactions are based on differences in power. Neither of these interchanges are labelled “good” or “bad”, but are both present in adaptive interactions (Griffin, 2006). Thus, communicants position themselves in certain roles when they interact based on the relationship between them, consequently influencing the message exchanges (Høigaard, 2020). Overall, communication “pragmatists” emphasize that one cannot not communicate and that all messages are sent on two levels (Neulip, 1996). Further, communication is either symmetrical or complementary, communicated both digitally and analogically, where all behavior is simultaneously being a stimulus, response, and reinforcement (Watzlawick et al., 1967). Following the development of the interactional view, advances in theory and research have recommended some modifications of the tentative axioms outlined above (Bavelas, 2021). Still, the theoretical framework is emphasized as central for the study of interpersonal communication (Griffin, 2006).

2.2 Communication in team sports

Team sports are dynamic and complex structures working within a continuously changing environment (Reimer et al., 2006) where team members have been assigned to specific roles that involve interdependent behavior with other team members (Eys et al., 2015). Furthermore, team sports are also embedded within a

social structure consisting of norms, values, and roles that is distinct from that of other teams (Forsyth, 2021). Consequently, belonging to a team provides an opportunity for team members to establish meaningful interpersonal relationships with others and to satisfy personal and social needs (Wagstaff et al., 2012). Teams can therefore be viewed as social entities constituted of members who must integrate, coordinate, and cooperate to accomplish task demands (Salas et al., 2008).

Coordination and interaction require appropriate exchanges of information (i.e., communication) and therefore these exchanges become essential in team sports (Eccles & Tenenbaum, 2004; Eys et al., 2017). Literature devoted to team sports has underlined the importance of communication in relation to teamwork and performance (Eys et al., 2020). How team members manage to use their communication competencies are therefore important for sharing and understanding information exchanges accurately (Ishak, 2017). Further, Eys et al. (2017) describes communication as a complex, continuous, and dynamic phenomenon of interpersonal relations (Eys et al., 2017). The multidimensional process of communication (e.g., sharing information, coordination, cooperation, decision making) provides the opportunity for development and enhancement of knowledge structures and social interactions (Peters, 2020). Hence, communication can be seen as a thread for interdependent work in sport, influencing unity and motivation among team members (Eys et al., 2020).

When the complexity in the environment increases, communication becomes especially important in its ability to distribute necessary information and facilitate continuous updates of task-related information (Salas et al., 2005). Team members create, exchange, and uncover meaning when they interact, and thereby provide an explanation for specific behavior and situations (Eys et al., 2017). Different types of communication are useful for team members and coaches to be able to discuss challenges, suggestions, and give feedback (Sullivan & Feltz, 2003) and to share humorous interactions for amusement, or as a technique when facing adversity or stressful situations (Ronglan & Aggerholm, 2014). Thus, facilitating adaptive communication becomes one important leadership task within team sports (Smith et al., 2013) and in particular in elite sport (Giske et al., 2022).

Several theoretical models and conceptual frameworks for the study of team sports have been developed to explain how teams' function, where communication plays an important part in team training and for in-game processes (Carron & Eys, 2012;

Eccles & Tenenbaum, 2004; McEwan & Beauchamp, 2014). For example, Eccles and Tenenbaum (2004) developed a social-cognitive conceptual framework for the study of team coordination and communication in sport. In their model, coordination relies on shared knowledge that can be acquired through communication in pre-process coordination, in-game coordination, and post-process coordination (Eccles & Tenenbaum, 2004). In particular, shared knowledge encompasses both mutual and complementary knowledge structures among team members that are formative indicators of team coordination (Filho & Tenenbaum, 2020), where verbal and nonverbal communication are inherent in pre-, in-, and post processes (Eccles & Tenenbaum, 2004). In more detail, pre-process coordination includes setting goals and objectives, planning and strategizing, and allocating role responsibilities (Eccles & Tenenbaum, 2004). Marks et al. (2000) suggest that pre-process activities such as leader briefings are critical for developing shared knowledge, and that these may positively influence communication and performance if conducted appropriately. Post-process coordination includes evaluation of performance, where team members receive feedback that is used in the coming pre-process planning. According to Giske et al. (2022), post-performance reviews and team debriefings help team members collectively make sense of their performance, allowing them to refine task-related knowledge. Post-process coordination should therefore aim to build team-based interpretations of previous performances that are accurate, and which in a cyclical process create new input to future preparations (Ronglan, 2007).

Communication during in-game coordination gives limited time for planning, where the team needs to utilize situational probabilities that occur and adapt to shifting demands (Eccles & Tenenbaum, 2004). During in-game processes, the content of communication is mainly task-focused between team members (Sullivan et al., 2014). Action episodes that impact team members' interactions and affect team member communication can be either critical (e.g., error accumulation, referee decision) (Wergin et al., 2019) or more typically action episodes (e.g., attacking, defending, set pieces) during matches (Schei & Giske, 2020). Compatible assessments by team members regarding the current situation are often necessary to share an accurate understanding of how to resolve situations and achieve adaptive in-game coordination (Endsley, 1995; Giske et al., 2022). Several researchers claim that shared mental models in interdependent teamwork settings are positively related to mutual performance monitoring, back-up

behavior, and adaptability, and consequently that they affect communication within the team (Cannon-Bowers & Bowers, 2006; Gershgoren et al., 2016; Salas et al., 2005). In addition, team-specific shared mental models develop partly as a product of the quality and quantity of communication among team members (Filho & Tenenbaum, 2020).

In relation to communication in team sports, intrateam communication is a construct used to assess how team members communicate through four dimensions of communication (Sullivan & Short, 2011). Sullivan and Short (2011) divide intrateam communication into the following dimensions: 1) acceptance (i.e., interpersonal exchanges of consideration and appreciation), 2) distinctiveness (i.e., exchanges of a shared and unique identity), 3) positive conflict (i.e., exchanges of open, constructive, and positive intrateam conflict), and 4) negative conflict (i.e., exchanges of destructive, personal, and confrontational intrateam conflict). Acceptance, distinctiveness, and positive conflict point to communication resources that are positive and constructive, while negative conflict is characterized as damaging and destructive (Sullivan & Short, 2011). Studies have found that positive conflict is positively related to cohesion, while negative conflict is negatively associated to cohesion (McLaren & Spink, 2018a; McLaren & Spink, 2018b). Moreover, acceptance and distinctiveness are suggested to be positive predictors of cohesion (Sullivan & Short, 2011). In addition, Cunningham and Eys (2007) find that exchanges of support and trust (i.e., acceptance) predict less role ambiguity for males regarding both offensive and defensive categories. The factor of acceptance may provide a safe environment that influences team members' willingness to share and accept role-related information from one another. Furthermore, Sullivan et al. (2014) highlight the importance of communication strategies for creating feelings of respect, trust, and understanding. These communication strategies are based on four principles of communication between teammates: listening, openness, support, and self-disclosure.

Communication strategies, according to Eys et al. (2017), are one of the psychological mechanisms connecting leadership behaviors to perceptions of team cohesion. Intrateam communication has earlier been examined as a mediator by Smith et al. (2013) in relation to transformational leadership and task cohesion, in a study investigating mechanisms that mediate the association between leadership and follower outcomes among university-level frisbee players. Findings reveal a significant relationship between three transformational leader behaviors and task

cohesion. In addition, intrateam communication was found to be related to task cohesion, with acceptance and positive conflict as positive predictors of task cohesion, whereas negative conflict function as a negative predictor of task cohesion, supporting former findings from Sullivan and Feltz (2003) and Sullivan and Short (2011). In addition, Hardy et al. (2008) support the mediating role of intrateam communication on the leadership–task cohesion relationship among athlete leaders in team sports.

In team sports, interpersonal relations are highly affected by interactions within the team (Carron & Spink, 1993), and how team members subjectively assess and experience these interactional situations (McLaren & Spink, 2022; Yukelson, 2015). Emphasizing the importance of in-game interactions, communication is an inherent element between team members and consists of information exchanges that can be both intentional or unintentional, which is expressed both verbally and nonverbally (Reimer et al., 2006). Nonverbal communication is crucial in communication because it is “an inherent and essential part of message creation (production) and interpretation (processing)” (Burgoon, 1994, p. 239).

Nonverbal communication in sport can involve intentional cues, facial expressions, codes, and symbols that team members should understand quickly, while the opposition team is not supposed to decode the message. For instance, codes and cues play an important role in interdependent sports such as American football (Peters, 2020) and handball (Ronglan, 2000), where coaches and players try to exchange task-related information with certain hand gestures, and facial or eye expressions. When successful, it may give an advantage over the opposition team that “our” team can exploit. Shared knowledge within the team about the intended meaning will in these circumstances be a key requisite for team coordination and cooperation (Endsley, 1995; Salas et al., 2005). Eccles and Tenenbaum (2004) refer to this type of communication as intentional nonverbal communication, where the ability to encrypt messages quickly becomes essential to be able to exploit the intended message. Giske et al. (2018) demonstrates this type of behavior through the way handball players use cues or body language to proactively show their intention and produce a specific game situation: “We could just look at each other and if it came a wink, he then knew it would mean a ‘flyer’ if I attack between number 2 and number 3” (p. 175).

Nonverbal communication can also be attached to emotional states and body language (Barsade et al., 2018). For example, in volleyball, supportive

communication has been identified as a positive predictor of collective efficacy beliefs, while negative body language may predict negative collective efficacy beliefs (Fransen et al., 2012). Illustrating the importance of nonverbal communication, Duncan et al. (2014) emphasize on the significance of being emotionally intelligent and being able to perceive, use, understand, and manage emotions. This is exemplified in the following quote by an elite sport athlete:

I think even if you're not confident inside, you need to present yourself as confident on the outside because that's half the battle won; firstly with yourself, because if you present yourself as confident then you immediately feel more confident, and also for your opponents, if you look confident then you're obviously a little bit more scary, perhaps they don't feel as confident as you look and might be intimidated by that. (Hays et al., 2009, p. 1192)

This nonverbal behavior can be considered a subprocess of nonverbal communication that changes because of situational factors, through reactions to internal states and external circumstances (Furley & Schweizer, 2020). Moreover, Friesen et al. (2015) point out that the regulation of interpersonal emotions is a vital and complex element within sport settings.

2.2.1 Contagion in sport

Research on team sports has highlighted that contagion can occur in the communication process during matches within a team and affect individual and team performances (Apitzsch, 2006; Wergin et al., 2019). Within communication lies affective stimulus, contextual factors, and individual differences that influence the message that is transferred and how it is decoded (Barsade et al., 2018). Levy and Nail (1993) define social contagion as a process: “the spread of affect, attitude, or behavior from Person A (the initiator) to Person B (the recipient), where the recipient does not perceive an intentional influence attempt on the part of the initiator” (p. 271). Social contagion can include behavioral contagion, where externally observable behaviors are transferred from one team member to another (Apitzsch, 2009; Høigaard & Ommundsen, 2007; Wergin et al., 2019), and *emotional* contagion, which is transfer between team members of emotional components or moods (Totterdell, 2000; Totterdell et al., 1998). Apitzsch (2019) claims that the emotional contagion is highly relevant for team sports, and that emotional contagion can be considered as expressions of nonverbal communication.

Transfer of emotions can either be negative or positive in nature, categorized as *negative emotional contagion* and *positive emotional contagion* (Barsade, 2002). A model of emotional contagion within organizations is presented by Barsade et al. (2018) where affective stimuli (e.g., emotion, mood, trait affect) are influenced by individual differences among team members (e.g., receiver and sender characteristics) and structural/contextual factors (e.g., group characteristics and interdependence), leading to emotional contagion of different emotions and moods. Further, this emotional contagion leads to different levels of attitudinal outcomes (e.g., satisfaction, team commitment, risk perceptions) and behavioral and performance outcomes (e.g., group conflict, group coordination, communicative responsiveness) (Barsade et al., 2018; Felps et al., 2006).

In a study by Barsade (2002) investigating work–group dynamics, positive emotional contagion was found to lead to improved cooperation, decreased conflict, and increased perceived task performance. Further, the study identifies that group members intercept moods at work, and these moods have the potential to ripple out and influence group dynamics and individual cognition, attitudes, and behavior. According to Kelly and Barsade (2001), group emotion is caused by both individual-level affective factors that team members hold, and group- or contextual-level factors that form the affective experience of the team.

In sport, Moll et al. (2010) find that emotional transfer between two competing teams can occur but with contrasting effects. They studied emotional contagion in penalty shootouts in football, and results indicate that observing a player showing superiority causes feelings of inferiority in players on the opposing team, potentially leading to insecurity in their next penalty kick. This indicates that positive nonverbal behaviors can lead to contrasting moods, emotions, and behavior in the opposition team. This is further supported by the Ronglan (2007) study on handball players indicating that positive nonverbal behaviors during in-game processes can strengthen the feeling of defeat within the opponent. In summary, the aforementioned factors of in-game processes related to contagion point to the potential to influence team communication during team processes, and thus affect both individual and team outcomes. Illustrating how team emotions can be contagious, several researchers (Curseu & Fodor, 2016; Romero & Pescosolido, 2008) highlight that humor can infect and spread within the team and subsequently affect team outcomes.

2.2.2 Humor communication in teams

Inherent in and a central aspect of communication and interpersonal relationships is humor; it is a factor that plays an important role that affects both individual well-being and group productivity (Meyer, 2000; Romero & Pescosolido, 2008). Humor can be described as:

Anything that people say or do that others perceive as funny and tend to make other laugh, as well as the mental process that go into both creating and perceiving such an amusing stimulus, and also the emotional response of mirth involved in the enjoyment of it. (Martin & Ford, 2018, p. 4)

Humor communication in teams is divided into adaptive and maladaptive forms (Blanchard et al., 2014; Cann et al., 2014; Guenter et al., 2013), and relates to groups and individuals with different psychological factors, depending on which humor style is dominant in the group (Kuiper & McHale, 2009). Humor from a psychological perspective can be considered as a wide-ranging multifaceted phenomenon that consists of four different psychological components: cognitive, emotional, interpersonal, and a laughter component (Martin & Kuiper, 2016).

Humor in teams is often characterized by the ability to unite or divide, but how these social outcomes occur is not clear (Ronglan & Aggerholm, 2014). Differences in potential positive and negative humor is all about degrees, and not a case of one decisive outcome (Martin et al., 2003). For example, affiliative humor in a team can include teasing that is perceived by someone as aggressive. On the other hand, self-deprecating humor can be interpreted as positive in relation to others, because persons with self-irony can be seen as less threatening and easier to like. Further, while extensive research on humor has investigated individual humor styles (e.g., Kuiper & McHale, 2009; Martin et al., 2003), it is found that groups can develop a group-specific humor climate (Martin & Ford, 2018).

Drawing from an organizational context, Blanchard et al. (2014) define humor climate as “a shared perception of how humor is used and expressed within an employee group” (p. 54). According to Curseu and Fodor (2016), a positive humor climate within a work group is positively associated with satisfaction at several levels, while a negative humor climate is associated with less satisfaction with co-workers. Consequently, developing and maintaining an adaptive humor climate may contribute to strengthening the ingroup and enhance group functioning (Mesmer-Magnus et al., 2012).

Literature on humor in elite sports is a theme that has received limited attention in sport psychology research (Kim et al., 2020; Sullivan, 2013) and thus there is a lack of knowledge regarding humor climate and humor communication in team sports. There are nevertheless some researchers who have tried to reveal the role of humor in elite sport either as a social outcome, or as a team task contribution (Ronglan, 2000; Ronglan & Aggerholm, 2014). For example, coaches' practice of positive feedback and use of humor have showed potential results for predicting team identity (Høigaard et al., 2017) and appreciating the head coach (Grisaffe et al., 2003). Further, Ronglan and Aggerholm (2014) studied how Scandinavian coaches interpret and apply humor as an integrated part of their coaching practice. Results highlight that those coaches used humor as a part of their coaching philosophy, and that they were conscious of using humor as a tool for both developing individual and team performance and creating closeness between players and coaches. Similarly, Sullivan (2013) finds that a positive humor style is a significant predictor for athlete satisfaction, for both team task contributions and team integration. Nevertheless, Sullivan (2013) points out that this relation could be explained by other factors, and therefore it could not be concluded that a positive humor style causes athlete satisfaction.

Humor may be particularly important among elite sport athletes since they compete under conditions that are characterized by intense demands and expectations. Optimal performance is required under often difficult conditions, where stress and pressure are factors that can promote or inhibit performance (Jones et al., 2007). Studies show that fear of failure (Gustafsson et al., 2017), lack of confidence (Sagar et al., 2007), inexpedient coping strategies (Nicholls & Polman, 2007), and performance anxiety (Sagar et al., 2010) can have a performance-reducing effect. Therefore, during training and matches, humor can be a valuable tool for experiencing relief and enjoying the moment (Ronglan & Aggerholm, 2013). This is demonstrated in the following quote of an elite sport coach in Ronglan and Aggerholm's (2014) study:

Humor is an important counterbalance to the seriousness characterizing our practice. In many ways it is an extremely repetitive and structured life we are living within elite sport. I believe that humor becomes even more important within such a setting. Otherwise, the whole thing becomes entirely serious, which is devastating for engagement and desire. (p. 10)

Consequently, coaches should support and foster a positive and productive humor climate within the team as it may have the potential to strengthen various individual and team processes (Blanchard et al., 2014; Curseu & Fodor, 2016).

2.3 Leadership in sport

In sport, high performing teams manage to incorporate individuals' competencies within the team and appropriately coordinate their potential capacity for optimal team functioning (Reimer et al., 2006). Being a collective unit is in this regard a prerequisite for successful performance (Eccles, 2010); coaches play a crucial role in developing a team into a collective and strong unit and in getting individual players to interact efficiently both on and off the field (Hodge et al., 2014; Steffens et al., 2020). Specifically, leadership as a form of communication have the potential to strengthen the quality of the coach-athlete relationship, characterized by trust, commitment, and cooperation (Davis et al., 2019). Efficient and adaptive leadership qualities are therefore a necessity to facilitate team functioning (Chelladurai, 1990; Salas et al., 2005). Leadership can be defined as “the process whereby an individual influences a group of individuals to achieve a common goal” (Northouse, 2010, p. 3).

Historically, the act of leadership has been examined through several theoretical and conceptual models over the past half-century and have included an evolution of several major leadership theories (Sterrett & Janssen, 2015). Within the context of sports coaching, the multidimensional model of leadership (MML) developed by Chelladurai (1984) is a commonly used model to understand and explain leadership in sport (Arthur & Bastardo, 2020). MML emphasizes that coaches leadership behavior is a product of interaction between required coaching behavior, preferred behavior, and actual coaching behavior (Carron et al., 2012). Specific antecedents such as situational characteristics, leader characteristics, and member characteristics influence what is required, preferred, and actual leadership in certain situations (Chelladurai, 2007). Congruence between what is required, preferred, and actual coaching behavior is a prerequisite in this theory for athlete satisfaction and performance (Eys et al., 2020). The theory emphasizes five behavioral dimensions of coaching behavior: training and instruction, democratic behaviors, autocratic behavior, social support, and positive feedback (Arthur & Bastardo, 2020). More recently, the MML was updated with transformational leadership as an antecedent of situational, leader, and member characteristics (Chelladurai, 2007; Høigaard, 2020).

Transformational leadership theory highlights the quality of interaction between the coach and athletes (Arthur et al., 2017; Bass & Bass Bernard, 1985; Callow et al., 2009). Transformational leadership is a leadership theory that emphasizes how leaders can inspire, intellectually stimulate, develop, and influence followers to reach higher levels of their potential (Bass & Bass Bernard, 1985). The theory encompasses four dimensions of transformational leadership, often labeled the four I's: idealized influence (e.g., behave as role models), inspirational motivation (e.g., inspire and believe in your athletes), individual consideration (e.g., express care and sensitivity for followers' feelings), and intellectual stimulation (e.g., involve athletes in the coaching process) (Bass & Riggio, 2006). Research on transformational leadership in sport has demonstrated positive associations with a variety of individual and team outcomes, including positive developmental experiences (Vella et al., 2013), perceived competence (Price & Weiss, 2013), cohesion (Smith et al., 2013), and task-oriented motivational climates (Álvarez et al., 2019).

Coaching and leadership behaviors in sport at different performance levels (elite, non-elite, recreational) may have many similarities, however it may also be significant differences (Chelladurai, 2011). In elite sport, athletes are often highly motivated and competitive which involves the pursuit of excellence (MacPherson & Howard, 2011). Even though, if players do not meet the high-quality standard at the elite level, they are often excluded from playing (Bruner et al., 2008). Chelladurai (2011) emphasizes qualities of extraordinary effort, large sacrifices, and high dedication as characteristics of elite sport. An important leadership task in this environment is to implement high-quality exercises, based on the athletes' physical and mental fitness and stage of social development (Lyle, 2002). Moreover, the coach's ability to create an effective coaching process demands knowledge about the sport (e.g., technical, tactical, physiological, and psychological), and knowledge about the athletes' skills and potential (Collins & Collins, 2011; Hodge et al., 2014). Finally, performing successfully at the elite sport level demand an effective development environment and high-quality team function (Mallett, 2010; Nash & Collins, 2006). The latter highlight that teamwork and the connections between team members are crucial to build teams in a way that facilitates success (Eys et al., 2015). Drawing from this, one prominent social psychological approach that focuses on the psychological connections between individuals in groups is the social identity approach (Haslam et al., 2020; Rees et

al., 2015). The social identity approach may provide a valuable contribution to the sport context and more specifically to the elite coach management by explaining the underlining psychosocial mechanisms that influence team members cognitions and behaviours in elite sport (Stevens et al., 2021).

2.3.1 Social identity leadership

The social identity approach is grounded in the social identity theory (SIT; Tajfel et al., 1979) that underpins how individuals develop ingroup preferences based on group membership. The theory describes how and why individuals behave, think, and feel as group members. In addition, it explains how an individual's self-concept derives from their group membership (Tajfel & Turner, 1986). According to Cameron (2004), social identity can be represented in the three following factors: ingroup ties (i.e., connections and bonds), ingroup affect (i.e., emotions), and cognitive centrality (i.e., importance).

An extension of the social identity theory is the self-categorization theory (SCT; Turner, 1987), which draws a distinction between social identity and personal identity (Turner & Reynolds, 2001). The first principle of SCT is that individuals within a certain group self-stereotype and through group membership depersonalize themselves, and accordingly they define themselves in terms of their intragroup similarities (Turner, 1987). The second principle of the SCT is that context-sensitive categorization processes contribute to individuals sharing group membership with others through their shared social identity (Rees et al., 2015). Lastly, the third principle of SCT is that common social influence is created by shared social identity (Haslam et al., 1995). Therefore, individuals strive to act according to the group's common values and norms, and in addition coordinate themselves by promoting shared group interests (Haslam et al., 2020). In sum, SCT clarifies how individuals self-define themselves in relation to their group by its shared social identity.

The social identity approach to leadership emphasizes strongly how coaches can manage to influence their team and team members to contribute to common goals through processes of mutual social influence (Haslam et al., 2020). According to Haslam et al. (2022), leaders are never just leaders in the abstract; this is in contrast to many leadership theories which often focus on the psychology or behavior of the individual leader in isolation. As Haslam et al. (2017) maintain, they are always leaders of a specific team, and their followers are also members of the same entity. The leader and the follower are bound together, and leadership could therefore be

seen as a process of social influence (Turner, 1991; Turner & Haslam, 2001). Gleaned from this perspective, leadership may therefore be understood as the leader's capacity to represent and develop a sense of shared social identity (Steffens et al., 2020). If the leader is seen as prototypical for the ingroup, leaders are more likely to be endorsed by followers and able to influence them in desired ways (Hogg, 2001; Platow & van Knippenberg, 2001).

According to Haslam et al. (2017) "it is only when leaders are seen as embodying 'who we are' that their leadership stimulates followership" (p. 114). However, leadership is not just a matter of being prototypical; leaders need to be involved in creating, advancing, and embedding a sense of shared social identity before they can mobilize and harness the power of the team (Steffens et al., 2014). Leaders should therefore create a shared sense of team identity among team members and behave in ways that advance their interests in the team (rather than their own personal interests) (Haslam et al., 2022). Furthermore, leaders also need to engage team members in activities that enable them to enact their membership in a meaningful way and to facilitate coordination (Steffens et al., 2020). Finally, leaders must promote that the team matters, not only for the members but also for people outside the team (Miller et al., 2020). These leadership qualities can be organized into the following four components, providing social influence on team members through identity leadership (Haslam et al., 2020): 1) identity entrepreneurship (e.g., building a sense of shared social identity and creating a sense of "we"), 2) identity prototypicality (e.g., embodying attributes that are central for the team), 3) identity advancement (e.g., promoting interests and goals of the team), and 4) identity impresarioship (e.g., the leader develops and executes events, activities, and structures that foster the team's sense of shared social identity. In sum, by implementing these four leadership qualities, leaders can improve collective behavior and enhance team functioning (Fransen et al., 2020).

Research on identity leadership in sport has demonstrated that identity leadership is positively related to team effort, individual and team performances (Krug et al., 2021; Stevens et al., 2019), cohesion (Steffens et al., 2014), and social identification (Bruner et al., 2022). Further, Herbison et al. (2022) conducted an in-depth longitudinal exploration of elite coaches' use of identity leadership in a naturalistic setting at a youth ice hockey tournament. Results reveal that coaches engage in identity leadership behaviours in a variety of social environments (e.g., the locker room, car rides, competition). Moreover, coaches use both positive and

negative applications of the four dimensions of identity leadership. For example, coaches demonstrate humility and respect toward both their own athletes and opponents, while there are also examples of coaches encouraging athletes to cheat or fake an injury to the short-term advantage for the ingroup. This provides an important insight into actual behaviour of identity leadership, adding an important notion of the potential to provide maladaptive applications of identity leadership (Herbison et al., 2022).

Notably, research on identity leadership in sport has seen a major increase the last five years, nevertheless empirical research with elite sport samples is needed to investigate performance-related benefits in elite sport (Stevens et al., 2021). Some might credit success in elite sport to the self-centred individualistic approach one sometimes perceives in competitions (Van Puyenbroeck et al., 2020). However, as amplified by Slater and Barker (2019), social identity leadership may be especially suitable in the elite context since it emphasizes developing a shared identity, where athletes identify with the team and direct their efforts toward team objectives.

2.4 Cohesion in sport

One of the most heavily investigated group dynamics concepts is cohesion (Carron et al., 2008; Severt & Estrada, 2015). In the field of sport psychology, cohesion is recognized as central in developing and maintaining well-functioning teams, and is a vital attribute in successful teams, as highlighted via anecdotal stories (Kasraoui, 2022), empirical research (Carron et al., 2002), meta study from sport research (Mullen & Copper, 1994), and in group dynamics textbooks (Carron et al., 2005; Høigaard, 2020; Weinberg & Gould, 2019). The historical origin of cohesion in the group dynamic literature can be traced back to the writings of Lewin (1935). Lewin (1935) emphasized psychological processes and tried to uncover factors that enable individuals and collectives to stick together. Later, Festinger and Back (1950) proposed that cohesiveness of a group was the result of all forces attracting members to remain in the group. A number of ensuing empirical and theoretical developments led to different conceptualizations and definitions of cohesion, and subsequently on how to measure the construct (for an overview see Drescher et al., 2012; Hogg, 1992; Severt & Estrada, 2015). This lack of a conceptual definition and conceptualization was pinpointed by Mudrack (1989) who claimed that “research into cohesiveness has been dominated by confusion, inconsistency, and almost inexcusable sloppiness with regard to defining the construct” (p. 45). However, in sport psychology, there seems to be a

consensus toward the definition and conceptualization provided by Carron et al. (1998) of group cohesion (Haugen et al., 2021).

Carron et al. (1998) define cohesion as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of members affective needs” (p. 213). Cohesion is viewed as a multidimensional construct consisting of both task and social related aspects associated to individual attraction to the team, and team integration (Beauchamp et al., 2020). An important characteristic of cohesion is the dynamic nature of the phenomenon, and how it changes throughout a season depending on team input, team processes, and team outcomes (Høigaard, 2020). In addition, cohesion is instrumental, which reflects the fact that all teams form for a specific purpose and cohere together for that purpose (Eys et al., 2020). Another important characteristic of cohesion is the affective dimension that involves positive feelings that develop and are maintained through social relationships among team members (Carron & Brawley, 2000).

The conceptual model of group cohesion by Carron et al. (1985) separates individual and group orientations, and social and task dimensions. Individual attraction to the team represents a member’s personal attraction to the team, while team integration represents a member’s perception of the team as a whole (Carron et al., 2002). Task-related aspects refer to the degree that team members unite to work together on a task and achieve shared performance-related goals, while social-related aspects refer to teammates bonding for social reasons and how they maintain social relationships within their team (Carron et al., 1985). The distinction between task and social cohesion is important and encompasses that objectives of teams vary in relation to either task and/or social aspects of cohesion (Dion, 2000). Some might be more attracted to task accomplishment and performance, while others may be more attracted to developing and preserving social relationships (Eys et al., 2020). Accordingly, the multidimensional model of cohesion provided by Carron et al. (1985) consists of four separate factors: 1) group integration – task, 2) group integration – social, 3) individual attractions to group – task, and 4) individual attractions to group – social. These factors were developed with a background in social cognitive theories of human behavior and group dynamics theories related to different layers of analysis of groups, and because group dynamics perspectives pertain to both social and task functions (Eys et al., 2020).

Research has identified multiple factors that are correlates to cohesion, and in an attempt to organize these factors, the following four main categories have emerged: environmental factors, personal factors, leadership factors, and team factors (Carron et al., 2005; Eys et al., 2020). First, environmental factors involve normative aspects that hold the group together and involve contractual responsibilities, organizational orientation, and group permeability (Høigaard, 2020). For example, a major aspect that separates team sports and social groups is contractual responsibilities, since team members in elite sport are formally attached to their team through signed contracts (Carron et al., 2005). Second, personal factors that influence cohesion include demographic attributes, cognitions, affect, and behavior (Eys et al., 2020). Central to this factor are individual similarities and differences, and how these personality traits influence social- and task-related aspects of cohesion within the team (Carron et al., 2012). For example, van Vianen and De Dreu (2001) find in their study that high mean levels of emotional stability and extraversion have a positive impact on social cohesion. Third, leadership factors include leadership behavior, decision style, and coach–athlete relationship, which are highly influential in the development of cohesion, since leaders are a source of stimulus to team members (Eys et al., 2020). Accordingly, stimulus that leaders transfer to individuals may impact perceptions of perceived task and social cohesion (Dion, 2000). For instance, Cronin et al. (2015) point to certain leadership dimensions that are positively related to task cohesion, mediated by inside sacrifices by individual athletes and teammates. Lastly, team factors include numerous influential factors (e.g., status, role involvement, group norms, stability, team identity, performance) that are associated to the structure of the team (Høigaard, 2020). Team factors point to the team as a totality, and team performance is highlighted as one of the most central correlates of cohesion among team factors (Carron et al., 2008).

Understanding how teams can optimize cohesiveness has been an important topic for coaches, researchers, and sport psychologists (Carron & Eys, 2012; Høigaard, 2020). Both athletes and coaches are responsible for contributing to the development of cohesion, and team building has been broadly used to enhance cohesion within team sports (Beauchamp et al., 2020). Eys et al. (2015) present several practical examples of team building strategies for coaches to target cohesion-related aspects. For example, providing opportunities for athletes to deliver input and feedback can improve interaction and communication between

team members. Moreover, Eys et al. (2015) claim that emphasizing traditions and history related to the team can enhance distinctiveness and subsequently increase togetherness. Athletes on the other hand can, through their interaction and specific leadership actions in relation to team activities, contribute to building cohesiveness (Cotterill & Fransen, 2016). Practical examples of productive athlete behavior involve giving positive feedback to team members, taking responsibility, communicating honestly, and providing helping behavior (Høigaard, 2020).

As one example of potential outcomes related to cohesion, Benson et al. (2016) find in their longitudinal study of youth football players that performance outcomes positively contribute to cohesion perceptions. More specifically, this indicates that when teams perform successfully, players perceive higher levels of social and task cohesion. Accordingly, it is suggested that cohesion “develops as a function of the socialization and interaction processes that occur within groups” (Carron & Brawley, 2000, p. 102). Over the past years, the relationship between cohesion and team performance has been thoroughly examined (Beauchamp et al., 2020). Two meta-analysis of the cohesion–performance relationship have been conducted by Carron et al. (2002) and Filho et al. (2014). Both meta-analyses point to a positive and moderate relationship between cohesion and performance, and that both task and social cohesion are positively related to performance. In addition, the relationship is circular, which means that better performance leads to higher cohesion, which again may lead to improved performance.

Attitudes and behaviors exhibited by members of cohesive teams include, for example, organizational citizenship behavior (Chen et al., 2009), trust (Bandura et al., 2019), and team identification (De Backer et al., 2011). Research from team sports has demonstrated that cohesion is positively related to increased performance (Carron et al., 2002; Filho et al., 2014), productive in-game processes (Gershgoren et al., 2016), development of team mental models (Filho et al., 2015), adaptive cooperation (Prapavessis & Carron, 1997), effective communication (McLaren & Spink, 2018a), and perception of momentum (Eisler & Spink, 1998).

2.5 Momentum in team sport

Interactive sports such as football, ice hockey and handball involve interdependent actions by team members where they try to achieve optimal coordination through actions at the correct time, with the correct action type, at the right location (Eccles, 2010; Giske et al., 2018). These sports are characterized as open, dynamic, co-

active, complex, and unpredictable (Giske et al., 2015; Gréhaigne et al., 1997), where athletes perform high-intensity efforts over the course of 60 (handball, ice hockey; Douglas & Kennedy, 2020; Michalsik, 2018) and 90 minutes (football; Beato et al., 2021). Of relevance for the present thesis and team sports in general is the term *momentum*. It can be described as a hidden force that influences the flow in a match, which is not necessarily reflected in the score (Higham et al., 2005). Momentum emerges through the flow of energy from the competing teams and affects performances in the game. Momentum points to the balance of power between teams, and how this impacts patterns of play and makes in-game processes ebb and flow (Higham et al., 2005). Momentum is a situational phenomenon that follows match dynamics and as a result relates to individual behavior and team coordination in matches (Apitzsch, 2009; Taylor & Demick, 1994).

A positive momentum can in certain circumstances be triggered by a negative momentum in the opposition team (Higham et al., 2005). When a team experiences an extreme decline in performance or a level of underperformance by many team members, with an inability to return to former performance levels within the game, it is usually described as a collective collapse (Apitzsch, 2019). A collective collapse can occur in most games but seems to be more prevalent in important and decisive matches that involve high levels of pressure and stress (Apitzsch, 2006). The distinction between negative momentum and collective collapse lies in the sudden collective underperformance that can shift between teams (negative momentum), and the more extreme negative momentum with limited possibility to return to previous performance levels (collective collapse) (Wergin et al., 2018). Apitzsch (2009) highlights five major factors causing collective collapse in his qualitative study of elite handball players. These include inappropriate behavior, failure of the role system to operate properly, goals by the opponent team, change in tactics by the opposing team, and negative communication.

Following the process model of collective collapse developed by Wergin et al. (2018), the extreme decline in performance may be explained by different antecedents prior to the collapse (e.g., physical exhaustion, increased pressure, lack of attentional focus). Next, critical incidents (e.g., scoring by the opponent, referee decision, error accumulation, key player collapse) are described as game situations that can trigger collective collapse (Wergin et al., 2018). These critical events may then create behavioral, cognitive, and affective outcomes that foster

the maintenance of collective collapse within the team (Wergin et al., 2019). In addition, following the collective collapse, negative moods often arise among team members which may spread through contagion within the team (Apitzsch, 2019) when experiencing coordination breakdown.

According to Apitzsch (2019), one major reason for collective collapse in a study of Swedish floorball, handball, and ice hockey teams was a lack of communication. Results indicate that when the teams underperform, communication decreases and becomes negative, and additionally negative moods spread within the team. This causes or maintains fear of failure, stress, and low self-confidence among players. Marks and Panzer (2004) also emphasize how “communication breakdowns” in teams are likely to affect coordination negatively. Strategies for avoiding collective collapse can be related to developing team resilience (Wergin et al., 2019). Team resilience during competition can be described as a collective resilient attitude with a strong and shared leadership, where the team manages to maintain productive communication and adapt to shifting demands when facing adversity (Kegelaers et al., 2020). Furthermore, Høigaard (2020) recommends that teams develop a strong team culture, have clear role descriptions, establish shared mental models, and build emotional regulation strategies that prevent maladaptive communication in difficult game situations.

2.6 The working model and aims for the current thesis

There are numerous aspects of communication a scientist can examine, but most communication scientists focus their research in one or two areas (Neulip, 1996). Accordingly, the current thesis centers the attention on a selection of factors interconnected to communication in the environment of elite team sports. The conceptual framework (figure 2) presents the investigated factors in the current thesis in a working model. The model points to hypothesized relations between the investigated factors and includes the relation between two different layers of team processes and in-game processes in elite team sports.

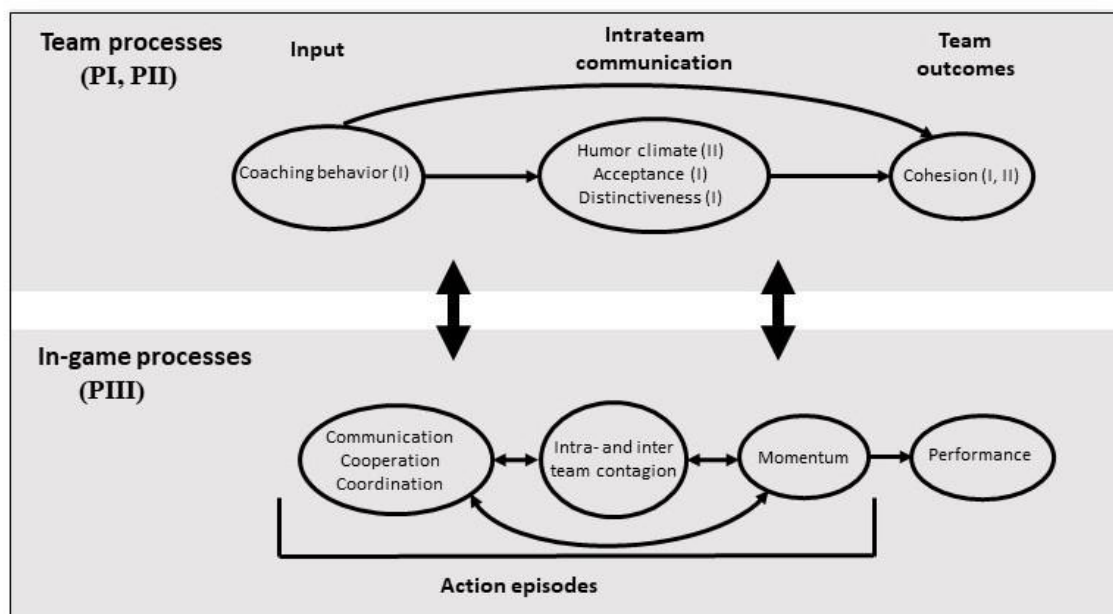


Figure 2. The overall working model for the present thesis. Numbers I, II, and III refer to content in the different papers.

In team processes, coaching behavior, intrateam communication (i.e., acceptance, distinctiveness, humor), and cohesion are communication-factors that are expected to be related to one another (PI and PII). The first aim was to investigate the relationship between identity leadership and cohesion in elite sport, and to examine the mediating role of the intrateam communication dimensions of acceptance and distinctiveness (PI). Based on group dynamics theory in sport and former research on leadership, cohesion and intrateam communication, we hypothesized a positive relationship between identity leadership and task cohesion, with intrateam communication as a positive mediator in the relationship between identity leadership and task cohesion. Second, humor is established as an inherent part of communication processes and interpersonal relationships in working groups. Still, humor in team sports has received limited attention in the literature. One explanation may be the lack of a sport-specific questionnaire with the ability to measure humor climate in team sports. Therefore, the second aim in the current thesis was to understand and measure humor communication in team sports (PII).

Lastly, in-game processes are team processes that only occur during a match in- and between teams (PIII). As illustrated in the model, coordination, cooperation, and communication are reciprocally connected to momentum and intra- and interteam contagion during in-game processes. Such factors represent individual and team processes that are present during the dynamic and complex nature of sport competition, and they will most likely be affected by different action

episodes that occur continuously during a match. These in-game processes are expected to potentially influence individual and team performance as an outcome. Hence, the third aim was to investigate communication processes in and between teams prior to and during a collective collapse in an elite football match (PIII). Overall, the working model is intended to clarify key factors that are examined in the present thesis.

3.0 Methods

The methodological decisions for the current thesis is elaborated in the present chapter. First, research philosophy for the overall thesis is introduced. Second, the methodological approaches and background for study 1, study 2, and study 3 are presented. Lastly, ethical considerations are considered.

3.1 Research philosophy

Research philosophy refers to assumptions and beliefs regarding development of knowledge (Saunders et al., 2019). It concerns principles related to the search for knowledge about reality, through accessible and valid methodological steps (Delanty & Strydom, 2003). Different philosophical perspectives in social sciences try to identify whether certain methodological alternatives or particular theories are suitable for explaining social phenomena (Baert, 2005). Two main concepts are central for distinguish and understand research philosophies: ontology (assumptions about the nature of reality) and epistemology (assumptions about knowledge) (Creswell & Poth, 2018). Ontology involves what exists in the human world that we can acquire knowledge about, while epistemology is concerned with what constitutes valid knowledge and how knowledge can be communicated to others (Saunders et al., 2019). According to Moon and Blackman (2014) ontology and epistemology are closely linked, since to talk about meaning is also to talk about meaningful reality. A philosophical perspective to research is therefore underpinned by ontological and epistemological assumptions that form how knowledge is produced and how we extract meaning from it.

The philosophical orientation that has guided the methodological actions in the current thesis can be considered pragmatism. The ontological assumption of philosophical pragmatism is that reality is what is useful, practical and “works” (Creswell & Poth, 2018). The epistemological assumption of philosophical pragmatism is that “true” knowledge enable successful action (Saunders et al., 2019) and that truth claims are explored in terms of consequences and applications (Moon & Blackman, 2014). Knowledge then could be conceived as a form of action (Baert, 2005). Accordingly, pragmatism emphasize on knowledge in real collective situations, and regards knowledge as being social by nature (Delanty & Strydom, 2003). This can be deemed especially relevant to the domain of team sports, since knowledge development in the field of sport is inherently a social process where humans collectively generate expectations of what kind of knowledge that is important, and how this knowledge should be obtained (Brustad,

2002). Moreover, Breivik (2020) emphasize the ontologically uniqueness in team sports, where individuals are identified as members of a social unit, being a team member. Richard Rorty, one of the central figures of contemporary pragmatism emphasized objective truth as “the best idea we currently have about how to explain what is going on” (Rorty, 1980, p. 385). Thus, knowledge arises from social practices, which allows humans to manage and navigate their way in the world (Barnes, 2020). From this perspective, the core of pragmatism is to focus on useful knowledge as successful rules for action, and whatever methods that support the pursuit of useful knowledge would be deemed suitable (Rorty, 1989).

From a methodological perspective, pragmatists claims that different methods are often appropriate within a research study and that we can understand the world in different ways (Creswell & Creswell, 2023). Giacobbi et al. (2005) argues that a pragmatic research philosophy in sport psychology can help address applied research questions from multiple perspectives. Researchers are therefore “free” to select appropriate methods, techniques, and procedures of research that meet their purposes (Creswell & Poth, 2018). Still, methods need to be justified by the researcher and be presented transparent to the reader so they can assess the methodological choices that have been taken (Giacobbi et al., 2005). The driving force for the appropriate methodological choices are the research question, the research context and research consequences. Consequently, both quantitative and qualitative data are emphasized as valuable in the position of pragmatism (Biesta, 2010). Accordingly, the current thesis is situated in philosophical pragmatism and pragmatist methodology. With respect to the three individual studies and the decision to utilize methodological diversity in the current thesis, study 1 and study 2 follow a framework of post-positivism using a primarily quantitative research design, while paper 3 follow a framework of social constructivism with a qualitative research design. The quantitative data were used to search for theoretical connections related to teamwork and communication, while the qualitative data provided insight into the situational perspective of communication in a football match. Taking a pragmatic position and mixing theoretical not-compatible worldviews (e.g., post-positivism and social constructivism), I emphasize the underlying belief in complementarity that these approaches can be combined, and consequently complement each other (Morgan, 2007; Shannon-Baker, 2016).

3.2 Quantitative methods – Study 1 and study 2

Study 1 and study 2 is inspired by the post-positivistic paradigm where the focus is to identify explanatory connections and causal relationships that can be achieved through both quantitative and qualitative approaches (Clark, 1998). The epistemological position of post-positivism is to generate hypotheses that researchers can test and thereafter make explanations that can be assessed. Knowledge can thus be created through research that combines quantitative and qualitative methods using different tools in various contexts (Bryman, 2016). The process of deduction was used in study 1 with development of hypothesis after a theoretical review of relevant literature. In contrast, study 2 included both inductive and deductive approaches to develop humor dimensions in phase 1 of the development process of a sport specific-humor climate questionnaire. The necessity of this combination lies in the lack of sport-specific research on humor in teams and a relevant questionnaire for the team sport context. Therefore, humor theory generated from organizational and other relevant contexts worked as a deductive foundation for developing humor dimensions, while responses from focus group interviews were examined, explored, and categorized using an inductive approach.

3.2.1 Participants – Study 1 and study 2

Participants in study 2 consisted of two different samples for the quantitative analyses. Sample 1 was used as the primary exploratory sample, while sample 2 was used to confirm the most appropriate model with confirmatory analyses. Sample 1 contained 441 active handball ($n = 295$) and ice hockey ($n = 146$) players competing in the two highest senior levels in Norway. Participants was recruited from 19 handball teams and 9 ice hockey teams. Sample 1 was also used as the primary sample in study 1. Sample 2 consisted of 335 active football ($n = 221$) and handball ($n = 114$) players competing on senior levels three, four, and five in Norway. Participants came from 14 football teams and 9 handball teams.

3.2.2 Procedures – Study 1 and study 2

In total, 60 coaches and sporting directors from clubs in Norway were contacted and invited to participate in study 1, with 51 clubs agreeing to take part. Nine clubs declined to participate for because of lack of time and workload. Five researchers visited clubs in person over a period of 12 months collecting data. Procedures were standardized for all researchers visiting the participating teams. Each player was provided with a letter of information about the current study and a consent form to

sign after the study was described to the team. Questionnaires were completed before or after a training session or a match, depending on the conditions the club set for participation. Information was collected through a hard copy questionnaire, with questions about individual characteristics and team information. The physical surroundings were organized with each club so that participants were able to fill out the questionnaire with enough space around them, and that members from the coaching staff were not able to see how the players responded to the different items. Anonymity and confidentiality were guaranteed, and an open invitation to either withdraw from the study or contact the research team with questions was given. Participants used approximately 10–15 minutes to complete the questionnaire. Ethical approval was granted by the ethics committee at the first author's university and by the Norwegian Social Sciences Data Service.

3.3 Measures – Study 1 and study 2

3.3.1 Identity leadership (study 1)

Players' perceptions of identity leadership were measured using the Norwegian version (van Dick et al., 2018) of the four-dimensional Identity Leadership Inventory (ILI; Steffens et al., 2014). Identity leadership was assessed as a global second-order construct, with the four subdimensions at first-order level (see Steffens et al., 2014; model b, study 3). The inventory consists of fifteen items. To make the ILI more sport specific, two modifications were done: "group" was changed to "team", and "leader" was substituted with "head coach". Identity prototypicality was measured with four items (e.g., "My head coach exemplifies what it means to be a member of the team"), identity advancement with four items (e.g., "My head coach promotes the interests of members of the team"), identity entrepreneurship with four items (e.g., "My head coach develops an understanding of what it means to be a member of the team"), and identity impresarioship with three items (e.g., "My head coach arranges events that help the team function effectively"). Players rated items using a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (totally agree).

3.3.2 Intrateam communication (study 1)

Two subscales from the Scale of Effective Communication in Team Sports (SECTS-2; Sullivan & Short, 2011) was used to measure players' perceptions of intrateam communication. The dimension of acceptance included four items (e.g., "When our team communicate, we communicate our feelings honestly"), while the dimension of distinctiveness included three items (e.g., "Use gestures that only

team members would understand”). Based on recommendations by Kvamme et al. (1998), items were forward/backward translated to Norwegian. Players rated items using a 7-point Likert scale, ranging from 1 (hardly ever) to 7 (almost always).

3.3.3 Task cohesion (study 1)

Perceptions of task cohesion were measured using the Norwegian version of the Group Environmental Questionnaire (GEQ; Carron et al., 1985; Haugen et al., 2021). The GEQ includes dimensions of task (9 items) and social (9 items) cohesion, but only task cohesion was investigated in PI. One item (“I am happy with the amount of playing time I get”) was removed a priori since it was considered not relevant to the elite perspective in the current paper (Haugen et al., 2021; McLaren & Spink, 2022). Items were rated on a 9-point Likert scale, ranging from 1 (never) to 9 (always).

3.3.4 Humor climate (study 2)

To assess humor climate in team sports, three different instruments (Blanchard et al., 2014; Cann et al., 2014; Curseu & Fodor, 2016) were initially critically assessed for appropriateness. Acknowledging that none of these three instruments was applicable due to item wording and lack of capturing the specific context of team sports, it was necessary to 1) understand humor and humor climate within the environment of sport, and 2) develop a sport-specific instrument with the capacity to measure humor climate in team sports. In scale development theory, several guidelines and recommendations are described in order to develop an appropriate measurement scale (e.g., DeVellis, 2017; Johnson & Morgan, 2016). DeVellis (2017) organizes these guidelines in eight different steps in the construction of a survey scale. First, the researcher needs to establish the purpose of the instrument, and clearly determine what it is intended to measure. Former theory and specificity level of the investigated construct contributes to create clarity in this first step (Johnson & Morgan, 2016). Second, it is important to select items that reflect the scale’s purpose when generating an item pool. Useful redundancy is recommended in this step to ensure generation of a large pool of items that at a later stage can be reduced (DeVellis, 2017). Step 3 involves determining the format for the measurement which is compatible with the generation of items (Worthington & Whittaker, 2006). Several different options are available in this step regarding both scaling and response formats. The main objective is that the intended use of the scale is related to scaling and response formats, and coincides with the latent variable of interest (DeVellis, 2017). Fourth, having knowledgeable expert groups

examining the item pool is an important step in enhancing content validity. Expert groups are, for example, meant to assess items for conciseness, clarity, relevance, grammar, and redundancy (Worthington & Whittaker, 2006). In addition, it is useful if they get the opportunity to suggest new and relevant ways of tapping the construct of interest that are not yet included. Fifth, it is suggested that the researcher should consider inclusion of validation items that can help to determine validity of the final scale (DeVellis, 2017). The three last steps involve administering items to a development sample, evaluating the items, and optimizing scale length (Worthington & Whittaker, 2006). Following these steps in constructing a new instrument would contribute to ensuring reliability and validity of the newly developed instrument. In addition, an important part of the development process is the documentation of instrument construction, technical information connected to item quality, validity, and reliability evidence (Johnson & Morgan, 2016).

Three different phases were conducted in study 2 to accomplish the goal of developing an instrument to measure humor climate in team sports. Phase 1 consisted of a qualitative entrance to investigate humor in team sports, where focus group interviews were conducted with coaches and athletes to gain insight into humor as a part of communication in team sports. In total, 21 athletes and 5 coaches from team sports (i.e., handball, football, volleyball, ice hockey, and rhythmic gymnastics) participated in five different focus group interviews. Athletes were organized to attend focus group interviews according to their team affiliation, while one focus group interview consisted of the five coaches. Athletes' ages were in the range of 17–31 years old and consisted of 11 males and 10 females. Coaches' ages were in the range of 50–56 years old and involved 4 males and 1 female. The interview guide consisted of three main themes: what humor is in team sport, how interviewees perceive utilization of different types of humor among players and coaches, and lastly the perceived effect of different types of humor. Focus groups were digitally recorded and lasted on average 50 min (range 44–60 minutes). The second phase involved item generation through discussion groups with master's students and first-year sport science students which produced a total of 80 items. The item pool was reduced to 14 items after revision by an expert group and an expert panel of five former senior elite athletes. Third, initial validation of the instrument was conducted through psychometric evaluation of the instrument (see PII for more detailed information of the different phases). Perceptions of humor

climate were measured using the three-dimensional Humor Climate in Sport Scale (HCSS; PII).

The HCSS assesses perceptions of positive humor (four items; e.g., “Players tell funny jokes that make others smile and laugh”), negative humor in-group (five items; e.g., “Players tell negative stories about each other to be funny”), and negative humor out-group (five items; e.g., “Players use offensive humor about people outside the team”). Positive humor is described as friendly nonthreatening humor that players share within their team, while negative humor in-group is identified as aggressive humor directed toward someone or something in the team originating from aggression or denigration. Negative humor out-group is described as aggressive humor directed outside the team, that either generate a positive or a negative atmosphere for the team (PII). Players rated the items on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

3.3.5 Social cohesion (study 2)

Social cohesion were measured using one subcomponent of the Norwegian version (Haugen et al., 2021) of the Group Environmental Questionnaire (GEQ; Carron et al., 1985; Eys et al., 2007). Group integration social (GIS) consists of four items (e.g., “Members of our team stick together outside of practice”). Players rated the items on a 9-point Likert scale, ranging from 1 (strongly disagree) to 9 (strongly agree).

3.3.6 Social conflict (study 2)

Perceptions of social conflict (GCS) were assessed using one dimension from the Norwegian version (Haugen et al., unpublished) of the Group Conflict Questionnaire (GCQ; Paradis et al., 2014). The scale consists of seven items (e.g., “The negativity from personal disagreements makes it difficult for members of our team to be friends”). Players rated the items on a 9-point Likert scale, ranging from 1 (strongly disagree) to 9 (strongly agree).

3.4 Data analyses – Study 1 and study 2

Analyses were completed using *Mplus* v8.6. In addition, SPSS v28 was used to manually input data before it was converted to *Mplus*, and inputs were checked for potential errors. Structural Equation Modelling (SEM) was conducted in both studies including mediation analysis (study 1), Exploratory Factor Analysis (EFA), Independent Cluster Model Confirmatory Factor Analysis (ICM-CFA) and Exploratory Structural Equation Modeling (ESEM) (study 2). SEM can be

considered an overarching framework and is described as a causal inference method that includes three inputs and generates three outputs (Kline, 2016). Inputs are theoretically informed causal hypotheses based on assumptions from theory or empirical research, queries regarding causal relations among variables, and research design. Outputs on the other hand include numeric estimates of model parameters for hypothesized effects, logical implications of the psychometric model, and whether the testable implication of the psychometric model is supported (Kline, 2016).

The comprehensive and flexible application of SEM should consist of a concise theoretical rationale, differentiate between what is unknown and known, and set conditions for developing new questions (Morin et al., 2013). SEM consists of a group of different statistical techniques for modeling relations between variables, where the primary data are covariances. These statistical techniques make it possible to assess relations among latent constructs adjusted for measurement errors and to estimate chains of indirect and direct relations (e.g., path analysis) (Morin et al., 2020). Latent variables can be described as variables not directly measurable and for which there are no direct observations in the given sample (Bollen & Hoyle, 2012). Therefore, latent variables in SEM are parallel to hypothetical constructs that are not directly observable (Kline, 2016). Observed variables are therefore used as indirect measures of a construct as an indicator, and the statistical power of measurement of these indicators is a factor (Morin et al., 2020). The distinction between factors and indicators provides the opportunity in SEM to test multiple hypotheses related to measurement strategies (Kline, 2016).

The aim of SEM analysis is mainly to understand patterns of covariances and to describe the highest possible amount of variance in the hypothetical model (Kline, 2016). Among several advantages in SEM is the opportunity to test both latent and/or observed variables as causes or outcomes, which provides measurement flexibility (Marsh et al., 2014). In addition, SEM accounts for measurement error and provides psychometric rigor (Morin et al., 2013). Since SEM consists of multiple estimators, it manages to handle data on several different levels (e.g., continuous data, categorical data, nominal data). Moreover, an additional feature of SEM analysis is the opportunity to handle missing data with estimators such as full information maximum likelihood (FIML; Marsh et al., 2014). Handling of missing data depends on the origin of missingness and is divided into missing completely at random (MCAR), missing at random (MAR), and missing not at

random (MNAR) (McIntosh, 2020). FIML procedures involve extraction of means and variances from each subset, which next lead to the opportunity to estimate parameters of the research model after combining information from subsets of each case. Parameter estimates and standard errors are subsequently estimated from existing data without imputation or deletion of certain values (Kline, 2016).

Still, one important demand for conducting SEM analysis is the requirement for large sample sizes. With no clear “cut-off” value of sample size, the researcher needs to consider the number of cases required for sufficient statistical precision and a minimum sample size for achieving statistical power for performing significance testing (Kline, 2016). Despite an initial acceptable sample size in study 2, dividing the sample in two when examining sex differences naturally provided a decrease in statistical power. Therefore, a multiple indicator multiple causes (MIMIC) approach was used to investigate sex differences in study 2 since it was a more parsimonious approach when dividing the sample on sex (Morin et al., 2016). For a detailed presentation of the statistical analyses that were conducted, see PI and PII.

3.5 Qualitative methods – Study 3

Study 3 is placed within a social constructivist paradigm where reality is subjective and mentally constructed by individuals in their surrounding environment (Burr & Dick, 2017). Social constructivism assumes that reality is constructed through human activity, represents knowledge as a human product, and that learning occurs through interactions and collaboration among individuals during social activities. Human behavior is seen as context dependent, and results from interactions with others in the current environment (Burr, 2015). Experiences are therefore created both inter-individually (between persons) and intra-individually (within the person) (Hassmén et al., 2016).

Paper 3 (Schei et al., 2022, p. 3) report a phenomenological approach was considered the most appropriate to explore participants’ lived experience and to gain insight into their reflections and opinions. While social constructivism share features with phenomenology (Robson & McCartan, 2016), there are key differences in the two methodological approaches that are important to acknowledge. For example, phenomenology asks a person or a group question of meaning, structure, and essence of the lived experiences of a phenomenon (Patton, 2015). In comparison, social constructivism focus on how humans construct reality

through interactions, and often address the process of interaction among individuals (Creswell & Poth, 2018). To provide conceptual clarity of how humans create meaning of their lived experiences, phenomenology, or phenomenological sensitivity can be used to reflect on data that has been generated by a series of different methods (Allen-Collinson, 2017). Phenomenological research follows according to Ravn (2017) at least two strands of methodological choices; a) employing phenomenology in the analysis of qualitative data, or b) employing qualitative data in phenomenological analysis. The first strand aims to explore the structure of meanings, while the other strand aims to address conceptual clarifications related to phenomenological discussions. Neither of these strands were conducted in paper 3. However, Kvale and Brinkmann (2009) describe phenomenology in qualitative research as a term that emphasize an interest in understanding social phenomenon through the actor's own perspective, and that the real world is what humans perceives (p. 45). Following their argument, our reference to a phenomenological approach in paper 3 is related to gaining an understanding of the participants lived experience of the research phenomenon. Thus, one might acknowledge an inspiration by certain features in the phenomenological approach. Nevertheless, the methodological approach in study 3 intended to capture reality that was constructed through social interaction and is consequently placed within social constructivism.

Moving forward, the aim of study 3 was to gain a deeper understanding of the topic of interest through an interpretative approach and provide insight into the situated and complex nature of communication in a football match. Study 3 was therefore conducted with a qualitative design based on interviews with players, the coach, and the sporting director in the football club IK Start. An ideographic method was used to be able to describe, explain, interpret, and understand the research phenomenon under investigation (Kvale et al., 2015; Robson & McCartan, 2016). To understand the phenomenon in depth, a case study design was selected with use of semistructured interviews. This is especially useful to create a close interaction between the researcher and the respondent in a dialog where they jointly uncover experiences from the respondent's perspective and actively co-construct knowledge that has been formed by internal and external factors (Smith & Sparkes, 2016; Yin, 2014). The result from this process is achieved through critical introspection and reflection from the researcher and seeks to promote attentive reflection by the reader (Cotterill, 2020).

3.5.1 Participants – Study 3

The sample in study 3 included three players, the head coach, and the sporting director from the football club IK Start in Norway. Informants were recruited using a purposive sampling approach with a goal of attracting informants who were especially familiar with our research subject, maximizing the quality of the data, and therefore we considered key informants to expand our understanding of the phenomenon. The sporting director and the head coach were both former elite football players and had represented their national teams at senior level. They had been in the positions of head coach and sporting director for one year at the time of the interview. The three players were all in the starting line-up in the investigated match and regarded as important players for the club in the 2019 season (i.e., regularly in the starting line-up). Players' ages were 22, 26, and 32 years at the time of data collection, and had played for their current club for five, one, and two years at senior level, respectively. Three informants had Norwegian nationality, while two came from different European countries. All informants were male.

3.5.2 Procedures – Study 3

The football club IK Start was contacted through its sporting director and informed about our study aim and objectives. Permission was given to contact relevant players and the coach in IK Start to ask if they would agree to take part. All five individuals that were contacted agreed to participate, that is, three players, the head coach, and the sporting director. Two separate researchers interviewed participants individually at the stadium of IK Start after a training session in February 2020, two months after the investigated game was played. Both researchers had previously conducted semistructured interviews with elite sport athletes in previous studies and were experienced with interviewing techniques. Interviews were digitally recorded and lasted an average of 48.2 minutes (range 42–55 minutes). Informed consent forms were signed before the interviews started, and participants were informed that they could access the transcribed data to make necessary changes or withdraw from the study. Ethical approval for the study was obtained from the Norwegian Social Sciences Data Service and the ethics committee at the first author's university.

3.5.3 Interview guide – Study 3

The interview guide was organized into four different parts based on the study aim and objectives. Part 1 included an introduction with information given to each

participant about the current study, involving how the interview would be conducted and the opportunity for the participant to ask questions to the researcher. Part 2 consisted of an open conversation about the investigated game where the participant and the researcher talked freely about the game. Additionally, the researcher asked questions about certain factors from the game (e.g., “Did you notice anything special about the opposition team during the game?” and “What was said/done during half time?”). The aim was to get the perspective of the participant on important situations and details from the game that the participant remembered as central for both the development of the game and the result.

Part 3 contained a structured video-recall review where the participant was exposed to 11 short clips from the investigated game. Video-stimulated recall has previously been highlighted as an appropriate technique in semistructured interviews with elite sport athletes (Schei & Giske, 2020). The clips included a video montage of kick off, goals, celebrations, substitutions at critical times, and end of the match. After each clip, the participants were asked to reflect verbally about the clip (e.g., descriptions of behaviors, thoughts, emotions, attitudes, and communication in their team and the opposition team). Depending on the participant’s answer, follow-up questions were used to explore newly added information (Patton, 2015). Further, probes were applied to get participants to reflect at a deeper and more analytical level. A fundamental assumption in the current study is that elite football players coaches, and sporting directors are experts in their domain and possit context-dependent knowledge that they can verbalize when exposed to video clips from game situations (Ericsson & Simon, 1980; Flyvbjerg, 2006). Part 4 consisted of wrap-up questions and a summary of the main factors the participant had spoken about. The participant also had the opportunity to add information that he felt was important to elaborate.

3.5.4 Thematic analysis – Study 3

Analysis from the interviews was conducted using thematic analysis guided by the six-phase model recommended by Braun et al. (2016). Thematic analysis fits within the application of qualitative techniques within a qualitative paradigm (Braun et al., 2017) and can be viewed as a standalone analytical technique without rigid ties to a particular research philosophy (Saunders et al., 2019). The decision to use this analytical technique was based on an assessment that it would suit the research purpose in study 3. In addition, there was also a personal preference towards this technique since I had previous experiences with conducting thematic

analysis in other research projects (Schei & Giske, 2020). Thematic analysis is deemed useful for identifying, analyzing, organizing, describing, and reporting themes that are constructed of the data set (Braun & Clarke, 2021a, 2021b). It is a flexible approach that is suitable for examining perceptions and meanings, highlighting differences and similarities among participants. It allows large data sets to be reviewed and provides an understanding of key factors (Fereday & Muir-Cochrane, 2006).

In the first phase, familiarization with the data set was conducted through transcription of verbal data. In addition, all transcripts were reviewed twice to gain familiarity with the data. Second, initial codes were generated from the raw data to later be assessed in a meaningful way (Braun et al., 2016). Codes were compared to notes that were written down during the interviews to establish a broader understanding of the intended meaning from the interviewee. Third, construction of themes were conducted when all initial codes were generated. In this phase, codes were connected to lower-order themes, ending up with a collection of candidate lower order themes (Braun & Clarke, 2006). Furthermore, lower-order themes were attached to higher-order themes that were generated through phase 3. Phase 4 involved reviewing themes and checking whether the coded data connected to each theme seemed to form a correct pattern (Braun et al., 2016). A thematic map of our generated themes was assessed in this phase to ensure that all relevant issues were covered by an existing code, and that all themes had enough raw data behind them to support the existing theme (Nowell et al., 2017). The fifth phase is based on defining and naming themes, and identifying the fundamental nature of what each theme covers, and which aspects of the data it captures (Braun & Clarke, 2006). The research team met on several occasions during phases 1–5 to establish a coherent understanding of the data and to agree upon development and naming of lower- and higher-order themes. Furthermore, match recordings and objective match statistics were connected to interview data to increase researchers' understanding of the information gained from the interviews. This process produced an improved meaning to the transcribed material, granting a greater insight into those quotations related to match situations. Finally, the sixth phase of producing the report and finalizing the analysis was conducted providing a concise, coherent, and logical story of the phenomenon under investigation (Braun et al., 2016).

Trustworthiness

Trustworthiness is especially important in thematic analysis since the researcher is the instrument for analysis (Nowell et al., 2017). Trustworthiness in qualitative research addresses issues related to reliability and/or validity of the research design, researcher credibility, research methods, and the credibility of the findings (Rose & Johnson, 2020). To establish trustworthiness in each phase of the thematic analysis, several checks were followed to ensure transparency and rigor. Trustworthiness is not achieved in isolated steps according to Nowell et al. (2017), but rather attained through several interrelated and simultaneous steps throughout the research process. In study 3, prolonged engagement with the data set was an important process to gain familiarity with the respondents' view of the phenomenon under investigation. Further, to gain credibility as regards our findings, data collection triangulation was conducted through sampling of data from three different sources (i.e., semistructured interviews, objective match statistics, and video recordings of the investigated match). Further, these sources of data were thoroughly explored and examined as an ongoing process in expert group discussions in all six phases of the thematic analysis. Moreover, peer debriefing and reflexive writing with co-authors contributed to identifying interesting aspects of the data set that were then explored further. In addition, team consensus on defining and naming themes was finalized through discussion groups with co-authors. Lastly, thick descriptions of context and direct quotes from respondents were provided in the produced paper to ensure transparency of our findings and a contextualized understanding of the research phenomenon.

An important aspect of trustworthiness in qualitative research is the reflexivity provided by the researcher. Reflexivity refers to the process of critical reflection on the knowledge that is produced, and how the researcher potentially influences the production of knowledge (Dodgson, 2019). Accordingly, self-awareness is demanded regarding power relations between the researcher and the respondents, researcher background, and preunderstanding from former experiences with the topic under examination (Smith & Sparkes, 2016). The aim of reflexivity is to acknowledge and provide transparency to the researchers' position and subjectivity as an integrated part of knowledge construction (Berger, 2015). In addition, reflexivity is an interactional process of repeated awareness and reflection that is embedded in the steps that the researcher engages in (Dodgson, 2019).

The candidate's position in the current study influenced the research process in various ways. First, at the time of the interviews, I had a part time job in the investigated club working with the boys' U-17 football team as an assistant coach. Because of this, I had some knowledge regarding the respondents from the senior team I interviewed. In addition, I had knowledge about facilities at their home stadium, providing me with information that I could use to optimize interview surroundings for the respondents. However, with just a minor relation to the first-team players in my profession, it most likely did not affect the power relation in the interview setting and how they responded. Second, with my background as a professional working with match analysis in a Norwegian premier league football club for several years, it probably gave me some advantages in data collection of objective match statistics and in conducting match analysis of the investigated match. This pre-understanding or preconception ensured trustworthiness in data analyses of the match and strengthened the process of development and selection of those clips for the systematic video-recall review that were used in the interviews. Two main actions were taken to ensure rigor and quality in addressing issues related to researcher reflexivity. First, peer debriefing was an ongoing process in all phases to provide external checks on the research process and expose aspects that needed to be explained (Patton, 2015). Second, a reflexive journal was used to keep track of methodological decisions, personal reflections, and structuring of emerging impressions (Nowell et al., 2017).

3.6 Ethical considerations

The three studies in the present thesis were conducted with ethical approval by the ethical committee at the University of Agder and were carried out after approval by the National Committee for Research Ethics in the Social Sciences and the Humanities (formerly the Norwegian Center for Research Data). Procedures and data treatment were in line with the ethical standards recommended by the American Psychological Association (APA). In study 1 and study 2, information about the study was given verbally and in writing when the researcher visited the team. Participants filled out the questionnaire after signing informed consent forms to participate. Anonymity and confidentiality were guaranteed, and it was explained that it would not be possible to identify either the team or the player in the produced paper and that the potential burden of participation was low. One potential ethical risk related to study 1 and study 2, was that the sporting director and/or the head coach provided access to the researcher to visit their club. This

may have created a feeling among players that they were obligated to participate in our study. To solve this potential ethical dilemma, it was clearly specified that it was voluntary to participate, and that respondents could withdraw at any time. The research team's contact details were also provided to the club in case any player wished to withdraw from the study in the future.

In study 3, several checks were incorporated to meet the criteria of ethical standards in qualitative interviews recommended by the National Committee for Research Ethics in the Social Sciences and the Humanities. First, information about the study was provided to the sporting director of the football club IK Start both verbally and writing. This included information about the study purpose, what participation would imply for coaches and players, and stating that participation was voluntary. In addition, it was clearly specified that it was possible to withdraw from the study at any given time. Further, when access was granted, participants were given the abovementioned information and made aware that they could access and make necessary changes to the transcribed material in the future if they so desired. Moreover, interviews were conducted in a meeting room at the football stadium used by the participants so as to create a safe environment. We asked for permission to use a sound recorder, and participants received information about how the interview data would be stored, and when it would be deleted. Informed consent forms were signed before the interviews started, and the developed interview guide worked as a tool for creating an appropriate structure in the interviews. An ethical risk in study 3 is the possibility of identifying participants in the published paper. This was due to their specific roles in the investigated game related to quotes included in the paper, and the public interest in the investigated club. Therefore, we specified to the participants before the interviews started that they could be identified as respondents in relation to certain quotes used in the paper. Still, neither of the respondents raised any issues regarding anonymity and agreed to participate without anonymity. Even though this may serve as an ethical risk and a potential burden, participants were presumed to be speaking about a positive experience because it was described by them as one of their greatest sporting experiences. Therefore, from the participants' perspective, this made the potential burden of being identified low.

4.0 Summary of results

A brief summary of the main findings from the different papers is presented below. For more details, please see the full-length papers.

4.1 PI

The aim of PI was to examine identity leadership in male and female elite team sports and its relation to task cohesion, and to explore the mediating role of the intrateam communication dimensions acceptance and distinctiveness. Through structural equation modelling, the results revealed that identity leadership by coaches was positively associated with task cohesion, mediated by intrateam communication acceptance. Identity leadership had a weak significant positive effect on distinctiveness, but distinctiveness did not function as a significant mediator in the relationship between identity leadership and task cohesion. The article contributes with a promising insight into the application of identity leadership in elite sport, which should further be examined and explored with methodological diversity in further studies. Overall, results were partly in line with our hypotheses and provide support for the theoretically informed performance-related benefits of identity leadership in elite team sports.

4.2 PII

The aim of PII was to understand and measure humor communication in team sports. To examine the psychometric properties of the Humor Climate in Sport Scale (HCSS) we intended to assess content, structural, and concurrent validity. Further, we aimed to examine differential item functioning (DIF) as a function of sex. The development process included three phases: 1) focus group interviews, 2) item generation, and 3) psychometric evaluation of the instrument. EFA, ICM-CFA, and ESEM analyses supported a three-factor structure with positive humor (four items), negative humor in-group (five items), and negative humor out-group (five items). Results from testing the latent variable correlation revealed that positive humor was positively associated with group integration social, and negatively associated with social conflict. Moreover, negative humor in-group and negative humor out-group were both positively associated with social conflict. In addition, when comparing males and females, our results indicated partial DIF as a function of sex, suggesting that females report lower ratings on humor-climate items related to negative humor.

4.3 PIII

The aim of PIII was to investigate communication processes in and between teams prior to and during a collective collapse in an elite football match. The results indicated that the first IK Start goal triggered a positive momentum in IK Start with a set of positive cognitive, emotional, and behavioral reaction chains. Conversely, for Lillestrøm (LSK) it was a critical incident, in which negative behavioral and emotional trajectories were perceived. Respondents reported observing negative emotions, maladaptive communication, and counterproductive behaviors among LSK players, including negative feedback, passivity, personal errors, and defensiveness. The next two IK Start goals further escalated the negative behavior with detrimental communication (e.g., yelling, blaming) within the LSK team, thereby contributing to less coordinated play. In addition to intrateam contagion of positive (IK Start) and negative (LSK) emotions, results indicated an interteam contagion between the two competing teams where IK Start players gained more belief and energy when observing the change in behavior and increase of negative communication in the LSK team. Overall, critical incidents seemed to influence LSK players negatively, and affect the whole team through intrateam contagion which contributed to a collective collapse in performance.

5.0 Discussion

The overall purpose of the present thesis was to investigate aspects of communication within elite team sports. The following sections will discuss the findings from the present work based on the overall working model of this thesis (figure 2), followed by methodological considerations, applied perspectives, and future directions.

Overall, the findings from the current thesis support the central and pervasive role of communication in team processes (Eys et al., 2017; Ishak, 2017; Watzlawick et al., 1967) and during in-game processes (Eccles & Tran, 2012). More specifically, factors such as coaching behavior, momentum, and contagion are identified as influencers of communication (PI, PIII). Moreover, communication contains dimensions such as humor climate (i.e., positive humor, negative in-group humor, negative out-group humor), acceptance, and situational communication patterns (i.e., in-game communication) (PII, PII, PIII). In addition, communication outcomes identified in the current thesis include cohesion (i.e., task and social), conflict, contagion, momentum, and performance (PI, PII, PIII).

The dynamic process of communication allows individuals to create meaning from situations, where they simultaneously are receivers and senders of information (Harris & Sherblom, 2011). To specify that communication involves more than verbal communication (Eys et al., 2017; Yukelson, 2015), a message (i.e., verbal, and nonverbal) is a stimulus, a response, and a reinforcement of the overall interaction (Watzlawick et al., 1967). Giving sense to collective experiences (i.e., communication, cooperation, coordination) provides the opportunity to rationale for and interpret how team members behave, think, and feel in various situations (Weick, 1995). Thus, communication has been investigated in the current thesis by examining factors of coaching behavior, cohesion, different dimensions of communication (i.e., humor, acceptance, distinctiveness), and in-game communication. These factors may be contagious and therefore transfer within a team and may affect team processes with either a positive or a negative outcome. Being a good leader, having an adaptive humor climate, and communicating honestly with team members are examples of productive processes that can have positive repercussions for the team. Thus, being the recipient or an observer of different behaviors and emotions may lead to various reactions, behaviors, processes, and outcomes (Felps et al., 2006; Watzlawick et al., 1967).

5.1 Communication in team processes

Coach leadership is identified as a decisive factor influencing intrateam communication in teams (PI), affecting both individual and team outcomes in elite team sports (Hodge et al., 2014; Lyle, 2002). Identity leadership as a form of communication is intended to mobilize communication, improve message encoding, and enhance message decoding (Peters, 2020). In PI, results revealed that identity leadership is positively associated with task cohesion. Our findings correspond to theoretical connections provided by Steffens et al. (2014) on the relationship between identity leadership and task cohesion. Furthermore, Worley et al. (2020) highlight a positive association between social identity and cohesion, and therefore emphasize the importance of leadership that promotes togetherness and belongingness with other team members to create cohesive team environments. Moreover, in a scoping review by Hague et al. (2021), results emphasize the importance of coaches' interpersonal behaviours as regards to influencing team functioning and the team environment. Indeed, a team-based social influence process is the foundation of the social identity approach to leadership that revolves around the process of cultivating, representing, and promoting a sense of shared identity or "we-ness" (Miller et al., 2020; Rees et al., 2015).

Communication strategies exhibited by the coach function as one of several psychological mechanisms that connect leadership actions with perceptions of team cohesion (Eys et al., 2017). More specifically, a coach's capacity to influence athletes toward team goals and a shared coordination pattern rest on the coach's ability to build and maintain a shared sense of "we" (Fransen et al., 2016; Stevens et al., 2019). This further includes developing structures and activities that strengthen the team's existence and promoting structures that facilitate shared understanding and coordination patterns (e.g., norms, values, goals, shared mental models; Araújo & Davids, 2016; Høigaard et al., 2006; Richards et al., 2017). Such communication processes have the capacity to increase the athletes' willingness to contribute with great effort in order to realize the team's potential and goals (Haslam et al., 2020; Miller et al., 2020; Worley et al., 2020). A leader's ability to enhance followers' perceptions of "we" and "us" is believed to increase team effort (Krug et al., 2021) and team functioning (Fransen et al., 2020). This is especially salient in elite sport where leadership success correlates with interpersonal and group factors (Slater & Barker, 2019) and subsequently contribute to increased

cohesion (PI). Maintaining cohesion when facing adversity is one important characteristic of team resilience (López-Gajardo et al., 2022). This is illustrated by the following quote by one of the IK Start players in PIII: “Look each other in the eyes and say that we are not eleven individuals, but a group. (...) Nobody loses as an individual, and nobody will win as an individual, it is only team effort” (Goalkeeper, PIII, unpublished).

The quote exemplifies the importance of building a cohesive unit in elite sport and might indicate that social identity theory is suitable for understanding certain aspects of leadership in elite team sports. As highlighted by Fransen et al. (2020), coaches that nurture a shared sense of “we” can foster a safe environment, and consequently enhance team functioning. According to theory of cohesion, there is a reciprocal relationship between similarity in shared perceptions (attitudes, beliefs, and motives) and cohesion (Carron et al., 2005; Hogg, 2001). Therefore, not surprisingly, when athletes perceive that coaches engage in identity leadership behaviour, they are more likely to form an attachment and high commitment to the team’s instrumental factors (goals, norms, shared mental models); further, this may explain the direct effect between identity leadership and task cohesion (PI). The perceived importance of task cohesion may be particularly useful in elite team sports, given their primary focus on task objectives (e.g., winning matches, placement on the table, avoiding relegation) and the task-oriented nature of in-game communication (PIII). Moreover, teams at the elite level often involve exceptional players with extreme qualities (Collins & Collins, 2011). As emphasized by Eccles and Tenenbaum (2004), a team of expert individuals is not the same as an expert performing team. Therefore, performing at the highest level involves the process of creating a collective unit where everyone buys in (Fiore & Salas, 2006). According to Giske et al. (2018), team member knowledge among elite team athletes is centered within task perspectives of strengths and weaknesses, preferences and predictions, compensatory behavior, and co-players’ value. Furthermore, in a more recent study by Giske et al. (2022), national team coaches emphasized the importance of building a shared understanding of team task objectives within a learning environment. For example, coaches set expectations for appropriate interaction patterns including information exchange, and developing a team climate that should promote adaptability, backup behavior, and mutual performance monitoring. Consequently, influencing shared mental models, collective motivation, and behaviors among players (Salas et al., 2005).

Results from PI revealed the intrateam communication dimension of acceptance to be a mediator in the identity leadership–task cohesion relationship. The findings in PI are in line with previous research investigating communication in relation to leadership factors and task cohesion (Hardy et al., 2008; Smith et al., 2013). Moreover, our findings regarding identity leadership and acceptance are similar to research by Slater et al. (2014) suggesting that identity leadership contributes to a shared sense of identity among team members, potentially contributing to building trust (Stevens et al., 2021) and enhancing a sense of bonding and belongingness within the team (Bruner et al., 2022). Mutual trust has been identified as a key component for team members to share information between each other and communicate more freely (Salas et al., 2005). One important principle of identity leadership is the leader’s ability to develop activities and structures that promote visibility that the team is important (Miller et al., 2020). Furthermore, when team members identify more highly with their team, they increase levels of motivation to affiliate with other team members and to communicate in a constructive and adaptive manner (Peters, 2020). Therefore, communication between team members regarding task objectives in elite sport might work more seamlessly and subsequently contribute to increased task cohesion (PI).

The content of the identity-based communication by coaches or athletes may take the form of an ingroup code and can reflect technical or tactical descriptions and jargon (Giske et al., 2022; Peters, 2020), as well as light-hearted humor deriving from comical situations or aggressive humor directed inwards or outwards (PII). For example, Turman (2003) identified that a coach’s use of sarcasm and teasing could have positive effects on team cohesion since the coach may have shown a more personal and humorous version of himself/herself. Moreover, according to Levine and Moreland (1990), the unique team language may demonstrate players’ own membership in the team, make individuals aware of their own status as ingroup or outgroup members, and restrict the access to the meaning of the communication to the ingroup members only. This is in line with Watzlawick et al. (1967) second axiom that highlight both content and relationship aspects as present in all communication. Thus, intrateam communication can add additional contributions to the ongoing maintenance of shared identity. Identity leadership may therefore enhance communication patterns within the team, and subsequently strengthen how team members accept each other (PI, PII).

Regarding the positive relationships between acceptance and task cohesion (PI), Cunningham and Eys (2007) have highlighted the socioemotional nature of acceptance communication in developing and maintaining a shared understanding of team members' needs within interdependent team sports, thereby facilitating role clarity within the social structure. Consequently, these positive relationships contribute to increased levels of mutual performance monitoring, boosting synergies of teamwork behaviours (Salas et al., 2005). This contention is further supported by Kim and Cruz (2016), who find a positive association between acceptance and team cohesion, stressing the importance of a communication environment grounded in messages demonstrating caring and appreciation of team members. This communication environment may in turn generate adaptive conditions for successful task performances (Eys et al., 2017). Perhaps more importantly, the positive relationship between acceptance and task cohesion was expected given the theoretical connections between intrateam communication and task cohesion (Eys et al., 2020; Peters, 2020). Indeed, the foundation of productive intrateam communication is centred around exchanges of communication among team members that may promote the unity of the team both as a task and a social unit (Sullivan & Short, 2011). Exchanges of interpersonal appreciation and consideration of teammates may therefore contribute to higher levels of shared agreement and understanding of teamwork (PI and PII).

Contrary to our theoretical expectations and our hypotheses, the intrateam communication dimension of distinctiveness did not function as a positive mediator in the relationship between identity leadership and task cohesion (PI). This may be seen as somewhat surprising since team language around a shared and unique identity is predicted to correlate with task-related aspects (Sullivan & Short, 2011) and identity leadership (Haslam et al., 2020). Still, our results revealed that identity leadership had a positive effect on distinctiveness, even though this effect can be considered weak. This relationship may be related to the dynamics of communication within team sports that can be separated in both horizontal (athlete–athlete) and vertical (coach–athlete) communication (Abu Bakar & Sheer, 2013). For example, one may argue that the coach does not have the hypothesized impact on distinctiveness if this type of communication is primarily developed horizontally among athletes. Moreover, in relation to task cohesion, our predictions that there would be a positive relationship between distinctiveness and task cohesion was grounded in the notion that communicating a unique shared

identity would predict task cohesion (Sullivan & Feltz, 2003). However, the lack of a positive relationship might indicate that the distinctiveness measured in our study is more related to social aspects of communication. Another reason may be that our measure of distinctiveness was unable to capture the type of distinctiveness in communication that is prevalent within elite team sports, in relation to identity leadership and task cohesion. This is further discussed in PI.

Humor is identified as a vital part of the content of communication in team sports (PII). Hence, humor is an important factor of productive communication that is associated with several essential individual and team outcomes (e.g., team identity, cohesion: Høigaard et al., 2017; Romero & Pescosolido, 2008). Findings in PII identified three different dimensions of humor climate in team sports, namely positive humor, negative humor in-group, and negative humor out-group. These results support earlier findings about humor in a workplace climate with a division of positive and negative humor (Blanchard et al., 2014; Cann et al., 2014) and a division of in-group and out-group direction of negative humor (Cruthirds et al., 2013). However, earlier research on humor in team sports is limited. In addition, there has been a lack of a sport-specific instrument to measure how humor styles, humor climate, and perceived use of humor in coaches' feedback influence teamwork. Still, qualitative research on humor in sport finds that coaches utilize humor as a deliberate and central part of their coaching practice (Ronglan & Aggerholm, 2014), and that humor can be positively related to outcomes such as increased pleasure, less tension, and improved team integration (Kim et al., 2020). Furthermore, quantitative research from sport reveals that coaches' humor is related to team identity (Høigaard et al., 2017) and players' appreciation of the coach (Grisaffe et al., 2003).

To examine the underlying mechanisms of humor climate in teams, it will be necessary to understand how team processes are influenced by a series of individual-, team-, and external-level input factors that are team specific (McEwan & Beauchamp, 2014). Starting at the individual level, team members bring their own humor styles into the team, with their own preferences of what they perceive as funny or not (Martin et al., 2003). Based on findings from Robert and Wilbanks (2012), it is reasonable to believe that the humor style that each individual team member brings into the team has a large impact on how the humor climate is developed and maintained. Moreover, coaches bring their humor styles into the team, contributing to the fact that their specific coaching behaviors decide norms

and values that contribute to regulating a teams' humor climate (Ronglan & Aggerholm, 2013).

According to Edwards and Jones (2018), the coach of a team can set boundaries that team members are supposed to follow and adapt to, consequently using humor to produce and maintain social order. As described by Fine (1979), when team members interact, they generate an idioculture of knowledge, beliefs, and behaviors that to a certain degree are shared by the interacting team members. At the team level, team size, subgroups, and interdependence will be important factors for the idioculture (Gockel, 2017). Moreover, external factors such as team resources and cultural beliefs could impact what kind of humor team members share when they are together (Kalliny et al., 2006; Martineau, 1972). These inputs influence team processes in the regulation of team performance and impact individual and team outcomes. Therefore, one may argue that communication related to humor develops as a product of inputs, team processes, and experienced outcomes of humorous situations (PII).

Findings in PII identified that positive humor was positively related to group integration social and negatively related to social conflict. This contention supports the suggestion that positive humor can be seen as a social skill that can lead to increased acceptance and improved interpersonal relationships between team members (Gockel, 2017). It may thus be beneficial for coaches to emphasize increasing affiliation and cohesion within a team, and thereby to reduce tensions caused by conflict (PI). Positive humor may therefore be one dimension of communication that provides productive interpersonal interactions that enhance the unity between team members. This finding supports the positive relationship between acceptance and task cohesion identified in PI. Conversely, our results showed that negative humor in-group and out-group were positively related to social conflict as an outcome. Given the positive association between negative humor and social conflict identified in PII, it is expected that negative humor creates counterproductive effects within a team. Moreover, these associations are in line with former research suggesting that negative humor can undermine relationships and contribute to dysfunctional competition within teams (Romero & Cruthirds, 2006) and may have the potential to increase levels of conflict (Baumeister et al., 2001). Coaching behaviors are in this regard one important input that influences team members' interactions and patterns of communication (PI). More specifically, the findings in PI are in line with former research by

Høigaard et al. (2017) that highlights how coaches' feedback patterns are positively associated to team identity. Thus, coaches should aim to communicate in such a manner that each team member feels integrated in the team, and thereby counteract withdrawal from team processes (Ronglan, 2007).

Conversely, researchers have also identified that coaches of some elite teams may enact darker forms of communication (Cruickshank & Collins, 2015; Fletcher & Arnold, 2011). Destructive leadership can be viewed as a double-edged sword that may create a short-term gain in performance but could have negative consequences long-term for team members (Cruickshank & Collins, 2015). However, limited research has been conducted within sport psychology to investigate potential long-term effects of destructive leadership and how it relates to levels of individual well-being, performance, and team processes. Identity leadership is in this perspective intended to shape team members' attitudes and behaviors in a positive manner (Steffens et al., 2020) and thereby influence the team-specific communication productively (PI). In the social identity model of communication by Peters (2020), there is a reciprocal relationship between communication and identity, and that shared social identity provides the basis for three key components of communication: initiation (i.e., social identity mobilizes communication), encoding (i.e., shared social identity enhances message encoding), and interpretation (i.e., shared social identity enhances message decoding). Potential outcomes of such adaptive communication processes may therefore include higher levels of task cohesion (PI) and social cohesion (PII), and conversely lower levels of conflict (PII).

5.2 Communication during in-game processes

Communication was investigated in team processes in PI and PII (see figure 2). To complement this perspective, PIII directed focus on a situational (i.e., in-game processes) perspective to explore communication during a competitive match with all at stake. As a part of communication, emotional contagion is emphasized in sport psychology as a factor influencing individual and team performance (Moll et al., 2010; Totterdell, 2000). The findings in PIII highlight that positive and negative intrateam emotional contagion occurring and possibly influencing communication, cooperation, coordination, and momentum in the qualification match between IK Start and LSK. These findings support previous studies suggesting that momentum shifts within a match (Apitzsch, 2009) and that emotions (positive or negative) expressed by a player, or several players, can have

either a productive or detrimental influence on team cohesion (PII), momentum in the game (Wergin et al., 2018), and performance (Lausic et al., 2009; Moll et al., 2010). More specifically, positive emotional contagion is associated with increased perceived task performance, improved cooperation, and decreased conflict (Barsade, 2002), while negative emotional contagion is associated with counterproductive communication (Apitzsch, 2019), decreased cooperation (Tamminen et al., 2016), and reduced coordination (Eys et al., 2017).

In the investigated game, IK Start were down 4–0 in the second half, needing three goals to qualify for the premier league (Eliteserien) next season (see PIII for more detailed information). Feelings of resignation, shame, low self-esteem, and low confidence were prevalent within IK Start. Still, respondents expressed feelings of togetherness, even though hope of turning the game around and qualifying was absent. When IK Start scored their first goal, it triggered a positive momentum in IK Start which led to team members expressing positive behavioral, emotional, and cognitive reactions.

Similar to the expressions by the IK Start players (PIII), Totterdell (2000) highlights in his study that positive moods of professional cricketers in match situations were connected to ongoing positive moods of their teammates, especially when engaging in actions that depended on coordinated efforts. In addition, as negative moods are associated with rejection, positive moods are on the other hand associated with acceptance of other team members (Carver et al., 1994). Interestingly, these findings point to the positive association between acceptance and task cohesion identified in PI. Therefore, based on findings in PI, one may question whether acceptance of each other contributed to the fact that IK Start players managed to maintain togetherness when they were down 4–0. Consequently, keeping concentration on task objectives, productive communication, and cohesion in a difficult and demanding situation.

Further, when IK Start scored their second goal, their positive momentum was further increased in strength, providing energy, belief, initiative, and a mental advantage over the opposition team. Similar to the findings in the present study, Taylor and Demick (1994) describe positive momentum as a chain of incidents that begin with an unexpected incident that may lead to changes in affect, arousal, and cognition. This leads to changes in behavior, coordination, and individual and team performance. Still, the strength of emotional contagion in the team is most

likely moderated by several different factors (e.g., social and task interdependence, team climate, conflict; Barsade et al., 2018).

Conversely to the positive momentum developing in IK Start, respondents reported a perceived negative momentum within the LSK team when IK Start reduced the lead to 4–1, which was further increased in strength in line with the two following IK Start goals. The negative momentum in LSK included counterproductive communication of negative feedback and blaming teammates. In addition, behavioral changes followed where LSK players suddenly became defensive, passive, uncertain, and doubtful, which contributed to error accumulation (PIII). These findings are in line with Moesch and Apitzsch's (2012) findings around triggers of a negative momentum; they also emphasize the potential of emotional contagion to infect teammates with negativity, thus increasing the risk of remaining in a state of negative momentum. This is captured in the following quote from one of the IK Start respondents:

How I saw it, a couple of the players (on LSK) that had that high energy in the start of the game in terms of giving signals to their team members, not that they were the ones that were shouting a lot, but they gave many signals to the players around them, they suddenly became uncertain and passive. And those that had been very verbally active (in LSK) in a positive manner became more verbally active in a negative manner. (Captain IK Start, PIII)

Interpreting the quote in line with the working model for the present thesis, LSK players experienced critical events that they did not manage to cope with. Further, it led to behavioral and affective outcomes, creating and maintaining a negative momentum that influenced communication, cooperation, and coordination. Negative intrateam contagion was most likely prevalent within the LSK team during this period of the game, amplifying the demands of the situation they were facing. If and potentially how LSK players were affected by the renewed belief and energy exhibited by IK Start players after the 4–1 goal is not possible to address with our study design. However, findings in PIII indicate that interteam emotional contagion was occurring, where IK Start players gained belief and energy when they perceived the sudden spread of fear, passivity, and negativity in LSK players. Such findings might be interpreted as a linear process that follow the development of action episodes. However, as stated by Watzlawick et al. (1967), interactions have no clear start or end, they are conversely punctuated into sequences. It is therefore suggested that stimulus-response-reinforcement triads are adopted, where all behavior (i.e., communication) is both cause and effect

(Watzlawick & Beavin, 1967). From this perspective, the behaviors by the LSK player may have functioned as a stimulus for the renewed belief in IK Start, which was further reinforced by the overall interaction.

Moreover, the negative spiral of action episodes for the LSK team caused a collective collapse with an inability to return to previous levels of performance. As exemplified in the quote, communication within LSK changed when they suddenly met adversity. This observation is in line with Apitzsch (2019), who highlights how communication between players can decrease in quantity and/or involve more maladaptive content and expression of negative emotions when they face a collective collapse. The expressions of negative emotions and decrease of productive messages and signals within the LSK team may therefore have caused them to struggle with collectively coping with critical events. Players may then have become uncertain, and passive, and expected somebody else to take action, leading to a breakdown in coordination, cooperation, and communication (Wergin et al., 2019; Wergin et al., 2018).

From a team sport perspective based on findings in PIII, one may question whether the magnitude of contagion in communication related to team processes (e.g., training, team meetings, brief, debrief) and in-game processes has received sufficient attention in sport psychology. As previously mentioned, communication is composed of numerous interrelated processes that must be coordinated (Peters, 2020). These interrelated processes may include emotional or behavioral components that are being transferred to other team members through contagion (Moll et al., 2010; Ronglan, 2007). Thus, we may hypothesize that other investigated factors in the current thesis (e.g., leadership, humor, acceptance, cohesion) contain influential elements of emotional and behavioral contagion. Still, it should be noted that the current thesis did not measure nor intended to objectively measure intra- and interteam contagion. However, our findings regarding intra- and interteam contagion may encourage other researchers to further investigate the prevalence of contagion within team sports and how it influences team processes and in-game processes.

5.3 Methodological considerations

The current thesis has several strengths worth mentioning. First, using methodological triangulation and different research designs to investigate communication processes in elite team sports is considered a strength since it

provides a broad and complementary exploration of the complex nature of communication in sport. The use of quantitative methods made it possible to examine theoretical connections of communication initially in study 1 and study 2, and afterward to explore team communication retrospectively within its real context as a situational feature in a football match in study 3. As described by Jick (1979), triangulation of methodologies provides the opportunity to sustain a beneficial closeness to the phenomenon of interest and an improved sensitivity to different sources of data.

Second, a large study sample of 776 athletes from ice hockey, handball, and football were used in study 2, consisting of both elite and sub-elite athletes with a quite even distribution of females and males. The large study sample and inclusion of athletes from different sports, levels, and sex may therefore increase the external validity and credibility of our findings (Ferguson, 2004). Third, application of advanced and transparent statistical analyses using SEM and more specifically mediation analysis (study 1), EFA, ICM-CFA, and ESEM (study 2) is considered a strength. These statistical approaches provide adaptive types of analysis that can test separate measurement models, estimate composite reliability, handle missing data, and conduct bias-corrected bootstrapping (Kline, 2016).

A fourth strength is the use of systematic video-recall review of critical incidents of the investigated match in study 3. Using video recordings as a stimulus in semistructured interviews is a promising technique for uncovering information from respondents that could enlighten the phenomenon under investigation (Bourbousson et al., 2010; Miles & Neil, 2013). Selection of clips was conducted by an expert group, which ensured agreement of which match situations were deemed suitable for the video montage after the group reviewed match analysis and objective match statistics of the investigated match. Still, with a retrospective design, there will probably be some degree of unconscious information that respondents are unable to address when they verbalize post-performance reflections.

Lastly, one important strength of the current thesis is the doctoral candidate's control and involvement in almost every step conducted in each individual study (1-3). Apart from focus group interviews in phase 1 in study 2, the candidate was responsible for conceptualization, study design, data sampling, formal analysis, and interpretation of data. Moreover, the candidate and the research team have

tried to the best of our ability to provide transparency and rich descriptions of each step performed in the current thesis.

Methodological limitations should be considered when interpreting the findings in the current thesis. First, data from study 1 and study 2 are self-reported and cross-sectional. Participants' subjective ratings on the questionnaire may thus be influenced by the time and date of sampling, win-loss record at the current time, and selective memory. Consequently, the cross-sectional design limits the possibility of making causal explanations and establishing reliable estimations of the longitudinal processes of relations between dependent and independent variables (Bryman, 2016). When exploring these relations, longitudinal data are preferred for capturing the temporal nature of mediation (Maxwell & Cole, 2007). However, a strong theory driven foundation can provide the basis for initial tests of hypothesized causal chains that includes mediators (MacKinnon, 2008). Consequently, our cross-sectional analysis in study 1 offers a snapshot of the relationship between the investigated factors. A natural next step would be to conduct longitudinal and intervention studies to further explore the relations that have been examined in study 1 and study 2 (Maxwell & Cole, 2007).

The method of developing a new instrument measuring humor climate in study 2 created some methodological challenges. Initially, the global outbreak of the Covid-19 pandemic generated hindrance for several parts of the research project. The planned inclusion of 300 elite football players was not possible to implement due to lockdown in the sporting community and restrictions on accessing football clubs. Moreover, the intended investigation of temporal stability (test-retest reliability) of the HCSS was not performed because of Covid-19. The application of test-retest in quantitative research is recommended since it gives information related to the consistency of measures that are being used and whether these measures are stable over time (Noble et al., 2019). Future studies should therefore include test-retest reliability when further examining the HCSS or translating the HCSS into other languages.

Further, humor styles and perception of humor are considered highly dependent on personality traits and cultural background (Banas et al., 2011; Mendiburo-Seguel et al., 2015). Sample 1 in study 2 included 90.3% participants with Norwegian nationality who responded to the Norwegian version of the HCSS, while 9.7% participants did not speak Norwegian and were consequently administered to respond to the English version of the HCSS. In terms of statistical

analysis, responses on the English version were not separated from the Norwegian version. Different cultural backgrounds include diverse assumptions, ideas, and purposes of words, grammar, meanings, and language use (Harris & Sherblom, 2011). Understanding how complex multicultural factors may influence participants' assessment of items is therefore a concern related to research ethics (Watson et al., 2012). Thus, one must take into consideration that some items in the HCSS may have been differently interpreted by certain participants with a foreign nationality.

Next, a limitation often associated with qualitative studies is the use of retrospective data, and subsequently recall memory bias (Smith & McGannon, 2018). However, retrospective data form the basis of qualitative interviews where participants recall and reconstruct former experiences such that studies of this kind will always be affected by certain levels of subjectivity or bias (Smith & Sparkes, 2020). More importantly, a limitation in study 3 was the lack of participants from the LSK team, who did not want to participate. Participation in research must be voluntary, and the absence of perspectives from LSK players leaves us with several questions regarding how they perceived the investigated match. LSK players would most likely challenge certain perceptions elaborated on by IK Start participants relating to how they perceived emotions and communication in the LSK team. These questions are left unaddressed and should therefore be investigated in future research when exploring communication dynamics within and between two competing teams. In addition, objectively measuring the effect of intra- and interteam contagion was not possible because of study design. The potential effect of intra- and interteam contagion on performance was previously described by Moll et al. (2010) and Totterdell (2000). Thus, researchers are encouraged to conduct studies and develop an instrument that can measure the impact of intra- and interteam contagion more precisely.

Further, taking a pragmatic position, while placing the three individual studies in different interpretive framework can be viewed as a limitation. This poses a challenge when I as a researcher are to add value from the individual studies into a bigger picture in the current thesis. From an axiological perspective, it includes being concerned with values, ethics, and biases within us as researchers and among research participants (Saunders et al., 2019). The methods for engaging in such practice within pragmatic axiology seems unclear according to Biddle and Schafft (2015). However, Morgan (2007) describes that principles of axiology flow

directly from assumptions within pragmatism, consequently not needing to add axiology as an isolated element. Along similar lines, study 3 is placed within social constructivism, but with a phenomenological approach referenced in paper 3 (Schei et al., 2022, p. 3). Phenomenology seeks to discover essence, while social constructivism places the notion of phenomenological essence as a social construction (Patton, 2015, p. 121). As highlighted by Patton (2002), the clarity of the term phenomenology can create confusion following its popularity among researchers and the many branches it can refer to (p. 104). Thus, the methodological unclarity regarding the framework in study 3 can mainly be attributed to the methodological journey of conducting a doctoral thesis, and the progression of reaching a better understanding of methodological decisions that were taken in the process of producing a research article retrospectively.

Lastly, critiques of qualitative research are often related to factors such as researcher subjectivity, challenges with replication, generalization, and transparency (Bryman, 2016). These issues are relevant to reflect over when considering our results in study 3. However, these assumptions of limitations within qualitative research in sport psychology can also be valued as strengths, depending on the perspective one chooses to take (Smith & Sparkes, 2020). Qualitative research can be viewed as an experience of discovery and enriched understanding that exceeds our preunderstanding (Thomas & Magilvy, 2011). Thus, the basic question when interpreting the results from study 3 should be whether the current thesis have managed to address questions of credibility, transferability, dependability, and confirmability in a manner acceptable to our readers (Lincoln & Guba, 1985). For more detailed information regarding strengths and limitations related to each individual paper, see PI, PII, and PIII.

5.4 Applied perspectives

The findings in the current thesis may provide coaches and athletes in sport with certain practical implications for their practice. First, the social identity approach to leadership emphasizes bringing team members together and incorporating a shared identity that motivates them to contribute toward collective goals. The foundation of identity leadership involves to be identity entrepreneurs, identity prototypes, ingroup champions, and to be identity impresarios who manage to build a sense of “we” through the process of social influence (Steffens et al., 2020). Previous research in sport has revealed positive associations with identity leadership in relation to team processes and team outcomes (Bruner et al., 2022;

Krug et al., 2021; Steffens et al., 2014). Findings in PI indicate that identity leadership may prove to be useful for coaches of elite team sports. Identity leadership can be a beneficial antecedent to adaptive communication in team processes, positively influence the intrateam communication dimension acceptance and task cohesion (PI). This may be particularly important at the elite level since teams are dependent on “star players” to contribute to the collective unit and maximize their potential productivity as a team. One important distinction in relation to identity leadership is the described potential as not only being an effective leadership style for performance and athlete development, but also as a leadership style that may help improve health and well-being among athletes (Steffens et al., 2020). The competitive environment of elite sport involves situations of high pressure, feelings of burnout, and the psychological process of fear of failure (Lebrun & Collins, 2017). Thus, identity leadership may in this type of environment promote adaptive communication and reduce negative individual effects of performing at the highest level.

Findings from the present work emphasize on humor as an important part of the content of communication within elite team sports (PII). Hence, coaches and athletes should acknowledge and be aware of potentially productive and/or destructive outcomes of certain adaptive and maladaptive humor types and humor climates. It seems clear that positive and negative types of humor is associated with cohesion and conflict in team sports, and that humor can be used to include or exclude team members (PII). Accordingly, coaches and athletes would benefit from building a positive and productive humor climate that can work as social glue, relieve stress, and strengthen feelings of belonging (Ronglan & Aggerholm, 2014). Based on findings in the present work, a positive humor climate would involve friendly, non-threatening humor that coaches and athletes share within their team. Practical examples of this would be to tell funny histories, use friendly irony, and engage in practical jokes (PII). Drawing inspiration from the social identity theory, coaches and athletes can use humor to be prototypical for other team members and positively affect outcomes of team processes (Høigaard et al., 2017).

Our findings in PIII underlie the small margins that characterize elite sport. Sudden changes and unexpected incidents may have a critical impact on momentum of the game, and in the worst scenario contribute to a collective collapse (PIII). Hence, coaches are recommended to implement strategies and structures that assist players

when they face adversity and extra challenging match situations. Moreover, intra- and interteam contagion is identified as factors occurring during in-game processes (PIII). Accordingly, one might argue that players should develop knowledge of how their specific verbal and nonverbal communication can be interpreted and transferred to team members and opponents. As highlighted by Ronglan (2007), coaches and players should understand the importance of individual- and team appearance when competing with an opposition. Coaches may therefore be regarded as responsible for facilitating the development of expertise in how to exploit the potential of contagion in matches. In relation to building strategies for handling adversity and exploiting the potential in intra- and interteam contagion, athlete leadership and cultural architects in game situations is one major factor that seems promising for managing task-related demands during matches (Danielsen et al., 2019).

Overall, the findings in the current thesis provide practical implications for coaches and athletes regarding the complex, dynamic, and important process of communication in team sports. It is therefore recommended that practitioners involved in team sports take our findings in consideration regarding preparation, execution, evaluation, and adjustments of team processes.

5.5 Future directions

The findings and methodology used in the present thesis offers several pathways that would be of great interest for further examinations. First, identity leadership is a relative new leadership style that has received increased attention the last decade (Haslam et al., 2022). Still, limited research with elite sport athletes has been conducted. In a critical narrative review of identity leadership in sport and exercise, Stevens et al. (2021) suggest five key recommendations for future research. These include for example stronger and more varied research designs, comparing effects of identity leadership with other leadership styles, and explore additional mediators (see Stevens et al., 2021 for details). Consequently, a number of interesting opportunities are present for researchers to explore potential performance-related benefits of identity leadership. In the field of elite sport, researchers are encouraged to conduct longitudinal research to explore if, how, and when identity leadership is appropriate from an applied perspective.

Further, the development and initial validation of the humor climate in sport scale (HCSS; PII) is hopefully only the starting point for an internationally recognized

and accepted instrument for measuring humor climate in team sports. Thus, researchers are encouraged to examine, explore, and further develop the HCSS. In doing so, researchers should include and explore athletes from different team sports, cultural backgrounds, and nationalities. Furthermore, sex-differences should be examined more thoroughly to establish eventual practical distinctions between males and females regarding humor. Indeed, coaches and athletes may benefit from gaining insight to how sex-differences impact team processes and subsequently team outcomes (Grisaffe et al., 2003). More research on female athletes and teams is requested (Curran et al., 2019; Emmonds et al., 2019), and future research should emphasize closing the knowledge gap between genders in elite sport. Overall, in the present thesis, humor was investigated as a part of communication, associated to certain outcomes (i.e., cohesion, conflict; PII). A continuation might be to investigate associations between various leadership styles (e.g., identity leadership, destructive leadership) and humor communication, and consequently how these factors affect team processes.

Lastly, findings in PIII indicate that intra – and interteam contagion occur during in-game processes and have the potential to transfer emotional and/or behavioural components from one athlete to other team members and opponents. As a result, the contagion process has the capacity to influence communication, coordination, and cooperation in matches (Wergin et al., 2019). However, with our study design, it is unclear to which degree contagion directly influenced performance or other performance related factors in the investigated match. Hence, we advocate for studies that manage to capture the magnitude of contagion within in-game processes. As recommended by Moll et al. (2010), experimental designs and self-report studies might help reveal the emotional or cognitive information athletes experience and perceive by others in certain match situations. Additionally, we consider contagion of emotional and behavioural components as factors that should be explored in relation to other relevant team factors (e.g., leadership, humor, acceptance, cohesion). This may provide beneficial information that teams can exploit in their practice to optimize team processes.

6.0 Conclusion

The overall purpose of the present thesis was to investigate aspects of communication in elite team sports. Aspects of communication that are examined in the present thesis support the inherent and integral part communication plays in team processes (Eccles & Tenenbaum, 2004; Eys et al., 2017; Watzlawick et al., 1967). In more detail, coaching behavior, momentum, and contagion are identified as important influencers of communication. More specifically, identity leadership by coaches had a positive relationship to intrateam dimension acceptance (i.e., trust, honesty, sharing, inclusion), which former theory has identified contribute to building and maintaining a shared identity (Peters, 2020). With regards to contagion and momentum, both factors seem to be influential during in-game processes and consequently to some degree influence how teams communicate, cooperate, and coordinate during a football match.

Communication in the present thesis contained of intrateam communication dimensions acceptance and distinctiveness, humor, and in addition in-game communication. First, acceptance was identified as a mediator of the identity leadership – task cohesion relationship, while distinctiveness did not function as a significant mediator in the identity leadership – task cohesion relationship. Second, the present work supported a categorization of humor climate in three different dimensions of positive humor, negative humor in-group, and negative humor out-group. Hence, within team sports, content of humor communication and direction of humor will most likely lead to different team dynamic outcomes. Third, the exploration of in-game communication revealed productive communication within IK Start following their comeback (e.g., togetherness, enthusiasm, energy, positivity). On the contrary, counterproductive communication were prevalent within LSK when they were losing their lead (e.g., negative feedback, blaming, uncertainty, fear). These result highlight how communication in matches can rapidly change when reacting to critical incidents and indicate how teams manage to adapt to prosperity and adversity.

Outcomes of communication identified in the present thesis consisted of cohesion (i.e., task- and social), conflict, contagion, momentum, and performance. Task cohesion was positively associated with identity leadership and acceptance, while social cohesion was positively associated to positive humor. Regarding conflict, negative humor (i.e., in-group and out-group) were positively associated with social conflict, while positive humor was negatively associated with social

conflict. In relation to outcomes of in-game communication, the findings in the investigated match indicate that momentum, contagion, and performance were influenced by the team-specific communication. When investigating the LSK – IK Start match (PIII) it was identified more constructive and positive communication among IK Start players after their first goal. Communication was transferred within their team and further reinforced, consequently contributing to the positive momentum for IK Start. Conversely, counterproductive and negative communication within LSK contributed to the opposite after IK Start's first goal. The findings in PIII also highlight interteam contagion, where IK Start players increased their belief and energy when observing counterproductive behavior and emotions in LSK. This is emphasized by IK Start participants as something they utilized and used to their advantage.

In conclusion, the perceived importance of communication in elite team sports is highlighted in our findings, and the current thesis has attempted to gain a deeper understanding of the underlying mechanisms that are prevalent within communication dynamics. Accordingly, further exploration of our findings regarding the development, maintenance, and enhancing of communication within elite team sports would be of great interest. Still, knowledge about communication in elite team sports is a work in progress.

References

- Abu Bakar, H., & Sheer, V. C. (2013). The mediating role of perceived cooperative communication in the relationship between interpersonal exchange relationships and perceived group cohesion. *Management Communication Quarterly*, 27(3), 443-465. <https://doi.org/10.1177/0893318913492564>
- Allen-Collinson, J. (2017). Breathing in life: Phenomenological perspectives on sport and exercise. In B. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (2 ed., pp. 11-23). Routledge.
- Álvarez, O., Castillo, I., Molina-García, V., & Tomás, I. (2019). Transformational leadership, task-involving climate, and their implications in male junior soccer players: A multilevel approach. *International Journal of Environmental Research and Public Health*, 16(19), 3649. <https://doi.org/10.3390/ijerph16193649>
- Apitzsch, E. (2006). Collective collapse in team sports: A theoretical approach. In F. Boen, B. De Cuyper, & J. Opdenacker (Eds.), *Current research topics in exercise and sport psychology in Europe* (pp. 35-46). LanooCampus.
- Apitzsch, E. (2009). Coaches' and elite team players perception and experiencing of collective collapse. *Athletic Insight*, 1(2), 57-74.
- Apitzsch, E. (2019). Collective collapse in football. In E. Konter, J. Beckman, & T. Loughhead (Eds.), *Football psychology: From theory to practice* (pp. 117-126). Routledge.
- Araújo, D., & Davids, K. (2016). Team synergies in sport: Theory and measures. *Frontiers in Psychology*, 7, 1449. <https://doi.org/10.3389/fpsyg.2016.01449>
- Arthur, C. A., & Bastardo, N. (2020). Leadership in sport. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (pp. 344-371). Wiley. <https://doi.org/https://doi.org/10.1002/9781119568124.ch16>
- Arthur, C. A., Bastardo, N., & Eklund, R. (2017). Transformational leadership in sport: Current status and future directions. *Current Opinion in Psychology*, 16, 78-83. <https://doi.org/10.1016/j.copsyc.2017.04.001>
- Baert, P. (2005). *Philosophy of the social sciences: Towards pragmatism*. Polity.
- Banas, J. A., Dunbar, N., Rodriguez, D., & Liu, S.-J. (2011). A review of humor in educational settings: Four decades of research. *Communication Education*, 60(1), 115-144. <https://doi.org/10.1080/03634523.2010.496867>
- Bandura, C. T., Kavussanu, M., & Ong, C. W. (2019). Authentic leadership and task cohesion: The mediating role of trust and team sacrifice. *Group Dynamics: Theory, Research, and Practice*, 23(3-4), 185-194. <https://doi.org/https://doi.org/10.1037/gdn0000105>
- Barnes, T. (2020). Rorty, conversations and the power of maps. In J. Wills & R. W. Lake (Eds.), *Power of pragmatism* (pp. 102-116). Manchester University Press. <https://doi.org/10.2307/j.ctv11vc913>
- Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly*, 47(4), 644-675. <https://doi.org/10.2307/3094912>
- Barsade, S. G., Coutifaris, C. G. V., & Pillemer, J. (2018). Emotional contagion in organizational life. *Research in Organizational Behavior*, 38, 137-151. <https://doi.org/10.1016/j.riob.2018.11.005>
- Bass, B. M., & Bass Bernard, M. (1985). *Leadership and performance beyond expectations*. Free Press.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership*. Psychology Press.

- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, 5(4), 323-370. <https://doi.org/10.1037/1089-2680.5.4.323>
- Bavelas, J. B. (2021). Pragmatics of human communication 50 years later. *Journal of Systemic Therapies*, 40(2), 3-25. <https://doi.org/10.1521/jsyt.2021.40.2.3>
- Beato, M., Drust, B., & Iacono, A. D. (2021). Implementing high-speed running and sprinting training in professional soccer. *International Journal of Sports Medicine*, 42(4), 295-299. <https://doi.org/10.1055/a-1302-7968>
- Beauchamp, M. R., McEwan, D., & Wierst, C. M. (2020). Psychology of group dynamics: Key considerations and recent developments. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (4 ed., pp. 323-343). Wiley. <https://doi.org/10.1002/9781119568124>
- Benson, A. J., Šiška, P., Eys, M., Priklerová, S., & Slepíčka, P. (2016). A prospective multilevel examination of the relationship between cohesion and team performance in elite youth sport. *Psychology of Sport and Exercise*, 27, 39-46. <https://doi.org/10.1016/j.psychsport.2016.07.009>
- Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research*, 15(2), 219-234. <https://doi.org/10.1177/1468794112468475>
- Biddle, C., & Schafft, K. A. (2015). Axiology and anomaly in the practice of mixed methods work: Pragmatism, valuation, and the transformative paradigm. *Journal of Mixed Methods Research*, 9(4), 320-334. <https://doi.org/10.1177/1558689814533157>
- Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Sage handbook of mixed methods in social and behavioral research* (2 ed., pp. 95-118). Sage.
- Blanchard, A. L., Stewart, O. J., Cann, A., & Follman, L. (2014). Making sense of humor at work. *The Psychologist-Manager Journal*, 17(1), 49-70. <https://doi.org/https://doi.org/10.1037/mgr0000011>
- Blaser, M. A., & Seiler, R. (2019). Shared knowledge and verbal communication in football: Changes in team cognition through collective training. *Frontiers in Psychology*, 10, 1-8. <https://doi.org/10.3389/fpsyg.2019.00077>
- Bollen, K. A., & Hoyle, R. H. (2012). Latent variables in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 56-67). The Guilford Press.
- Bourbousson, J., Poizat, G., Saury, J., & Seve, C. (2010). Team coordination in basketball: Description of the cognitive connections among teammates. *Journal of Applied Sport Psychology*, 22(2), 150-166. <https://doi.org/10.1080/10413201003664657>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2021a). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, 21(1), 37-47. <https://doi.org/10.1002/capr.12360>
- Braun, V., & Clarke, V. (2021b). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328-352. <https://doi.org/10.1080/14780887.2020.1769238>

- Braun, V., Clarke, V., & Weate, P. (2016). Using thematic analysis in sport and exercise research. In B. M. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 213-227). Routledge.
- Breivik, G. (2020). The sporting exploration of the world; Toward a fundamental ontology of the sporting human being. *Sport, Ethics and Philosophy*, 14(2), 146-162. <https://doi.org/10.1080/17511321.2019.1572214>
- Bruner, M. W., McLaren, C. D., Mertens, N., Steffens, N. K., Boen, F., McKenzie, L., Haslam, S. A., & Fransen, K. (2022). Identity leadership and social identification within sport teams over a season: A social network analysis. *Psychology of Sport and Exercise*, 59, 102106. <https://doi.org/10.1016/j.psychsport.2021.102106>
- Bruner, M. W., Munroe-Chandler, K. J., & Spink, K. S. (2008). Entry into elite sport: A preliminary investigation into the transition experiences of rookie athletes. *Journal of Applied Sport Psychology*, 20(2), 236-252. <https://doi.org/10.1080/10413200701867745>
- Brustad, R. (2002). A critical analysis of knowledge construction in sport psychology. In T. Horn (Ed.), *Advances in sport psychology* (2 ed., pp. 21-38). Human Kinetics.
- Bryman, A. (2016). *Social research methods* (5 ed.). Oxford University Press.
- Burgoon, J. K. (1994). Nonverbal signals. In M. L. Knapp & G. R. Miller (Eds.), *Handbook of interpersonal communication* (2 ed., pp. 229-285). Sage.
- Burr, V. (2015). Social constructionism. *International Encyclopedia of the Social & Behavioral Sciences* 22, 222-227. <https://doi.org/10.1016/B978-0-08-097086-8.24049-X>
- Burr, V., & Dick, P. (2017). Social constructionism. In I. B. Gough (Ed.), *The palgrave handbook of critical social psychology* (pp. 59-80). Palgrave Macmillian.
- Callow, N., Smith, M. J., Hardy, L., Arthur, C. A., & Hardy, J. (2009). Measurement of transformational leadership and its relationship with team cohesion and performance level. *Journal of Applied Sport Psychology*, 21(4), 395-412. <https://doi.org/10.1080/10413200903204754>
- Cameron, J. E. (2004). A three-factor model of social identity. *Self and identity*, 3(3), 239-262. <https://doi.org/10.1080/13576500444000047>
- Cann, A., Watson, A. J., & Bridgewater, E. A. (2014). Assessing humor at work: The humor climate questionnaire. *Humor-International Journal of Humor Research*, 27(2), 307-323. <https://doi.org/10.1515/humor-2014-0019>
- Cannon-Bowers, J. A., & Bowers, C. (2006). Applying work team results to sports teams: Opportunities and cautions. *International Journal of Sport and Exercise Psychology*, 4(4), 447-462. <https://doi.org/10.1080/1612197X.2006.9671807>
- Carron, A. V., & Brawley, L. R. (2000). Cohesion: Conceptual and measurement issues. *Small Group Research*, 31(1), 89-106. <https://doi.org/10.1177/104649640003100105>
- Carron, A. V., Brawley, L. R., & Widmeyer, N. W. (2002). *The group environment questionnaire test manual*. Fitness Information Technology.
- Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). The measurement of cohesiveness in sport groups. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213-226). Fitness Information Technology.
- Carron, A. V., Colman, M. M., Wheeler, J., & Stevens, D. (2002). Cohesion and performance in sport: A meta analysis. *Journal of Sport & Exercise Psychology*, 24(2), 168-188. <https://doi.org/10.1123/jsep.24.2.168>

- Carron, A. V., & Eys, M. A. (2012). *Group dynamics in sport* (4, Ed.). Fitness Information Technology.
- Carron, A. V., Hausenblas, H. A., & Eys, M. A. (2005). *Group dynamics in sport* (3 ed.). Fitness Information Technology.
- Carron, A. V., Martin, L. J., & Loughead, T. M. (2012). Teamwork and performance. In S. M. Murphy (Ed.), *The Oxford handbook of sport and performance psychology* (pp. 309-327). Oxford University Press.
- Carron, A. V., Shapcott, K. M., & Burke, S. M. (2008). Group cohesion in sport and exercise: Past, present, future. In M. R. Beauchamp & M. Eys (Eds.), *Group dynamics in exercise and sport psychology: contemporary themes* (pp. 117-139). Routledge.
- Carron, A. V., & Spink, K. S. (1993). Team building in an exercise setting. *Sport Psychologist*, 7(1), 8-18. <https://doi.org/10.1123/tsp.7.1.8>
- Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1985). The development of an instrument to assess cohesion in sport teams - the group environment questionnaire. *Journal of Sport Psychology*, 7(3), 244-266. <https://doi.org/10.1123/jsp.7.3.244>
- Carver, C. S., Kus, L. A., & Scheier, M. F. (1994). Effects of good versus bad mood and optimistic versus pessimistic outlook on social acceptance versus rejection. *Journal of Social and Clinical Psychology*, 13(2), 138-151. <https://doi.org/10.1521/jscp.1994.13.2.138>
- Chelladurai, P. (1984). Discrepancy between preferences and perceptions of leadership behavior and satisfaction of athletes in varying sports. *Journal of Sport and Exercise Psychology*, 6(1), 27-41.
- Chelladurai, P. (1990). Leadership in sports - a review. *International Journal of Sport Psychology*, 21(4), 328-354.
- Chelladurai, P. (2007). Leadership in sport. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (3 ed., pp. 113-135). Wiley.
- Chelladurai, P. (2011). Leadership in sports. First congress of the federacion de asociaciones de gestores del deporte de Espana (FAGDE), Madrid, Spain,
- Chen, C.-H. V., Tang, Y.-Y., & Wang, S.-J. (2009). Interdependence and organizational citizenship behavior: Exploring the mediating effect of group cohesion in multilevel analysis. *Journal of Psychology*, 143(6), 625-640. <https://doi.org/10.1080/00223980903218273>
- Clark, A. M. (1998). The qualitative-quantitative debate: Moving from positivism and confrontation to post-positivism and reconciliation. *Journal of Advanced Nursing*, 27(6), 1242-1249. <https://doi.org/10.1046/j.1365-2648.1998.00651.x>
- Collins, D., & Collins, J. (2011). Putting them together: Skill packages to optimize team/group performance. In D. Collins, A. Button, & H. Richards (Eds.), *Performance psychology. A practitioner's guide* (pp. 361-380). Elsevier.
- Cotterill, S. T. (2020). Case study approaches in sport and exercise psychology. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (4 ed., pp. 1097-1109). Wiley. <https://doi.org/https://doi.org/10.1002/9781119568124.ch53>
- Cotterill, S. T., & Fransen, K. (2016). Athlete leadership in sport teams: Current understanding and future directions. *International Review of Sport and Exercise Psychology*, 9(1), 116-133. <https://doi.org/10.1080/1750984x.2015.1124443>
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6 ed.). Sage.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4 ed.). Sage.

- Cronin, L. D., Arthur, C. A., Hardy, J., & Callow, N. (2015). Transformational leadership and task cohesion in sport: The mediating role of inside sacrifice. *Journal of Sport & Exercise Psychology, 37*, 23-36. <https://doi.org/10.1123/jsep.2014-0116>
- Cruickshank, A., & Collins, D. (2015). Illuminating and applying "the dark side": Insights from elite team leaders. *Journal of Applied Sport Psychology, 27*(3), 249-267. <https://doi.org/10.1080/10413200.2014.982771>
- Cruthirds, K. W., Wang, Y. J., & Romero, E. J. (2013). Insights into negative humor in organizations: Development of the negative humor questionnaire. *Journal of Business & Management, 19*(3).
- Cunningham, I. J., & Eys, M. A. (2007). Role ambiguity and intra-team communication in interdependent sport teams. *Journal of Applied Social Psychology, 37*(10), 2220-2237. <https://doi.org/10.1111/j.1559-1816.2007.00256.x>
- Curran, O., MacNamara, A., & Passmore, D. (2019). What about the girls? Exploring the gender data gap in talent development. *Frontiers in Sports and Active Living, 1*, 1-7. <https://doi.org/10.3389/fspor.2019.00003>
- Curseu, P. L., & Fodor, O. C. (2016). Humor and group atmosphere Development of a short scale for evaluating affiliative and aggressive humor in groups. *Team Performance Management, 22*(7-8), 370-382. <https://doi.org/10.1108/Tpm-04-2015-0022>
- Danielsen, L. D., Giske, R., Peters, D. M., & Hoigaard, R. (2019). Athletes as "cultural architects": A qualitative analysis of elite coaches' perceptions of highly influential soccer players. *Sport Psychologist, 33*(4), 313-322. <https://doi.org/10.1123/tsp.2018-0166>
- Davis, L., Jowett, S., & Tafvelin, S. (2019). Communication strategies: The fuel for quality coach-athlete relationships and athlete satisfaction. *Frontiers in Psychology, 10*, 1-12. <https://doi.org/10.3389/fpsyg.2019.02156>
- De Backer, M., Boen, F., Ceux, T., De Cuyper, B., Høigaard, R., Callens, F., Fransen, K., & Vande Broek, G. (2011). Do perceived justice and need support of the coach predict team identification and cohesion? Testing their relative importance among top volleyball and handball players in Belgium and Norway. *Psychology of Sport and Exercise, 12*(2), 192-201. <https://doi.org/10.1016/j.psychsport.2010.09.009>
- Delanty, G., & Strydom, P. (2003). *Philosophies of social science: The classic and contemporary readings*. Open University Press.
- DeVellis, R. F. (2017). *Scale development: Theory and applications* (4 ed.). Sage.
- Dion, K. L. (2000). Group cohesion: From "field of forces" to multidimensional construct. *Group Dynamics: Theory, Research, and Practice, 4*(1), 7-26. <https://doi.org/10.1037/1089-2699.4.1.7>
- Dodgson, J. E. (2019). Reflexivity in qualitative research. *Journal of Human Lactation, 35*(2), 220-222. <https://doi.org/10.1177/0890334419830990>
- Douglas, A. S., & Kennedy, C. R. (2020). Tracking in-match movement demands using local positioning system in world-class men's ice hockey. *The Journal of Strength & Conditioning Research, 34*(3), 639-646. <https://doi.org/10.1519/JSC.0000000000003414>
- Drescher, S., Burlingame, G., & Fuhrman, A. (2012). Cohesion: An odyssey in empirical understanding. *Small Group Research, 43*(6), 662-689. <https://doi.org/10.1177/1046496412468073>
- Duncan, L. R., Latimer-Cheung, A. E., & Brackett, M. A. (2014). Emotional intelligence: A framework for examining emotions in sport and exercise groups.

- In M. R. Beauchamp & M. A. Eys (Eds.), *Group dynamics in exercise and sport psychology* (2 ed., pp. 3-20). Routledge.
- Eccles, D. (2010). The coordination of labour in sports teams. *International Review of Sport and Exercise Psychology*, 3(2), 154-170.
<https://doi.org/10.1080/1750984x.2010.519400>
- Eccles, D. W., & Tenenbaum, G. (2004). Why an expert team is more than a team of experts: A social-cognitive conceptualization of team coordination and communication in sport. *Journal of Sport & Exercise Psychology*, 26(4), 542-560. [https://doi.org/DOI 10.1123/jsep.26.4.542](https://doi.org/DOI%2010.1123/jsep.26.4.542)
- Eccles, D. W., & Tran, K. B. (2012). Getting them on the same page: Strategies for enhancing coordination and communication in sports teams. *Journal of Sport Psychology in Action*, 3(1), 30-40.
<https://doi.org/10.1080/21520704.2011.649229>
- Edwards, C. N., & Jones, R. L. (2018). Humour in sports coaching: 'It's a funny old game'. *Sociological Research Online*, 23(4), 744-762.
<https://doi.org/https://doi.org/10.1177/1360780418780047>
- Eisler, L., & Spink, K. S. (1998). Effects of scoring configuration and task cohesion on the perception of psychological momentum. *Journal of Sport & Exercise Psychology*, 20(3), 311-320. <https://doi.org/10.1123/jsep.20.3.311>
- Emmonds, S., Heyward, O., & Jones, B. (2019). The challenge of applying and undertaking research in female sport. *Sports Medicine*, 5(1), 1-4.
<https://doi.org/10.1186/s40798-019-0224-x>
- Endsley, M. R. (1995). Measurement of situation awareness in dynamic systems. *Human Factors*, 37(1), 65-84.
<https://doi.org/https://doi.org/10.1518/001872095779049499>
- Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as data. *Psychological Review*, 87(3), 215-250. <https://doi.org/https://doi.org/10.1037/0033-295X.87.3.215>
- Eys, M., Burke, S. M., Dennis, P., & Evans, B. (2015). The sport team as an effective group. In J. M. Williams & V. Krane (Eds.), *Applied sport psychology: Personal growth to peak performance* (7 ed., pp. 124-139). McGraw-Hill.
- Eys, M., Evans, M. B., & Benson, A. (2020). *Group dynamics in sport* (5 ed.). Fitness Information Technology.
- Eys, M., Surya, M., & Benson, A. J. (2017). Communicating within sport teams. In *Persuasion and communication in sport, exercise, and physical activity* (pp. 217-232). Routledge.
- Eys, M. A., Carron, A. V., Bray, S. R., & Brawley, L. R. (2007). Item wording and internal consistency of a measure of cohesion: The group environment questionnaire. *Journal of Sport & Exercise Psychology*, 29(3), 395-402.
<https://doi.org/10.1123/jsep.29.3.395>
- Felps, W., Mitchell, T. R., & Byington, E. (2006). How, when, and why bad apples spoil the barrel: Negative group members and dysfunctional groups. *Research in Organizational Behavior*, 27, 175-222. [https://doi.org/10.1016/S0191-3085\(06\)27005-9](https://doi.org/10.1016/S0191-3085(06)27005-9)
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92.
<https://doi.org/10.1177/160940690600500107>
- Ferguson, L. (2004). External validity, generalizability, and knowledge utilization. *Journal of Nursing Scholarship*, 36(1), 16-22. <https://doi.org/10.1111/j.1547-5069.2004.04006.x>

- Festinger, L. S., & Back, K. (1950). *Social pressures in informal groups*. Sanford University Press.
- Filho, E., Dobersek, U., Gershgoren, L., Becker, B., & Tenenbaum, G. (2014). The cohesion–performance relationship in sport: A 10-year retrospective meta-analysis. *Sport Sciences for Health, 10*(3), 165-177. <https://doi.org/10.1007/s11332-014-0188-7>
- Filho, E., & Tenenbaum, G. (2020). Team mental models: Theory, empirical evidence, and applied implications. In G. Tenenbaum & C. R. Eklund (Eds.), *Handbook of sport psychology* (pp. 611-631). Wiley. <https://doi.org/10.1002/9781119568124.ch29>
- Filho, E., Tenenbaum, G., & Yang, Y. (2015). Cohesion, team mental models, and collective efficacy: towards an integrated framework of team dynamics in sport. *Journal of Sports Sciences, 33*(6), 641-653. <https://doi.org/10.1080/02640414.2014.957714>
- Fine, G. A. (1979). Small groups and culture creation: The idioculture of little league baseball teams. *American Sociological Review, 44*(5), 733-745. <https://doi.org/10.2307/2094525>
- Fiore, S. M., & Salas, E. (2006). Team cognition and expert teams: Developing insights from cross –disciplinary analysis of exceptional teams. *International Journal of Sport and Exercise Psychology, 4*(4), 369-375. <https://doi.org/10.1080/1612197X.2006.9671803>
- Fletcher, D., & Arnold, R. (2011). A qualitative study of performance leadership and management in elite sport. *Journal of Applied Sport Psychology, 23*(2), 223-242. <https://doi.org/10.1080/10413200.2011.559184>
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry, 12*(2), 219-245. <https://doi.org/10.1177/1077800405284363>
- Forsyth, D. R. (2021). Recent advances in the study of group cohesion. *Group Dynamics: Theory, Research, and Practice, 25*(3), 213-228. <https://doi.org/10.1037/gdn0000163>
- Fransen, K., Decroos, S., Broek, G. V., & Boen, F. (2016). Leading from the top or leading from within? A comparison between coaches' and athletes' leadership as predictors of team identification, team confidence, and team cohesion. *International Journal of Sports Science & Coaching, 11*(6), 757-771. <https://doi.org/10.1177/1747954116676102>
- Fransen, K., McEwan, D., & Sarkar, M. (2020). The impact of identity leadership on team functioning and well-being in team sport: Is psychological safety the missing link? *Psychology of Sport and Exercise, 51*, 101763. <https://doi.org/10.1016/j.psychsport.2020.101763>
- Fransen, K., Vanbeselaere, N., Exadaktylos, V., Vande Broek, G., De Cuyper, B., Berckmans, D., Ceux, T., De Backer, M., & Boen, F. (2012). "Yes, we can!": Perceptions of collective efficacy sources in volleyball. *Journal of Sports Sciences, 30*(7), 641-649. <https://doi.org/10.1080/02640414.2011.653579>
- Frey, L. R., Botan, C. H., & Kreps, G. L. (1999). *Investigating communication: An introduction to research methods* (2 ed.). Allyn & Bacon.
- Friesen, A. P., Devonport, T. J., Sellars, C. N., & Lane, A. M. (2015). Examining interpersonal emotion regulation strategies and moderating factors in ice hockey. *Athletic Insight Journal, 7*(2), 143-143.
- Furley, P., & Schweizer, G. (2020). Body language in sport. In G. Tenenbaum & C. R. Eklund (Eds.), *Handbook of sport psychology* (4 ed., pp. 1201-1219). Wiley. <https://doi.org/10.1002/9781119568124.ch59>

- Gershgoren, L., Basevitch, I., Filho, E., Gershgoren, A., Brill, Y. S., Schinke, R. J., & Tenenbaum, G. (2016). Expertise in soccer teams: A thematic inquiry into the role of shared mental models within team chemistry. *Psychology of Sport and Exercise, 24*, 128-139. <https://doi.org/10.1016/j.psychsport.2015.12.002>
- Giacobbi, P. R., Poczwadowski, A., & Hager, P. (2005). A pragmatic research philosophy for sport and exercise psychology. *The Sport Psychologist, 19*(1), 18-31. <https://doi.org/10.1123/tsp.19.1.18>
- Giske, R., Gjerde, J., & Gaard, H. S. (2018). Felles mentale modeller i elitelagballspill: En kvalitativ analyse av spilleres opplevelse av medspillerkunnskap i fotball og håndball. In T. Haugen & R. Høigaard (Eds.), *Trender i idrettspsykologisk forskning i Skandinavia* (pp. 163-186). Cappelen Damm Akademisk. <https://doi.org/10.23865/noasp.39.ch8>
- Giske, R., Gjerde, J., Høigaard, R., & Johansen, B. T. (2022). Shared mental models: National representative coaches' thinking on importance, characteristics, and development. *Journal of Expertise, 5*(1).
- Giske, R., Rodahl, S. E., & Høigaard, R. (2015). Shared mental task models in elite ice hockey and handball teams: Does it exist and how does the coach intervene to make an impact? *Journal of Applied Sport Psychology, 27*(1), 20-34. <https://doi.org/10.1080/10413200.2014.940431>
- Glazier, P. S. (2017). Towards a grand unified theory of sports performance. *Human Movement Science, 56*, 139-156. <https://doi.org/10.1016/j.humov.2015.08.001>
- Gockel, C. (2017). Humor in teams: Interpersonal functions of humor. In T. Scheel & C. Gockel (Eds.), *Humor at work in teams, leadership, negotiations, learning and health* (pp. 31-46). Springer.
- Gréhaigne, J.-F., Godbout, P., & Bouthier, D. (1997). Performance assessment in team sports. *Journal of Teaching in Physical Education, 16*(4), 500-516. <https://doi.org/10.1123/jtpe.16.4.500>
- Griffin, E. (2006). *A first look at communication theory* (6 ed.). McGraw-Hill.
- Grisaffe, C., Blom, L. C., & Burke, K. L. (2003). The effects of head and assistant coaches' uses of humor on collegiate soccer players' evaluation of their coaches. *Journal of Sport Behavior, 26*(2).
- Guenther, H., Schreurs, B., Van Emmerik, I. H., Gijsbers, W., & Van Iterson, A. (2013). How adaptive and maladaptive humor influence well-being at work: A diary study. *Humor-International Journal of Humor Research, 26*(4), 573-594. <https://doi.org/10.1515/humor-2013-0032>
- Gustafsson, H., Sagar, S. S., & Stenling, A. (2017). Fear of failure, psychological stress, and burnout among adolescent athletes competing in high level sport. *Scandinavian Journal of Medicine & Science in Sports, 27*(12), 2091-2102. <https://doi.org/10.1111/sms.12797>
- Hague, C., McGuire, C. S., Chen, J., Bruner, M. W., Côté, J., Turnnidge, J., & Martin, L. J. (2021). Coaches' influence on team dynamics in sport: A scoping review. *Sports Coaching Review, 10*(2), 225-248. <https://doi.org/10.1080/21640629.2021.1874096>
- Halldorsson, V., Thorlindsson, T., & Katovich, M. A. (2017). Teamwork in sport: A sociological analysis. *Sport in Society, 20*(9), 1281-1296. <https://doi.org/10.1080/17430437.2017.1284798>
- Hardy, J., Eys, M. A., & Loughhead, T. M. (2008). Does communication mediate the athlete leadership to cohesion relationship? *International Journal of Sport Psychology, 39*(4), 329-345.

- Harris, T. E., & Sherblom, J. C. (2011). *Small group and team communication* (5 ed.). Allyn & Bacon.
- Haslam, S. A., Fransen, K., Boen, F., & Reicher, S. D. (2020). The social identity approach to sport and exercise psychology. In S. A. Haslam, K. Fransen, & F. Boen (Eds.), *The new psychology of sport & exercise* (pp. 15-38). Sage.
- Haslam, S. A., Gaffney, A. M., Hogg, M. A., Rast, D. E., & Steffens, N. K. (2022). Reconciling identity leadership and leader identity: A dual-identity framework. *The Leadership Quarterly*, 33(4), 101620. <https://doi.org/10.1016/j.leaqua.2022.101620>
- Haslam, S. A., Oakes, P. J., Turner, J. C., & McGarty, C. (1995). Social categorization and group homogeneity: Changes in the perceived applicability of stereotype content as a function of comparative context and trait favourableness. *British Journal of Social Psychology*, 34(2), 139-160.
- Haslam, S. A., Steffens, N. K., Peters, K., Boyce, R. A., Mallett, C. J., & Fransen, K. (2017). A Social Identity Approach to Leadership Development The 5R Program. *Journal of personnel psychology*, 16(3), 113-124. <https://doi.org/10.1027/1866-5888/a000176>
- Hassmén, P., Keegan, R., & Piggott, D. (2016). *Rethinking sport and exercise psychology research: Past, present and future*. Palgrave Macmillan. <https://doi.org/10.1057/978-1-137-48338-6>
- Haugen, T., Peters, D. M., Ommundsen, Y., Martin, L. J., Stenling, A., & Høigaard, R. (2021). Psychometric Evaluation of the Norwegian Versions of the Modified Group Environment Questionnaire and the Youth Sport Environment Questionnaire. *Measurement in Physical Education and Exercise Science*, 25(4), 365-378. <https://doi.org/10.1080/1091367X.2021.1917414>
- Hays, K., Thomas, O., Maynard, I., & Bawden, M. (2009). The role of confidence in world-class sport performance. *Journal of Sports Sciences*, 27(11), 1185-1199. <https://doi.org/10.1080/02640410903089798>
- Herbison, J. D., Sutcliffe, J. T., Martin, L. J., McLaren, C. D., Slatcher, R. B., Benson, A. J., Boardley, I. D., Côté, J., & Bruner, M. W. (2022). Capturing coaches' identity leadership within youth sport. *Psychology of Sport and Exercise*, 61, 102208. <https://doi.org/10.1016/j.psychsport.2022.102208>
- Higham, A., Harwood, C., & Cale, A. (2005). *Momentum in soccer: Controlling the game*. Coachwise 1st4sport.
- Hodge, K., Henry, G., & Smith, W. (2014). A case study of excellence in elite sport motivational climate in a world champion team. *The Sport Psychologist*, 28(1), 60-74. <https://doi.org/10.1123/tsp.2013-0037>
- Hogg, M. A. (1992). *The social psychology of group cohesiveness: From attraction to social identity*. New York University Press.
- Hogg, M. A. (2001). A social identity theory of leadership. *Personality and Social Psychology Review*, 5(3), 184-200. https://doi.org/10.1207/S15327957PSPR0503_1
- Høigaard, R. (2020). *Gruppedynamikk og ledelse i idrett* (1. utgave. ed.). Cappelen Damm Akademisk.
- Høigaard, R., Haugen, T., Johansen, B. T., & Giske, R. (2017). Team identity in youth soccer: The role of coaches' feedback patterns and use of humour. *International Journal of Sports Science & Coaching*, 12(6), 697-707. <https://doi.org/https://doi.org/10.1177/1747954117738843>
- Høigaard, R., & Ommundsen, Y. (2007). Perceived social loafing and anticipated effort reduction among young football (soccer) players: An achievement goal

- perspective. *Psychological Reports*, 100(3), 857-875.
<https://doi.org/10.2466/pr0.100.3.857-875>
- Høigaard, R., Tofteland, I., & Ommundsen, Y. (2006). The effect of team cohesion on social loafing in relay teams. *International Journal of Applied Sport Sciences*, 18(1), 59.
- Ishak, A. W. (2017). Communication in sports teams: A review. *Communication Research Trends*, 36(4), 4-38.
- Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, 24(4), 602-611.
<https://doi.org/10.2307/2392366>
- Johnson, R. L., & Morgan, G. B. (2016). *Survey scales: A guide to development, analysis, and reporting*. Guilford Publications.
- Jones, G., Hanton, S., & Connaughton, D. (2007). A framework of mental toughness in the world's best performers. *The Sport Psychologist*, 21(2), 243-264.
<https://doi.org/10.1123/tsp.21.2.243>
- Kalliny, M., Cruthirds, K. W., & Minor, M. S. (2006). Differences between american, egyptian and lebanese humor styles: Implications for international management. *International Journal of Cross Cultural Management : CCM*, 6(1), 121-134.
<https://doi.org/10.1177/1470595806062354>
- Kasraoui. (2022). *Portugal's Jose Pedro: Morocco has A cohesive team*. Retrieved 9. december from
<https://www.morocoworldnews.com/2022/12/352907/portugals-jose-pedro-morocco-has-a-cohesive-team>
- Kegelaers, J., Wylleman, P., & Oudejans, R. R. D. (2020). A coach perspective on the use of planned disruptions in high-performance sports. *Sport, Exercise, and Performance Psychology*, 9(1), 29-44. <https://doi.org/10.1037/spy0000167>
- Kelly, J. R., & Barsade, S. G. (2001). Mood and emotions in small groups and work teams. *Organizational Behavior and Human Decision Processes*, 86(1), 99-130.
<https://doi.org/10.1006/obhd.2001.2974>
- Kim, H.-D., & Cruz, A. B. (2016). The influence of coaches' leadership styles on athletes' satisfaction and team cohesion: A meta-analytic approach. *International Journal of Sports Science & Coaching*, 11(6), 900-909.
<https://doi.org/10.1177/1747954116676117>
- Kim, J., Godfrey, M., & Eys, M. (2020). A double-edged sword: The nature of team comedians in sport teams. *Journal of Applied Sport Psychology*, 1-24.
<https://doi.org/10.1080/10413200.2020.1759158>
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4 ed.). The Guilford Press.
- Kozlowski, S. W. J., & Ilgen, D. R. (2006). Enhancing the effectiveness of work groups and teams. *Psychological Science in the Public Interest*, 7(3), 77-124.
<https://doi.org/10.1111/j.1529-1006.2006.00030.x>
- Krug, H., Haslam, S. A., Otto, K., Safi, G., & Steffens, N. K. (2021). Doing it for the team: Soccer coaches' identity leadership predicts players' effort, turnover intentions, and performance. *Psychology of Sport and Exercise*, 55, 101947.
<https://doi.org/10.1016/j.psychsport.2021.101947>
- Kuiper, N. A., & McHale, N. (2009). Humor styles as mediators between self-evaluative standards and psychological well-being. *The Journal of Psychology*, 143(4), 359-376. <https://doi.org/10.3200/JRLP.143.4.359-376>
- Kvale, S., & Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research interviewing* (2 ed.). Sage.

- Kvale, S., Brinkmann, S., Anderssen, T. M., & Rygge, J. (2015). *Det kvalitative forskningsintervju* (3 ed.). Gyldendal Akademisk.
- Kvamme, O. J., Mainz, J., Helin, A., Ribacke, M., Olesen, F., & Hjortedal, P. (1998). Oversettelse av spørreskjema: Et oversett metodeproblem [Interpretation of questionnaires: An translation method problem]. *Nordisk Medicin*, *113*, 363-366.
- Lausic, D., Tennebaum, G., Eccles, D., Jeong, A., & Johnson, T. (2009). Intrateam communication and performance in doubles tennis. *Research Quarterly for Exercise and Sport*, *80*(2), 281-290.
<https://doi.org/10.1080/02701367.2009.10599563>
- Lebrun, F., & Collins, D. (2017). Is elite sport (really) bad for you? Can we answer the question? *Frontiers in Psychology*, *8*, 324.
<https://doi.org/10.3389/fpsyg.2017.00324>
- LeCouteur, A., & Feo, R. (2011). Real-time communication during play: Analysis of team-mates' talk and interaction. *Psychology of Sport and Exercise*, *12*(2), 124-134. <https://doi.org/10.1016/j.psychsport.2010.07.003>
- Levine, J. M., & Moreland, R. L. (1990). Progress in small group research. *Annual Review of Psychology*, *41*(1), 585-634.
<https://doi.org/10.1146/annurev.ps.41.020190.003101>
- Levy, D. A., & Nail, P. R. (1993). Contagion: A theoretical and empirical review and reconceptualization. *Genetic, Social, and General Psychology Monographs*, *119*(2), 233-284. <https://www.ncbi.nlm.nih.gov/pubmed/8405969>
- Lewin, K. (1935). *A dynamic theory of personality*. McGraw-Hill.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
- López-Gajardo, M. A., García-Calvo, T., González-Ponce, I., Díaz-García, J., & Leo, F. M. (2022). Cohesion and collective efficacy as antecedents and team performance as an outcome of team resilience in team sports. *International Journal of Sports Science & Coaching*, 1-12.
<https://doi.org/10.1177/17479541221129198>
- Lyle, J. (2002). *Sports coaching concepts: A framework for coaches' behaviour*. Routledge. <https://doi.org/10.4324/9780203994986>
- MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. Taylor & Francis Group.
- MacPherson, A. C., & Howard, P. W. (2011). The team perspective: Promoting excellence in performance teams. In D. Collins, A. Button, & H. Richards (Eds.), *Performance psychology. A practitioner's guide* (pp. 121-137). Elsevier.
- Mallett, C. J. (2010). Becoming a high-performance coach: Pathways and communities. In J. Lyle & C. Cushion (Eds.), *Sports coaching: Professionalisation and practice* (pp. 119-134). Elsevier Health Sciences.
- Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *The Academy of Management review*, *26*(3), 356-376. <https://doi.org/10.5465/AMR.2001.4845785>
- Marks, M. A., & Panzer, F. J. (2004). The influence of team monitoring on team processes and performance. *Human Performance*, *17*(1), 25-41.
https://doi.org/10.1207/S15327043HUP1701_2
- Marks, M. A., Zaccaro, S. J., & Mathieu, J. E. (2000). Performance implications of leader briefings and team-interaction training for team adaptation to novel environments. *Journal of Applied Psychology*, *85*(6), 971-986.
<https://doi.org/10.1037/0021-9010.85.6.971>

- Marsh, H. W., Morin, A. J., Parker, P. D., & Kaur, G. (2014). Exploratory structural equation modeling: An integration of the best features of exploratory and confirmatory factor analysis. *Annual Review of Clinical Psychology, 10*, 85-110. <https://doi.org/10.1146/annurev-clinpsy-032813-153700>
- Martin, R., & Ford, T. E. (2018). *The psychology of humor* (2 ed.). Academic Press. <https://doi.org/10.1016/B978-0-12-372564-6.X5017-5>
- Martin, R., & Kuiper, N. A. (2016). Three decades investigating humor and laughter: An interview with professor Rod Martin. *Europe's journal of psychology, 12*(3), 498-512. <https://doi.org/10.5964/ejop.v12i3.1119>
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the humor styles questionnaire. *Journal of Research in Personality, 37*(1), 48-75. [https://doi.org/10.1016/S0092-6566\(02\)00534-2](https://doi.org/10.1016/S0092-6566(02)00534-2)
- Martineau, W. H. (1972). A model of the social functions of humor. In J. H. Goldstein & P. E. McGhee (Eds.), *The psychology of humor: Theoretical perspectives and empirical issues* (pp. 101-125). Academic Press.
- Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. (2008). Team effectiveness 1997-2007: A review of recent advancements and a glimpse into the future. *Journal of Management, 34*(3), 410-476. <https://doi.org/10.1177/0149206308316061>
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods, 12*, 23-44. <https://doi.org/10.1037/1082-989X.12.1.23>
- McEwan, D., & Beauchamp, M. R. (2014). Teamwork in sport: A theoretical and integrative review. *International Review of Sport and Exercise Psychology, 7*(1), 229-250. <https://doi.org/10.1080/1750984x.2014.932423>
- McIntosh, C. N. (2020). Doing SEM bayesian-style: New opportunities for sport and exercise psychology. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (pp. 1020-1043). Wiley. <https://doi.org/10.1002/9781119568124.ch50>
- McKay, A. K. A., Stellingwerff, T., Smith, E. S., Martin, D. T., Mujika, I., Goosey-Tolfrey, V. L., Sheppard, J., & Burke, L. M. (2022). Defining training and performance caliber: A participant classification framework. *International Journal of Sports Physiology Performance, 17*(2), 317-331. <https://doi.org/10.1123/ijsp.2021-0451>
- McLaren, C. D., & Spink, K. S. (2018a). Examining communication as information exchange as a predictor of task cohesion in sport teams. *International Journal of Sport Communication, 11*(2), 149-162. <https://doi.org/10.1123/ijsc.2018-0004>
- McLaren, C. D., & Spink, K. S. (2018b). Team member communication and perceived cohesion in youth soccer. *Communication and Sport, 6*(1), 111-125. <https://doi.org/10.1177/2167479516679412>
- McLaren, C. D., & Spink, K. S. (2022). Testing boundary conditions in the communication-cohesion relationship in team sport: The case for psychological safety. *Group Dynamics: Theory, Research, and Practice, 26*(1), 12-23. <https://doi.org/10.1037/gdn0000161>
- Mendiburo-Seguel, A., Páez, D., & Martínez-Sánchez, F. (2015). Humor styles and personality: A meta-analysis of the relation between humor styles and the big five personality traits. *Scandinavian Journal of Psychology, 56*(3), 335-340. <https://doi.org/10.1111/sjop.12209>

- Mesmer-Magnus, J., Glew, D. J., & Viswesvaran, C. (2012). A meta-analysis of positive humor in the workplace. *Journal of Managerial Psychology*, *27*(2), 155-190. <https://doi.org/10.1108/02683941211199554>
- Meyer, J. C. (2000). Humor as a double-edged sword: Four functions of humor in communication. *Communication Theory*, *10*(3), 310-331. <https://doi.org/10.1111/j.1468-2885.2000.tb00194.x>
- Michalsik, L. B. (2018). On-court physical demands and physiological aspects in elite team handball. In L. Laver, P. Landreau, R. Seil, & N. Popovic (Eds.), *Handball sports medicine* (pp. 15-33). Springer. https://doi.org/10.1007/978-3-662-55892-8_2
- Miles, A., & Neil, R. (2013). The use of self-talk during elite cricket batting performance. *Psychology of Sport and Exercise*, *14*(6), 874-881. <https://doi.org/10.1016/j.psychsport.2013.07.005>
- Miller, A. J., Slater, M. J., & Turner, M. J. (2020). Coach identity leadership behaviours are positively associated with athlete resource appraisals: The mediating roles of relational and group identification. *Psychology of Sport and Exercise*, *51*, 101755. <https://doi.org/10.1016/j.psychsport.2020.101755>
- Moesch, K., & Apitzsch, E. (2012). How do coaches experience psychological momentum? A qualitative study of female elite handball teams. *The Sport Psychologist*, *26*(3), 435-453. <https://doi.org/10.1123/tsp.26.3.435>
- Moll, T., Jordet, G., & Pepping, G. J. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *Journal of Sports Sciences*, *28*(9), 983-992. <https://doi.org/10.1080/02640414.2010.484068>
- Moon, K., & Blackman, D. (2014). Guide to understanding social science research for natural scientists. *Conservation Biology*, *28*(5), 1167-1177. <https://doi.org/10.1111/cobi.12326>
- Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*, *1*(1), 48-76. <https://doi.org/10.1177/2345678906292462>
- Morin, A. J., Myers, N. D., & Lee, S. (2020). Modern factor analytic techniques: Bifactor models, exploratory structural equation modeling (ESEM), and bifactor-ESEM. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (pp. 1044-1073). Wiley.
- Morin, A. J. S., Maïano, C., White, R. L., Owen, K. B., Tracey, D., Mascaret, N., & Lonsdale, C. (2016). English validation of the short form of the physical self-inventory (PSI-S). *Psychology of Sport and Exercise*, *27*, 180-194. <https://doi.org/10.1016/j.psychsport.2016.08.016>
- Morin, A. J. S., Marsh, H. W., & Nagengast, B. (2013). Exploratory structural equation modeling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: A second course* (2 ed., pp. 395-436). Information Age Publishing.
- Mudrack, P. E. (1989). Defining group cohesiveness: A legacy of confusion? *Small Group Behavior*, *20*, 37-49. <https://doi.org/10.1177/104649648902000103>
- Mullen, B., & Copper, C. (1994). The relation between group cohesiveness and performance: An integration. *Psychological Bulletin*, *115*(2), 210-227. <https://doi.org/10.1037//0033-2909.115.2.210>
- Nash, C., & Collins, D. (2006). Tacit knowledge in expert coaching: Science or art? *Quest (National Association for Kinesiology in Higher Education)*, *58*(4), 465-477. <https://doi.org/10.1080/00336297.2006.10491894>

- Neuliep, J. W. (1996). *Human communication theory: Applications and case studies*. Allyn & Bacon.
- Nicholls, A. R., & Polman, R. C. J. (2007). Coping in sport: A systematic review. *Journal of Sports Sciences*, 25(1), 11-31. <https://doi.org/10.1080/02640410600630654>
- Noble, S., Scheinost, D., & Constable, R. T. (2019). A decade of test-retest reliability of functional connectivity: A systematic review and meta-analysis. *Neuroimage*, 203, 116157. <https://doi.org/10.1016/j.neuroimage.2019.116157>
- Northouse, P. G. (2010). *Leadership: Theory and Practice* (5 ed.). Sage.
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1-13. <https://doi.org/10.1177/1609406917733847>
- Paradis, K., Carron, A., & Martin, L. (2014). Development and validation of an inventory to assess conflict in sport teams: The group conflict questionnaire. *Journal of Sports Sciences*, 32(20), 1966-1978. <https://doi.org/10.1080/02640414.2014.970220>
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3 ed.). Sage.
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4 ed.). Sage
- Peters, K. (2020). Communication. In S. A. Haslam, K. Fransen, & F. Boen (Eds.), *The new psychology of sport & exercise. The social identity approach* (pp. 59-73). Sage.
- Platow, M. J., & van Knippenberg, D. (2001). A social identity analysis of leadership endorsement: The effects of leader ingroup prototypicality and distributive intergroup fairness. *Personality & Social Psychology Bulletin*, 27(11), 1508-1519. <https://doi.org/10.1177/01461672012711011>
- Prapavessis, H., & Carron, A. V. (1997). Sacrifice, cohesion, and conformity to norms in sport teams. *Group Dynamics: Theory, Research, and Practice*, 1(3), 231-240. <https://doi.org/10.1037/1089-2699.1.3.231>
- Price, M. S., & Weiss, M. R. (2013). Relationships among coach leadership, peer leadership, and adolescent athletes' psychosocial and team outcomes: A test of transformational leadership theory. *Journal of Applied Sport Psychology*, 25(2), 265-279. <https://doi.org/10.1080/10413200.2012.725703>
- Ravn, S. (2017). Phenomenological analysis in sport and exercise. In B. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (2 ed., pp. 206-218). Routledge. <https://doi.org/10.4324/9781315762012>
- Rees, T., Alexander Haslam, S., Coffee, P., & Lavalley, D. (2015). A social identity approach to sport psychology: Principles, practice, and prospects. *Sports Medicine*, 45(8), 1083-1096. <https://doi.org/10.1007/s40279-015-0345-4>
- Reimer, T., Park, E. S., & Hinsz, V. B. (2006). Shared and coordinated cognition in competitive and dynamic task environments: An information-processing perspective for team sports. *International Journal of Sport and Exercise Psychology*, 4(4), 376-400. <https://doi.org/10.1080/1612197x.2006.9671804>
- Ribeiro, J., Silva, P., Duarte, R., Davids, K., & Garganta, J. (2017). Team sports performance analysed through the lens of social network theory: Implications for research and practice. *Sports Medicine*, 47(9), 1689-1696. <https://doi.org/10.1007/s40279-017-0695-1>
- Richards, P., Collins, D., & Mascarenhas, D. R. D. (2017). Developing team decision-making: A holistic framework integrating both on-field and off-field

- pedagogical coaching processes. *Sports Coaching Review*, 6(1), 57-75.
<https://doi.org/10.1080/21640629.2016.1200819>
- Robert, C., & Wilbanks, J. E. (2012). The wheel model of humor: Humor events and affect in organizations. *Human Relations*, 65(9), 1071-1099.
<https://doi.org/10.1177/0018726711433133>
- Robson, C., & McCartan, K. (2016). *Real world research: A resource for users of social research methods in applied settings* (4 ed.). Wiley.
- Romero, E., & Pescosolido, A. (2008). Humor and group effectiveness. *Human Relations*, 61(3), 395-418. <https://doi.org/10.1177/0018726708088999>
- Romero, E. J., & Cruthirds, K. W. (2006). The use of humor in the workplace. *Academy of Management Perspectives*, 20(2), 58-69.
<https://doi.org/10.5465/Amp.2006.20591005>
- Ronglan, L. T. (2000). *En sosiologisk studie av det norske kvinnelandslaget i håndball på og utenfor banen [During the season: A sociological analysis of the female Norwegian national handball team on and off the court]*. Norwegian School of Sport Sciences, Oslo.
- Ronglan, L. T. (2007). Building and communicating collective efficacy: A season-long in-depth study of an elite sport team. *The Sport Psychologist*, 21(1), 78-93.
<https://doi.org/10.1123/tsp.21.1.78>
- Ronglan, L. T., & Aggerholm, K. (2013). Humour and sports coaching: A laughing matter? In P. Potrac, W. Gilbert, & J. Denison (Eds.), *Routledge handbook of sports coaching* (pp. 222-234). Routledge.
- Ronglan, L. T., & Aggerholm, K. (2014). 'Humour helps': Elite sports coaching as a balancing act. *Sports Coaching Review*, 3(1), 33-45.
<https://doi.org/https://doi.org/10.1080/21640629.2014.885776>
- Rorty, R. (1980). *Philosophy and the mirror of nature*. Princeton University Press.
- Rorty, R. (1989). The contingency of language. In R. Rorty (Ed.), *Contingency, irony, and solidarity* (pp. 3-22). Cambridge University Press.
- Rose, J., & Johnson, C. W. (2020). Contextualizing reliability and validity in qualitative research: Toward more rigorous and trustworthy qualitative social science in leisure research. *Journal of Leisure Research*, 51(4), 432-451.
<https://doi.org/10.1080/00222216.2020.1722042>
- Rousseau, V., Aubé, C., & Savoie, A. (2006). Teamwork behaviors: A review and an integration of frameworks. *Small Group Research*, 37(5), 540-570.
<https://doi.org/10.1177/1046496406293125>
- Sagar, S. S., Busch, B. K., & Jowett, S. (2010). Success and failure, fear of failure, and coping responses of adolescent academy football players. *Journal of Applied Sport Psychology*, 22(2), 213-230. <https://doi.org/10.1080/10413201003664962>
- Sagar, S. S., Lavallee, D., & Spray, C. M. (2007). Why young elite athletes fear failure: Consequences of failure. *Journal of Sports Sciences*, 25(11), 1171-1184.
<https://doi.org/10.1080/02640410601040093>
- Salas, E., Cooke, N. J., & Rosen, M. A. (2008). On teams, teamwork, and team performance: discoveries and developments. *Human Factors*, 50(3), 540-547.
<https://doi.org/10.1518/001872008X288457>
- Salas, E., Sims, D. E., & Burke, C. S. (2005). Is there a "big five" in teamwork? *Small Group Research*, 36(5), 555-599. <https://doi.org/10.1177/1046496405277134>
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8 ed.). Pearson.
- Schei, G. S., & Giske, R. (2020). Shared situational awareness in a professional soccer team: An explorative analysis of post-performance interviews. *International*

- Journal of Environmental Research and Public Health*, 17(24).
<https://doi.org/10.3390/ijerph17249203>
- Schei, G. S., Haugen, T., Jones, G., Saether, S. A., & Hoigaard, R. (2022). A qualitative exploration of collective collapse in a norwegian qualifying premier league soccer match: The successful team's perspective. *Frontiers in Psychology*, 12, 777597. <https://doi.org/10.3389/fpsyg.2021.777597>
- Severt, J. B., & Estrada, A. X. (2015). On the function and structure of group cohesion. In E. Salas, W. B. Vessey, & A. X. Estrada (Eds.), *Team cohesion: Advances in psychological theory, methods and practice* (Vol. 17, pp. 3-24). Emerald Group Publishing Limited. <https://doi.org/10.1108/S1534-085620150000017002>
- Shannon-Baker, P. (2016). Making paradigms meaningful in mixed methods research. *Journal of Mixed Methods Research*, 10(4), 319-334.
<https://doi.org/10.1177/1558689815575861>
- Slater, M. J., & Barker, J. B. (2019). Doing social identity leadership: Exploring the efficacy of an identity leadership intervention on perceived leadership and mobilization in elite disability soccer. *Journal of Applied Sport Psychology*, 31(1), 65-86. <https://doi.org/10.1080/10413200.2017.1410255>
- Slater, M. J., Coffee, P., Barker, J. B., & Evans, A. L. (2014). Promoting shared meanings in group memberships: A social identity approach to leadership in sport. *Reflective Practice*, 15(5), 672-685.
<https://doi.org/10.1080/14623943.2014.944126>
- Slater, M. J., Thomas, W., & Evans, A. L. (2020). Teamwork and group performance. In S. A. Haslam, K. Fransen, & F. Boen (Eds.), *The new psychology of sport & exercise: The social identity approach* (pp. 75-94). Sage.
- Smith, B., & McGannon, K. R. (2018). Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology*, 11(1), 101-121.
<https://doi.org/10.1080/1750984X.2017.1317357>
- Smith, B., & Sparkes, A. C. (2016). Interviews: Qualitative interviewing in the sport and exercise sciences. In B. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 103-138). Routledge.
- Smith, B., & Sparkes, A. C. (2020). Qualitative research. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (pp. 1001-1019). Wiley.
<https://doi.org/10.1002/9781119568124.ch49>
- Smith, M. J., Arthur, C. A., Hardy, J., Callow, N., & Williams, D. (2013). Transformational leadership and task cohesion in sport: The mediating role of intrateam communication. *Psychology of Sport and Exercise*, 14(2), 249-257.
<https://doi.org/10.1016/j.psychsport.2012.10.002>
- Steffens, N. K., Fransen, K., & Haslam, S. A. (2020). Leadership. In S. A. Haslam, K. Fransen, & F. Boen (Eds.), *The new psychology of sport & exercise. The social identity approach* (pp. 41-58). Sage.
- Steffens, N. K., Haslam, S. A., Reicher, S. D., Platow, M. J., Fransen, K., Yang, J., Ryan, M. K., Jetten, J., Peters, K., & Boen, F. (2014). Leadership as social identity management: Introducing the identity leadership inventory (ILI) to assess and validate a four-dimensional model. *Leadership Quarterly*, 25(5), 1001-1024. <https://doi.org/10.1016/j.leaqua.2014.05.002>
- Sterrett, J. D., & Janssen, J. (2015). Leadership in sports: The critical importance of coach and athlete leadership. In J. M. Williams & V. Krane (Eds.), *Applied sport psychology: Personal growth to peak performance* (7 ed., pp. 101-123). McGraw-Hill Education.

- Stevens, M., Rees, T., & Cruwys, T. (2021). Social identity leadership in sport and exercise: Current status and future directions. *Psychology of Sport and Exercise*, 55, 101931. <https://doi.org/10.1016/j.psychsport.2021.101931>
- Stevens, M., Rees, T., Steffens, N. K., Haslam, S. A., Coffee, P., & Polman, R. (2019). Leaders' creation of shared identity impacts group members' effort and performance: Evidence from an exercise task. *PLOS ONE*, 14(7), e0218984. <https://doi.org/10.1371/journal.pone.0218984>
- Sullivan, P. (2013). Humor styles as a predictor of satisfaction within sport teams. *Humor-International Journal of Humor Research*, 26(2), 343-349. <https://doi.org/10.1515/humor-2013-0023>
- Sullivan, P., & Feltz, D. L. (2003). The preliminary development of the scale for effective communication in team sports (SECTS). *Journal of Applied Social Psychology*, 33(8), 1693-1715. <https://doi.org/10.1111/j.1559-1816.2003.tb01970.x>
- Sullivan, P., Jowett, S., & Rhind, D. (2014). Communication in sport teams. In A. G. Papaioannou & D. Hackfort (Eds.), *Routledge companion to sport and exercise psychology: Global perspectives and fundamental concepts* (pp. 559-570). Routledge.
- Sullivan, P. J., & Short, S. (2011). Further operationalization of intra-team communication in sports: An updated version of the scale of effective communication in team sports (SECTS-2). *Journal of Applied Social Psychology*, 41(2), 471-487. <https://doi.org/10.1111/j.1559-1816.2010.00722.x>
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations* (2 ed., pp. 7-24). Nelson-Hall.
- Tajfel, H., Turner, J. C., Austin, W. G., & Worchel, S. (1979). An integrative theory of intergroup conflict. In M. J. Hatch & M. Schultz (Eds.), *Organizational identity: A reader* (Vol. 56, pp. 56-65). Oxford.
- Tamminen, K. A., Palmateer, T. M., Denton, M., Sabiston, C., Crocker, P. R. E., Eys, M., & Smith, B. (2016). Exploring emotions as social phenomena among canadian varsity athletes. *Psychology of Sport and Exercise*, 27, 28-38. <https://doi.org/10.1016/j.psychsport.2016.07.010>
- Taylor, J., & Demick, A. (1994). A multidimensional model of momentum in sports. *Journal of Applied Sport Psychology*, 6(1), 51-70.
- Thomas, E., & Magilvy, J. K. (2011). Qualitative rigor or research validity in qualitative research. *Journal for Specialists in Pediatric Nursing*, 16(2), 151-155. <https://doi.org/10.1111/j.1744-6155.2011.00283.x>
- Totterdell, P. (2000). Catching moods and hitting runs: Mood linkage and subjective performance in professional sport teams. *Journal of Applied Psychology*, 85(6), 848-859. <https://doi.org/10.1037/0021-9010.85.6.848>
- Totterdell, P., Kellett, S., Teuchmann, K., & Briner, R. B. (1998). Evidence of mood linkage in work groups. *Journal of Personality and Social Psychology*, 74(6), 1504-1515. <https://doi.org/10.1037/0022-3514.74.6.1504>
- Turman, P. D. (2003). Coaches and cohesion: The impact of coaching techniques on team cohesion in the small group sport setting. *Journal of Sport Behavior*, 26(1), 86-104.
- Turner, J. C. (1987). *Rediscovering the social group: A self-categorization theory*. Basil Blackwell.
- Turner, J. C. (1991). *Social influence*. Open University Press.

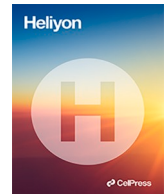
- Turner, J. C., & Haslam, S. A. (2001). Social identity, organizations and leadership. In M. E. Turner (Ed.), *Groups at work: Advances in theory and research* (pp. 25-65). Erlbaum.
- Turner, J. C., & Reynolds, K. J. (2001). The social identity perspective in intergroup relations: Theories, themes, and controversies. In R. Brown & S. Gaerner (Eds.), *Blackwell handbook of social psychology: Intergroup processes* (Vol. 4, pp. 133-152). Blackwell Publishing.
- van Dick, R., Lemoine, J. E., Steffens, N. K., Kerschreiter, R., Akfarit, S. A., Avanzi, L., Dumont, K., Epitropaki, O., Giessner, S., & et al. (2018). Identity leadership going global: Validation of the identity leadership inventory (ILI) across 20 countries. *Journal of Occupational and Organizational Psychology*, *91*(4), 697-728. <https://doi.org/10.1111/joop.12223>
- Van Puyenbroeck, S., Stouten, J., Hofmans, J., Van Meervelt, K., & Vande Broek, G. (2020). Characterizing positive and negative ‘voicers’ in elite sport teams: The role of the five factor model and narcissism in players’ frequency and passing on of voice. *Psychology of Sport and Exercise*, *48*, 101648. <https://doi.org/10.1016/j.psychsport.2020.101648>
- van Vianen, A. E. M., & De Dreu, C. K. W. (2001). Personality in teams: Its relationship to social cohesion, task cohesion, and team performance. *European Journal of Work and Organizational Psychology*, *10*(2), 97-120. <https://doi.org/10.1080/13594320143000573>
- Vella, S. A., Oades, L. G., & Crowe, T. P. (2013). A pilot test of transformational leadership training for sports coaches: Impact on the developmental experiences of adolescent athletes. *International Journal of Sports Science & Coaching*, *8*(3), 513-530. <https://doi.org/10.1260/1747-9541.8.3.513>
- Wagstaff, C., Fletcher, D., & Hanton, S. (2012). Positive organizational psychology in sport: An ethnography of organizational functioning in a national sport organization. *Journal of Applied Sport Psychology*, *24*(1), 26-47. <https://doi.org/10.1080/10413200.2011.589423>
- Watson, J. C., Etzel, E. F., & Vosloo, J. (2012). Ethics: Assessment and measurement in sport and exercise psychology. In G. Tenenbaum, R. C. Eklund, & A. Kamata (Eds.), *Measurement in sport and exercise psychology* (pp. 169-176). Human Kinetics.
- Watzlawick, P., & Beavin, J. (1967). Some Formal Aspects of Communication. *The American Behavioral Scientist* *10*(8), 4-8. <https://doi.org/10.1177/0002764201000802>
- Watzlawick, P., Beavin, J. H., & Jackson, D. D. (1967). *Pragmatics of human communication: A study of interactional patterns, pathologies, and paradoxes*. W. W. Norton & Company.
- Weick, K. E. (1995). *Sensemaking in organizations*. Sage Publications.
- Weinberg, R. S., & Gould, D. (2019). *Foundations of sport and exercise psychology* (7 ed.). Human Kinetics.
- Wergin, V. V., Mallett, C. J., Mesagno, C., Zimanyi, Z., & Beckmann, J. (2019). When you watch your team fall apart - coaches' and sport psychologists' perceptions on causes of collective sport team collapse. *Frontiers in Psychology*, *10*. <https://doi.org/10.3389/fpsyg.2019.01331>
- Wergin, V. V., Zimanyi, Z., Mesagno, C., & Beckmann, J. (2018). When suddenly nothing works anymore within a team - causes of collective sport team collapse [Original Research]. *Frontiers in Psychology*, *9*, 1-14. <https://doi.org/10.3389/fpsyg.2018.02115>

- Worley, J. T., Harenberg, S., & Vosloo, J. (2020). The relationship between peer servant leadership, social identity, and team cohesion in intercollegiate athletics. *Psychology of Sport and Exercise, 49*, 1-9. <https://doi.org/10.1016/j.psychsport.2020.101712>
- Worthington, R. L., & Whittaker, T. A. (2006). Scale development research - a content analysis and recommendations for best practices. *Counseling Psychologist, 34*(6), 806-838. <https://doi.org/10.1177/0011000006288127>
- Yin, R. K. (2014). *Case study research: Design and methods* (5 ed.). Sage.
- Yukelson, D. P. (2015). Communicating effectively. In J. M. Williams & V. Krane (Eds.), *Applied sport psychology: Personal growth to peak performance* (7 ed., pp. 140-156). McGraw-Hill.

Papers I-III

Paper I

Identity leadership and cohesion in elite sport: The mediating
role of intra-team communication



Identity leadership and cohesion in elite sport: The mediating role of intra-team communication

Gaute S. Schei^{a,*}, Rune Høigaard^a, Martin K. Erikstad^a, Andreas Ivarsson^{a,b}, Tommy Haugen^a

^a Department of Sports Science and Physical Education, University of Agder, Kristiansand, Norway

^b School of Health and Welfare, Halmstad University, Sweden

ARTICLE INFO

Keywords:

Leadership
Social identity
Performance
Communication
Mediation

ABSTRACT

One perspective on leadership that has recently gained increased attention in sport is identity leadership; however, research on elite sport teams is still in its infancy. Thus, the main purpose of this research is to investigate identity leadership in elite team sports in relation to task cohesion, and subsequently to explore the mediating role of the intra-team communication dimensions of acceptance and distinctiveness. A cross-sectional design was employed and 441 elite athletes from division 1 and division 2 in handball and ice hockey participated in the present study. Structural equation modeling was used to assess relationships between identity leadership and task cohesion, and the mediating role of acceptance and distinctiveness. Results revealed that identity leadership positively predicted task cohesion, and that this relationship was mediated by intra-team communication acceptance. In conclusion, findings in the present study expand our understanding of performance-related benefits of identity leadership in elite sport.

1. Introduction

Research into elite team sports has highlighted the benefits of adaptive group dynamics, including effective communication, collective efficacy, and cohesiveness [1–3]. According to the latter, cohesion is one of the most investigated group dynamic constructs and in sport it has commonly been defined as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of members affective needs” [4, p.213]. Cohesion has been associated with a variety of positive group and individual outcomes, including reduced social loafing [5], needs satisfaction [6], and athlete satisfaction [7]. Of particular relevance for elite sports contexts, cohesion has also been linked to increased performance [8,9]. While both task and social cohesion are seen as highly important for sports teams, studies have found that coach leadership behaviors are more strongly associated with task cohesion than with social cohesion [10,11]. Notably, task cohesion can be considered particularly relevant for elite sports groups, given their focus on performance-related objectives [12] and the positive relationship between task cohesion and collective efficacy in professional team sports [1,13].

While the coach is generally highlighted as highly influential in facilitating group dynamics in sports [14], Miller et al. [15] have noted that this is particularly relevant within competitive sport, where the coach is the leader who represents the group and inspires athletes to unite and mobilize their efforts. While the term leadership generally describes the process whereby an individual influences

* Corresponding author.

E-mail address: gaute.s.schei@uia.no (G.S. Schei).

a group of individuals to achieve a common goal [16], coaches' leadership in competitive sport groups has been investigated through different leadership theories, such as transformational leadership [17] and servant leadership [18]. Recently, there has been increased interest in social identity leadership in sport, and how identity leadership may create successful sports groups [19]. Despite some conceptual overlap between different leadership theories, findings from research focusing on other types of leadership may not be transferrable to identity leadership. Given the theoretical reasoning that identity leadership enhance the power of the collective through a shared identity among team members, it differs from other leadership theories that often emphasizes on the attributes of leaders as individuals [20]. More specifically, as identity leadership stimulates followers to embrace a shared social identity, transformational leadership emphasizes on leaders' ability to inspire followers to reach their potential as individuals [21].

Social identity leadership is grounded in a social identity approach [22] which recognizes individuals' personal identity and the various social identities they share with others (e.g., team members). According to the theory, experiencing a shared social identity will create a sense of belonging to the group, and will influence athletes' perceptions and behaviors. The social identity approach to leadership proposes that the following four principles lay the foundation for identity leadership: a) identity prototypicality (the leader represents the identity that defines the group they lead), b) identity advancement (the leader promotes the group's interests – "doing it for us"), c) identity entrepreneurship (creating a sense of belonging), and d) identity impresarioship (the leader develops and executes events, activities, and structures that foster the group's sense of shared social identity) [23,24]. Thus, the theory proposes that successful leadership is a process of social influence, where a coach's engagement in the four principles will strengthen group members' social identification with the team. In accordance with the theoretical predictions, there is evidence that perceptions of identity leadership by the coach are positively associated with team identification [25]. Furthermore, studies have found positive associations between social identity and adaptive outcomes, such as collective efficacy [26], commitment [27] and cohesion [28].

A growing body of research on identity leadership in sport contexts has been conducted over the past decade. For instance, in an early study on identity leadership, Slater et al. [29] performed a thematic analysis of media data focusing on six leaders from the 2012 Olympic Games. They found that the more successful leaders communicated in accordance with the principles of identity leadership, for instance, by promoting a collective language. Furthermore, Miller et al. [15] conducted two studies with amateur and professional athletes. In their first (cross-sectional) study, positive relationships between identity leadership and self-efficacy, control, approach goals, and social support were identified. They also found that these relationships were mediated by relational and group identification. In their second study, perceptions of identity leadership at the beginning of the season were related to athletes' self-efficacy at the end of the season, mediated by relational identification. Similarly, Brunauer et al. [30] examined relations between identity leadership and social identification over the course of a season using social network analysis with sports teams, finding a mutually reinforcing bidirectional link between identity leadership and social identification. In addition, Herbison et al. [21] highlighted that coaches engage in identity behaviors in a variety of social environments before, during and after competition. Their findings indicate that youth coaches use specific behaviors to influence the social environment of their team, in line with dimensions of identity leadership. However, it should be noted that results also suggest that coaches used principles of identity leadership in ways that can undermine positive athlete experiences in youth sport.

Although research on the link between identity leadership and cohesion is still in an initial phase, there is a substantial theoretical link between identity leadership and cohesion. For instance, according to the definition provided by Steffens et al. [31, p.1004], leaders' identity entrepreneurship will make athletes "feel that they are part of the same group and increasing cohesion and inclusiveness within the group". Furthermore, Worley et al. [28] found that social identity mediated the relationship between peer servant leadership and cohesion. More specifically regarding the relationship between identity leadership and task cohesion, Steffens et al. [31; Study 4] in a study among sporting teams in Belgium found task cohesion to be predicted by both identity impresarioship and identity entrepreneurship, while identity prototypicality and identity advancement did not predict task cohesion.

To advance the understanding of identity leadership in sport and exercise, Stevens et al. [19] pointed out in their review that more research from the elite sports population is warranted, as studies on identity leadership have been restricted to observational and anecdotal evidence [29]. Furthermore, Stevens et al. [19, p.8] noted that "it is important to test and establish the mechanisms through which identity leadership affects key outcomes", thus highlighting the need to investigate potential mediators. Moreover, Carron and Spink [32] highlighted in their model for cohesion in sports teams that leadership factors (e.g., identity leadership) influence team cohesion through adaptive group processes. Communication within the team is highlighted as one such group process that is influenced by leadership factors, that in turn will influence cohesion [33]. In support of this model, intra-team communication was found to mediate the relationship between transformational leadership and task cohesion [34]. These findings are also in line with those of Hardy et al. [35], who offered support for a mediating role of intra-team communication on the leadership–task cohesion relationship among athlete leaders in sports teams. To aid in the systematic process of studying communication, Sullivan and Feltz [36] present different aspects of effective communication in team sports. Of particular interest in the current study is the dimensions of acceptance (e.g., messages that support team members) and distinctiveness (e.g., messages that promote a shared and inclusive identity). It is reasonable to believe that in an elite team sport context, acceptance communication contributes to enhanced perceptions of task aspects of cohesion [3] and higher levels of trust [37]. Moreover, it is reasonable to assume that distinctiveness communication increase togetherness through valuable interactions among team members that promote the ingroup [38]. Taken together, acceptance and distinctiveness intrateam communication may strengthen the team as a collective performance unit and increase task cohesion, and subsequently contribute to team performance [39].

Thus, the purpose of the present study was to investigate the relationship between identity leadership and task cohesion in elite team sport, and to further study the potential mediating role of intra-team communication. While the relationship between identity

leadership and cohesion is theoretically well founded [31], to our knowledge, the relationship has not been investigated empirically among elite team athletes. In line with studies finding positive relationships between leadership behaviors focusing on unifying the group (i.e., transformational leadership) and cohesion [17,34], we expected a positive relationship between identity leadership and task cohesion. Furthermore, we hypothesized that identity leadership influences the communication within the team; previous studies have found intra-team communication is related to cohesion [38,40]. Additionally, intra-team communication has been found to serve as a mediator between leadership styles and task cohesion [34]. Thus, we expected intra-team communication to mediate the relationship between identity leadership and task cohesion.

2. Materials and methods

Ethical approval for the current study was given by the Norwegian Social Sciences Data Service and the Faculty Ethical Board at the first author's university. The sample in this study has been used in one other article [41], but that article referred to a different research question.

2.1. Participants

A total of 441 elite athletes from handball ($n = 295$) and ice hockey ($n = 146$) in Norway participated in the study. Mean age of the participants was 21.99 years with a standard deviation of 4.29 and range of 16–39 years. A total of 28 teams participated: 19 handball teams (153 males, 142 females) and nine ice hockey teams (108 males, 38 females). Overall, 14 teams (218 players) played in the highest senior division, and 14 teams (226 players) played in the second highest division. The number of players per team ranged from 8 to 25, with a mean of 15.8 ($SD = 3.65$) players. Participants came from 15 different nationalities, with a predominance of Norwegian participants (88.7%). Teams from the study sample were from seven different counties in Norway. Participants reported playing on their current team for a mean of 2.86 years ($SD = 2.43$), and 68 participants had represented their senior national team during the last three years.

2.2. Procedure

Clubs from the two highest senior levels in handball and ice hockey in Norway were contacted, either through their head coach or their sports director, about participating in the current study. Thirty-one clubs were asked, and 28 clubs agreed to participate. Data from these 28 teams was collected between November 2019 and March 2020. Three researchers gathered data individually via a hard copy questionnaire. Information about the study was given to the team verbally and in writing, prior to or after a training session, and it was made clear that participation was voluntary. Anonymity and confidentiality were guaranteed to the participants, and they were also informed that they could withdraw from the study at any point. Participants used about 10–15 min to complete the questionnaire. Questionnaires completed by each player were gathered and placed in an envelope. Procedures were in line with the ethical standards of the first author's university and the Norwegian Social Sciences Data Service.

2.3. Measures

Identity leadership was measured using the Norwegian version [42] of the four-dimensional Identity Leadership Inventory (ILI) [31] comprising 15 items in total. Identity prototypicality was measured with four items (e.g., "My head coach is a model member of the team"), identity advancement with four items (e.g., "My head coach acts as a champion for the team"), identity entrepreneurship with four items (e.g., "My head coach creates a sense of cohesion within the team") and identity impresarioship with three items (e.g., "My head coach creates structures that are useful for team members"). Two modifications were made to the ILI to make it more sports specific: "Leader" was substituted with "Head coach", and "group" was substituted with "team". Participants responded to items on a seven-point Likert scale (1 = *totally disagree*, 7 = *totally agree*). Higher scores reflected perceptions of stronger identity leadership. Identity leadership was estimated as a global second-order construct, with the four subdimensions at first-order level. This model has been shown to yield acceptable model-fit [31; model b, study 3].

Intra-team communication was measured using two subscales from the Scale of Effective Communication in Team Sports (SECTS-2) [38]: the dimension of acceptance (four items) and the dimension of distinctiveness (three items). For the purposes of this study, items were forward/backward translated to Norwegian according to recommendations by Kvamme et al. [43]. Items were rated on a seven-point Likert scale (1 = *Hardly ever*, 7 = *Almost always*). Higher scores reflected a greater amount of perceived intra-team communication.

Task cohesion was assessed using the Norwegian version of the Group Environmental Questionnaire [44]. The GEQ contains 18 items measuring task and social cohesion, but for the purposes of this study, only the task cohesion dimension was considered. It captures the beliefs the group and each member have regarding their team membership from a task perception and contains nine items. One item ("I am happy with the amount of playing time I get") was deemed not relevant to the elite context in the current study [44,45] and was therefore removed without further analysis. Items were scaled with a nine-point Likert Scale (1 = *Never*, 9 = *Always*). Higher scores suggest greater perceived team task cohesiveness.

2.4. Statistical analyses

Within the framework of structural equation modeling (SEM), we tested the hypothesized model with the constructs of interest (identity leadership, intra-team communication, and task cohesion) as latent variables. The models were estimated with the full information maximum likelihood estimator (ML) using *Mplus* v8.6 [46]. Item-level missing data were accounted for by the ML [47]. The chi-square test of exact fit is normally considered sensitive to sample size and minor model misspecifications [48]. Thus, model fit was evaluated with several goodness-of-fit indices and criteria: the Tucker Lewis index (TLI) > 0.90, comparative fit index (CFI) > 0.90, root mean square error of approximation (RMSEA) < 0.08 and the standardized root mean square residual (SRMR) < 0.08 [49]. To account for the nested data structure (clusters of teams), we adjusted the standard errors and goodness-of-fit model testing using Muthen and Satorra's [50] aggregated analysis (i.e., TYPE = COMPLEX in *Mplus*).

The path analysis included one exogenous factor (second-order identity leadership with four first-order factors), two parallel mediators (acceptance and distinctiveness), and one endogenous factor (task cohesion). All direct, indirect, and total effects in the model were estimated with a bootstrapping procedure [51]. A bias-corrected bootstrapped 95% confidence interval that does not include zero is considered statistically significant.

Prior to estimating the structural model, the psychometric properties of the instruments were tested through separate measurement models. The measurement models were tested with the independent clusters model confirmatory factor analysis (ICM-CFA) approach given sufficient a priori measurement theory for these constructs. Each latent variable was measured with its respective observed indicators. Composite reliability was estimated with McDonald's [52] $\omega = (\sum |\lambda_i|)^2 / (\sum |\lambda_i|^2 + \sum \delta_{ii})$ using standardized parameter estimates from the ICM-CFA models where λ_i are the factor loadings and δ_{ii} are the error variances. McDonald's omega coefficient can be interpreted in a similar manner to the coefficient alpha, but it is a more flexible alternative for reliability estimation and does not rely on the tau-equivalence assumption [53].

2.5. Preliminary analyses

The result from the preliminary analyses indicated that the second-order identity leadership model yielded close-to acceptable fit indices ($S-B \chi^2 = 444.882$ [df = 86, N = 436], $p < .001$; CFI = 0.94; TLI = 0.93; RMSEA = .098 [0.089–0.107], and SRMR = 0.050). Similarly, the two dimensions of acceptance and distinctiveness from SECTS-2 also yielded close-to-acceptable model-fit ($S-B \chi^2 = 504.633$ [df = 87, N = 436], $p < .001$; CFI = 0.93; TLI = 0.92; RMSEA = 0.105 [0.096–0.114], and SRMR = 0.052). Although the RMSEA values were marginally higher than a traditional threshold of 0.08, we decided to proceed with the models considering the controversy connected with post hoc modification of estimated models [54,55].¹

The one-dimensional ICM-CFA of the task items from GEQ resulted in an acceptable model fit ($S-B \chi^2 = 71.771$ [df = 20, N = 438], $p < .001$; CFI = 0.98; TLI = 0.97; RMSEA = .077 [0.058–0.096], and SRMR = 0.036).

3. Results

Inspection of skewness and kurtosis revealed that all the items generally fell within the cut-off values of ± 2 [56]. All the items loaded as statistically significant on their respective latent constructs. Latent factor correlations are presented in Table 1. As can be seen, identity leadership had a strong positive statistically significant correlation to task cohesion. As shown in the Methods section, ω was estimated as an indicator of composite reliability, and based on .70 as cut-off [56], the ω values were acceptable for all the latent factors (range 0.70–0.93).

Table 1
Latent factors correlations matrix.

	2. Adv	3. Entr	4. Impr	5. Idl	6. Acc	7. Dist	8. Task
1. Prot	.904**	.817**	.690**	.925**	.515**	.119	.652**
2. Adv	–	.862**	.729**	.977**	.544**	.125	.689**
3. Entr		–	.659**	.883**	.492**	.113	.622**
4. Impr			–	.746**	.415**	.096*	.526**
5. Idl				–	.557**	.128	.705**
6. Acc					–	.312**	.808**
7. Dist						–	.173*

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

¹ Similar to Steffens et al. [31], a one-factor first-order model of identity leadership yielded nonacceptable model fit ($S-B \chi^2 = 1113.363$ [df = 90, N = 436], $p < .001$; CFI = 0.83; TLI = 0.80; RMSEA = 0.161 [0.153–0.170], and SRMR = 0.069).

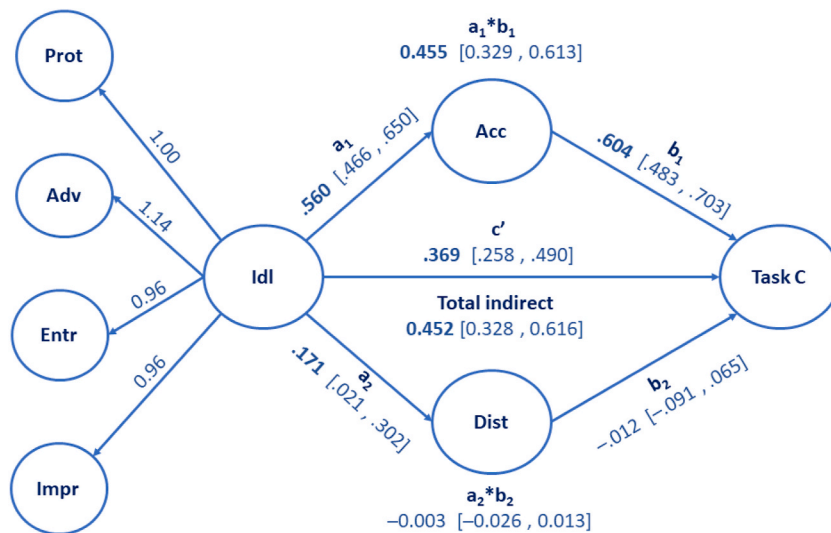


Fig. 1. Visual presentation of results from the structural model, testing indirect effects of acceptance and distinctiveness in the relationship between identity leadership and task cohesion. Note. Paths are presented with standardized point estimates and 95% CI. Indirect estimations are presented as unstandardized bootstrapped estimates (with bias-corrected 95% CI). CI not including zero indicates statistically significant paths. Statistically significant point estimated in bold. $N_{\text{replications}} = 10,000$.

3.1. Testing the indirect effect

The structural model, where we controlled for cluster effects, yielded an acceptable model fit ($S-B \chi^2 = 1001.232$ [$df = 396$, $N = 441$], $p < .001$; CFI = 0.93; TLI = 0.93; RMSEA = 0.059 [0.054–0.063, and SRMR = 0.051]). The bootstrapped estimates (with 95% bias-corrected CI) are shown in Fig. 1. As can be seen, there was a statistically significant positive relationship between identity leadership and task cohesion (c-path). Moreover, the proposed mediator acceptance significantly predicted task cohesion (b_1 -path), whereas the mediator distinctiveness did not (b_2 -path). Furthermore, identity leadership significantly and positively predicted the mediator acceptance (a_1 -path) and had a weak significant positive effect on distinctiveness (a_2 -path). Overall, there was a statistically significant indirect effect of identity leadership on task cohesion through acceptance (a_1*b_1 -path).

4. Discussion

The purpose of this study was firstly to examine the relationship between identity leadership and task cohesion among elite team athletes, and secondly to explore whether intra-team communication (i.e., acceptance and distinctiveness) mediated this relationship. Using a sample of elite athletes from the two highest divisions in handball and ice hockey in Norway, the study aimed to address limitations within the existing literature on identity leadership in sport, including the lack of studies on elite athletes and the need to test potential mediators between identity leadership and key outcomes [19]. The results support the hypothesis of a positive relationship between identity leadership and task cohesion. Furthermore, the intra-team communication dimension acceptance was a significant mediator between identity leadership and task cohesion, whereas distinctiveness was not. As such, the results from the mediation analyses were partly in line with our a priori prediction.

The positive relationship between identity leadership and task cohesion lends support to the findings of Steffens et al. [31] who found positive associations between task cohesion and two of the four subdimensions of identity leadership (i.e., identity impresarioship and identity entrepreneurship). Previous studies have also demonstrated a link between social identity and cohesion [28] and between leadership styles aligning with the principles of social identity leadership and task cohesion (e.g., transformational leadership [10]). Perhaps more importantly, the positive relationship between identity leadership and task cohesion was expected, given the theoretical connections between identity leadership and task cohesion [31]. Indeed, the social identity approach to leadership is centered around leaders' capabilities to foster a shared social identity for group members [23,31], whereas task cohesion refers to a group's shared commitment to achieve common goals/objectives [4]. Identity leadership behaviors by coaches for elite sports groups can include engaging in activities beyond what is expected to increase the likelihood of reaching set goals and focusing on "we" and "us" rather than "I" and "me" [29]. By acting in accordance with identity leadership principles, coaches are likely to be perceived as acting for the group rather than for themselves, with a likely consequence of increased cohesiveness [26].

The present study identified a positive relationship between identity leadership and the mediating variable of intra-team communication acceptance. This relationship may be understood through shared identity in the team. Previous research has found a positive relationship between identity leadership and a shared sense of identity among followers [30,57]. Furthermore, shared identity has a distinct implication for the individual's cognition, emotion, and behavior [58,59]. For example, when people are identified with their group, they will be more willing to act cooperatively within the group and to invest their time and energy in

working to see the group succeed. In the process of developing a shared identity, the leader's identity behavior is a key driver and provides a platform for psychological connection, communication, and sense of belonging [60]. This in turn may increase team members' willingness to share personal experiences, beliefs, values, attitudes, and personal motives. However, mutual sharing requires open and trustful communication (e.g., acceptance), which may explain the positive relationship between social identity leadership behavior and intra-team communication acceptance.

The positive relationship identified between the mediator acceptance and task cohesion in elite teams may also be understood in light of previous research and theory. According to the theory of cohesion, similarity in attitudes, beliefs, and motives may be considered as an antecedent to cohesion [8,61]. In elite sport, where the focus is primarily task and performance related [62,63], it is reasonable to believe that a relatively large part of the intra-team communication is related to task objectives including ambitions, goals, teamwork, and coordination. In this way, social identity in an elite context may promote shared agreement about goals, teamwork, and norms for contribution and effort, in addition to optimizing and strengthening them, and therefore may explain the relationship between intra-team communication acceptance and task cohesion.

Our results identified a significant positive relationship between identity leadership and intra-team communication distinctiveness. This result is in line with the theoretical reasoning that social identity creates contours and boundaries of communication [23] and draws parallel to the study by Smith et al. [34] who found leadership behaviors to be related to intra-team communication. For example, when leaders promote social identity to a group, and the group becomes a relatively stable part of each team member's self-definition, the team more easily develops a shared and distinctive form of team communication [29,64]. Moreover, distinctiveness may be affected by the time team members play together on their current team and how long they work under the same coach [65]. Still, according to Bakar and Sheer [66], communication in teams can be divided into vertical (coach-athlete) and horizontal (athlete-athlete) communication. It is reasonable to believe that the unique team language among athletes is mainly initiated and developed in a horizontal pattern among athletes, based on insight and knowledge among team members, without the coach necessarily actively or explicitly contributing [67]. Considering the relatively weak association found in the present study, there may be a possibility that distinctiveness in communication within elite teams is primarily developed horizontally.

Previous research has suggested that distinctiveness is a positive predictor of cohesion [36,40]. Surprisingly, our results did not show a significant relation between distinctiveness and task cohesion. According to Ronglan [67], team language can be separated into two different categories: *on the pitch* and *off the pitch*, indicating different kind of relations and communication within the team. Therefore, participants' perception of distinctiveness may refer to off-pitch communications such as social and humorous verbal and nonverbal team member interactions. This would support findings from McLaren and Spink [68] and Sullivan and Short [38] that distinctiveness is positively related to social cohesion. Nevertheless, distinctiveness measured in this study might primarily be perceived as relating to off-pitch communication (e.g., social and humorous) and therefore we argue that distinctiveness would to a lesser degree be related to task cohesion, and rather probably be more related to social cohesion. Even when distinctiveness is developed through horizontal communication, the coach's ability to facilitate positive communication patterns through identity leadership would still be an important factor, and therefore may contribute without being the primary driver of team communication processes on and off the pitch [69]. While this may indicate that elite teams have distinctive verbal and nonverbal communication patterns on and off the pitch, such differences were not investigated in the present study.

The results from the present study are not without their limitations, and these should be considered when interpreting our findings. First, even though measures used in this study have been validated and used in previous research [31,38,44], investigating elite athletes can be considered an extreme case; thus, it is unclear whether measures used in this study are sufficiently specific in an elite-sports context. In addition, it must be considered that our results depend on athletes' subjective ratings, which can be influenced by selective memory or halo effects [19]. Factors such as date and time, stress or flow, and win-loss record, may have influenced players' ratings when they filled out our questionnaires. Second, only two different team sports (ice hockey and handball) are represented in our study sample. However, with limited research investigating identity leadership and elite athletes, we consider it a strength that our sample size comprises 441 elite athletes representing both male and female athletes from the two highest divisions in Norway in two different sports. Lastly, causation and longitudinal trends caused by identity leadership cannot be investigated with our cross-sectional design.

Future studies would benefit from an in-depth longitudinal exploration of elite coaches' use of identity leadership in a naturalistic setting similar to that used by Herbison et al. [21] to explore both positive and negative effects of the four dimensions of identity leadership. This could give an insight into elite coaches' actual identity leadership behaviors, and their relation to important group processes and outcomes. Moreover, knowledge about how elite coaches integrate identity leadership into their day-to-day practice with athletes should be expanded. In addition, it would be fruitful to investigate how personal (e.g., "I" and "me") and collective (e.g., "we" and "us") language is used in structured and unstructured team activities, and how this influences individual and team outcomes (e.g., cohesion and collective efficacy) among elite athletes. This could help explain how different verbal and nonverbal communication on and off the pitch develops, and to what extent it is auto-generated among team members. Also, exploring and further developing the dimension of distinctiveness and the possibility of separately measuring the social and task-related contents of distinctiveness would be of great interest. Lastly, future research could benefit from investigating the unique contribution made by each dimension of identity leadership related to cohesion and intra-team communication.

In summary, the current study adds insight into identity leadership in an elite team context. Our findings suggest a positive relationship between identity leadership and task cohesion, with acceptance as a significant mediator between identity leadership and task cohesion. As noted by Stevens et al. [19], little research has been conducted on identity leadership in elite sports, and this study therefore expands our understanding of the performance-related benefits of identity leadership.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2023.e17853>.

References

- [1] J.-P. Heuzé, N. Raimbault, P. Fontayne, Relationships between cohesion, collective efficacy and performance in professional basketball teams: an examination of mediating effects, *J. Sports Sci.* 24 (1) (2006) 59–68, <https://doi.org/10.1080/02640410500127736>.
- [2] F.M. Leo, E. Filho, M.A. López-Gajardo, T. García-Calvo, L. González-Ponce, The relationship among intra-group communication, transactive memory systems, collective efficacy and team performance: a structural equation model analysis with elite footballers, *Eur. J. Sport Sci.* (2022) 1–8, <https://doi.org/10.1080/17461391.2022.2049373>.
- [3] E.J. Shah, K. Fransén, M.J. Slater, J.B. Barker, The impact of intra-team communication and support relationships on team identification and collective efficacy in elite team sport: a social network analysis, *Int. J. Sport Exerc. Psychol.* (2022) 1–22, <https://doi.org/10.1080/1612197X.2022.2084761>.
- [4] A.V. Carron, L.R. Brawley, W.N. Widmeyer, The measurement of cohesiveness in sport groups, in: J.L. Duda (Ed.), *Advances in Sport and Exercise Psychology Measurement, Fitness Information Technology*, 1998, pp. 213–226.
- [5] R. Høigaard, I. Tofteland, Y. Ommundsen, The effect of team cohesion on social loafing in relay teams, *Int. J. Appl. Sports Sci.* 18 (2006) 59–73.
- [6] M.K. Erikstad, L.J. Martin, T. Haugen, R. Høigaard, Group cohesion, needs satisfaction, and self-regulated learning: a one-year prospective study of elite youth soccer players' perceptions of their club team, *Psychol. Sport Exerc.* 39 (2018) 171–178, <https://doi.org/10.1016/j.psychsport.2018.08.013>.
- [7] E. Brisimis, E. Bebetos, C. Krommidas, Does group cohesion predict team sport athletes' satisfaction? *Hellenic J. Psychol.* 15 (2018) 108–124.
- [8] A.V. Carron, M.M. Colman, J. Wheeler, D. Stevens, Cohesion and performance in sport: a meta analysis, *J. Sport Exerc. Psychol.* 24 (2) (2002) 168–188, <https://doi.org/10.1123/jsep.24.2.168>.
- [9] E. Filho, U. Dobersek, L. Gershgoren, B. Becker, G. Tenenbaum, The cohesion–performance relationship in sport: a 10-year retrospective meta-analysis, *Sport Sci. Health* 10 (3) (2014) 165–177, <https://doi.org/10.1007/s11332-014-0188-7>.
- [10] M.K. Erikstad, R. Høigaard, J. Côté, J. Turnnidge, T. Haugen, An examination of the relationship between coaches' transformational leadership and athletes' personal and group characteristics in elite youth soccer, *Front. Psychol.* 12 (2021), 707669, <https://doi.org/10.3389/fpsyg.2021.707669>.
- [11] M.S. Price, M.R. Weiss, Relationships among coach leadership, peer leadership, and adolescent athletes' psychosocial and team outcomes: a test of transformational leadership theory, *J. Appl. Sport Psychol.* 25 (2) (2013) 265–279, <https://doi.org/10.1080/10413200.2012.725703>.
- [12] M. De Backer, F. Boen, B. De Cuyper, R. Høigaard, G. Vande Broek, A team fares well with a fair coach: predictors of social loafing in interactive female sport teams, *Scand. J. Med. Sci. Sports* 25 (6) (2015) 897–908, <https://doi.org/10.1111/sms.12303>.
- [13] F.M. Leo, L. González-Ponce, T. García-Calvo, D. Sánchez-Oliva, The relationship among cohesion, transactive memory systems, and collective efficacy in professional soccer teams: a multilevel structural equation analysis, *Group Dynam.: Theory, Res. Pract.* 23 (1) (2019) 44–56, <https://doi.org/10.1037/gdn0000097>.
- [14] C. Hague, C.S. McGuire, J. Chen, M.W. Bruner, J. Côté, J. Turnnidge, L.J. Martin, Coaches' influence on team dynamics in sport: a scoping review, *Sports Coaching Review* 10 (2) (2021) 225–248, <https://doi.org/10.1080/21640629.2021.1874096>.
- [15] A.J. Miller, M.J. Slater, M.J. Turner, Coach identity leadership behaviours are positively associated with athlete resource appraisals: the mediating roles of relational and group identification, *Psychol. Sport Exerc.* 51 (2020), 101755, <https://doi.org/10.1016/j.psychsport.2020.101755>.
- [16] P.G. Northouse, *Leadership: Theory and Practice*, seventh ed., Sage, 2016, p. 494.
- [17] L.D. Cronin, C.A. Arthur, J. Hardy, N. Callow, Transformational leadership and task cohesion in sport: the mediating role of inside sacrifice, *J. Sport Exerc. Psychol.* 37 (2015) 23–36, <https://doi.org/10.1123/jsep.2014-0116>.
- [18] M. Rieke, J. Hammermeister, M. Chase, Servant leadership in sport: a new paradigm for effective coach behavior, *Int. J. Sports Sci. Coach.* 3 (2) (2008) 227–239, <https://doi.org/10.1260/174795408785100635>.
- [19] M. Stevens, T. Rees, T. Cruwys, Social identity leadership in sport and exercise: current status and future directions, *Psychol. Sport Exerc.* 55 (2021), 101931, <https://doi.org/10.1016/j.psychsport.2021.101931>.
- [20] N.K. Steffens, K. Fransén, S.A. Haslam, *Leadership*, in: S.A. Haslam, K. Fransén, F. Boen (Eds.), *The New Psychology of Sport & Exercise. The Social Identity Approach*, Sage, 2020, pp. 41–58.
- [21] J.D. Herbison, J.T. Sutcliffe, L.J. Martin, C.D. McLaren, R.B. Slatyer, A.J. Benson, I.D. Boardley, J. Côté, M.W. Bruner, Capturing coaches' identity leadership within youth sport, *Psychol. Sport Exerc.* 61 (2022), 102208, <https://doi.org/10.1016/j.psychsport.2022.102208>.
- [22] H. Tajfel, J.C. Turner, An integrative theory of intergroup conflict, in: W.G. Austin, S. Worchel (Eds.), *The Social Psychology of Intergroup Relations*, Brooks/Cole, 1979, pp. 33–48.
- [23] S.A. Haslam, K. Fransén, F. Boen, *The New Psychology of Sport and Exercise: the Social Identity Approach*, Sage, 2020.
- [24] M.J. Slater, P. Coffee, J.B. Barker, A.L. Evans, Promoting shared meanings in group memberships: a social identity approach to leadership in sport, *Reflective Pract.* 15 (5) (2014) 672–685, <https://doi.org/10.1080/14623943.2014.944126>.
- [25] K. Fransén, D. McEwan, M. Sarkar, The impact of identity leadership on team functioning and well-being in team sport: is psychological safety the missing link? *Psychol. Sport Exerc.* 51 (2020), 101763, <https://doi.org/10.1016/j.psychsport.2020.101763>.
- [26] S.A. Haslam, S. Reicher, Identity entrepreneurship and the consequences of identity failure: the dynamics of leadership in the BBC prison study, *Soc. Psychol. Q.* 70 (2) (2007) 125–147, <https://doi.org/10.1177/019027250707000204>.
- [27] L.J. Martin, D. Balderson, M. Hawkins, K. Wilson, M.W. Bruner, The influence of social identity on self-worth, commitment, and effort in school-based youth sport, *J. Sports Sci.* 36 (3) (2018) 326–332, <https://doi.org/10.1080/02640414.2017.1306091>.
- [28] J.T. Worley, S. Harenberg, J. Vosloo, The relationship between peer servant leadership, social identity, and team cohesion in intercollegiate athletics, *Psychol. Sport Exerc.* 49 (2020), 101712, <https://doi.org/10.1016/j.psychsport.2020.101712>.
- [29] M.J. Slater, J.B. Barker, P. Coffee, M.V. Jones, Leading for gold: social identity leadership processes at the London 2012 Olympic Games, *Qualitat. Res. Sport, Exercise and Health* 7 (2) (2015) 192–209, <https://doi.org/10.1080/2159676X.2014.936030>.
- [30] M.W. Bruner, C.D. McLaren, N. Mertens, N.K. Steffens, F. Boen, L. McKenzie, S.A. Haslam, K. Fransén, Identity leadership and social identification within sport teams over a season: a social network analysis, *Psychol. Sport Exerc.* 59 (2022), 102106, <https://doi.org/10.1016/j.psychsport.2021.102106>.
- [31] N.K. Steffens, S.A. Haslam, S.D. Reicher, M.J. Platow, K. Fransén, J. Yang, et al., Leadership as social identity management: introducing the Identity Leadership Inventory (ILI) to assess and validate a four-dimensional model, *Leader. Q.* 25 (5) (2014) 1001–1024, <https://doi.org/10.1016/j.leaqua.2014.05.002>.
- [32] A.V. Carron, K. Spink, Team building in an exercise setting, *Sport Psychol.* 7 (1) (1993) 8–18.

- [33] L.J. Martin, K.F. Paradis, M.A. Eys, B. Evans, Cohesion in sport: new directions for practitioners, *Journal of Sport Psychology in Action* 4 (1) (2013) 14–25, <https://doi.org/10.1080/21520704.2012.702710>.
- [34] M.J. Smith, C.A. Arthur, J. Hardy, N. Callow, D. Williams, Transformational leadership and task cohesion in sport: the mediating role of intrateam communication, *Psychol. Sport Exerc.* 14 (2) (2013) 249–257, <https://doi.org/10.1016/j.psychsport.2012.10.002>.
- [35] J. Hardy, M.A. Eys, T.M. Loughhead, Does communication mediate the athlete leadership to cohesion relationship? *Int. J. Sport Psychol.* 39 (4) (2008) 329–345.
- [36] P.J. Sullivan, D.L. Feltz, The preliminary development of the scale for effective communication in team sports (SECTS), *J. Appl. Soc. Psychol.* 33 (8) (2003) 1693–1715, <https://doi.org/10.1111/j.1559-1816.2003.tb01970.x>.
- [37] M. Hakanen, M. Häkkinen, A. Soudunsaari, Trust in building high-performing teams – conceptual approach, *Electron. J. Bus. Ethics Organ. Stud.* 20 (2) (2015) 43–53.
- [38] P.J. Sullivan, S. Short, Further operationalization of intra-team communication in sports: an updated version of the Scale of Effective Communication in Team Sports (SECTS-2), *J. Appl. Soc. Psychol.* 41 (2) (2011) 471–487, <https://doi.org/10.1111/j.1559-1816.2010.00722.x>.
- [39] M.J. Slater, W. Thomas, A.L. Evans, Teamwork and group performance, in: S.A. Haslam, K. Fransen, F. Boen (Eds.), *The New Psychology of Sport & Exercise. The Social Identity Approach*, Sage, 2020, pp. 75–94.
- [40] C.D. McLaren, K.S. Spink, Examining communication as information exchange as a predictor of task cohesion in sport teams, *Int. J. Sport Commun.* 11 (2) (2018) 149–162, <https://doi.org/10.1123/ijsc.2018-0004>.
- [41] G.S. Schei, T. Haugen, A. Stenling, A. Grøtting, D.M. Peters, R. Høigaard, Development and initial validation of the humor climate in sport scale, *Front. Psychol.* 12 (2021), 692892, <https://doi.org/10.3389/fpsyg.2021.692892>.
- [42] R. van Dick, J.E. Lemoine, N.K. Steffens, R. Kerschreiter, S.A. Akfarit, L. Avanzi, et al., Identity leadership going global: validation of the Identity Leadership Inventory (ILI) across 20 countries, *J. Occup. Organ. Psychol.* 91 (4) (2018) 697–728, <https://doi.org/10.1111/joop.1222>.
- [43] O.J. Kvamme, J. Mainz, A. Helin, M. Ribacke, F. Olesen, P. Hjortedal, Oversettelse av spørreskjema: et oversett metodeproblem [Interpretation of questionnaires: a translation method problem], *Nord. Med.* 113 (1998) 363–366.
- [44] T. Haugen, D.M. Peters, Y. Ommundsen, L.J. Martin, A. Stenling, R. Høigaard, Psychometric evaluation of the Norwegian versions of the modified group environment questionnaire and the youth sport environment questionnaire, *Meas. Phys. Educ. Exerc. Sci.* 25 (4) (2021) 365–378, <https://doi.org/10.1080/1091367X.2021.1917414>.
- [45] C.D. McLaren, K.S. Spink, Testing boundary conditions in the communication–cohesion relationship in team sport: the case for psychological safety, *Group Dynam.: Theory, Research, and Practice* 26 (1) (2022) 12–23, <https://doi.org/10.1037/gdn0000161>.
- [46] L.K. Muthén, B.O. Muthén, 1998–2017. *Mplus User's Guide*, eighth ed., Muthén & Muthén, 2017.
- [47] C.K. Enders, *Applied Missing Data Analysis*, Guilford Press, 2010.
- [48] H.W. Marsh, K.-T. Hau, D. Grayson, Goodness of fit evaluation in structural equation modeling, in: A. Maydeu-Olivares, J. McArdle (Eds.), *Contemporary Psychometrics. A Festschrift for Roderick P. McDonald*, Erlbaum, 2005, pp. 275–340.
- [49] H.W. Marsh, Application of confirmatory factor analysis and structural equation modeling in sport/exercise psychology, in: G. Tenenbaum, R.C. Eklund (Eds.), *Handbook of Sport Psychology*, Wiley, 2007, pp. 774–798.
- [50] B.O. Muthén, A. Satorra, Complex sample data in structural equation modeling, *Socio. Methodol.* 25 (1995) 267–316, <https://doi.org/10.2307/271070>.
- [51] K.J. Preacher, A.F. Hayes, SPSS and SAS procedures for estimating indirect effects in simple mediation models, *Behav. Res. Methods Instrum. Comput.* 36 (4) (2004) 717–731, <https://doi.org/10.3758/BF03206553>.
- [52] R.P. McDonald, The theoretical foundations of principal factor analysis, canonical factor analysis, and alpha factor analysis, *Br. J. Math. Stat. Psychol.* 23 (1970) 1–21, <https://doi.org/10.1111/j.2044-8317.1970.tb00432.x>.
- [53] D. McNeish, Thanks coefficient alpha, we'll take it from here, *Psychol. Methods* 23 (3) (2018) 412–433, <https://doi.org/10.1037/met0000144>.
- [54] J. Pan, E.H. Ip, L. Dubé, An alternative to post hoc model modification in confirmatory factor analysis: the Bayesian lasso, *Psychol. Methods* 22 (4) (2017) 687–704, <https://doi.org/10.1037/met0000112>.
- [55] J.H. Steiger, Structural model evaluation and modification: an interval estimation approach, *Multivariate Behav. Res.* 25 (2) (1990) 173–180, https://doi.org/10.1207/s15327906mbr2502_4.
- [56] R.F. DeVellis, *Scale Development: Theory and Applications*, Sage, 1991.
- [57] H. Krug, S.A. Haslam, K. Otto, G. Safi, N.K. Steffens, Doing it for the team: soccer coaches' identity leadership predicts players' effort, turnover intentions, and performance, *Psychol. Sport Exerc.* 55 (2021), 101947, <https://doi.org/10.1016/j.psychsport.2021.101947>.
- [58] T. Rees, S.A. Haslam, P. Coffee, D. Lavallee, A social identity approach to sport psychology: principles, practice, and prospects, *Sports Med.* 45 (8) (2015) 1083–1096, <https://doi.org/10.1007/s40279-015-0345-4>.
- [59] E.Y. Tee, N. Paulsen, N.M. Ashkanasy, Revisiting followership through a social identity perspective: the role of collective follower emotion and action, *Leader. Q.* 24 (6) (2013) 902–918, <https://doi.org/10.1016/j.leafqua.2013.10.002>.
- [60] M.W. Bruner, L.D. Boardley, J. Côté, Social identity and prosocial and antisocial behavior in youth sport, *Psychol. Sport Exerc.* 15 (1) (2014) 56–64, <https://doi.org/10.1016/j.psychsport.2013.09.003>.
- [61] M.A. Marks, J.E. Mathieu, S.J. Zaccaro, A temporally based framework and taxonomy of team processes, *Acad. Manag. Rev.* 26 (3) (2001) 356–376, <https://doi.org/10.5465/amr.2001.4845785>.
- [62] D.W. Eccles, K.B. Tran, Getting them on the same page: strategies for enhancing coordination and communication in sports teams, *J. Sport Psychol. Action* 3 (1) (2012) 30–40, <https://doi.org/10.1080/21520704.2011.649229>.
- [63] R. Giske, J. Gjerde, R. Høigaard, B.T. Johansen, Shared mental models: national representative coaches' thinking on importance, characteristics, and development, *J. Expert.* 5 (1) (2022) 12–28.
- [64] S.A. Haslam, *Psychology in Organizations: the Social Identity Approach*, second ed., Sage, 2004.
- [65] M. Eys, M.B. Evans, A. Benson, *Group Dynamics in Sport*, 5 ed., Fitness Information Technology, 2020.
- [66] H. Abu Bakar, V.C. Sheer, The mediating role of perceived cooperative communication in the relationship between interpersonal exchange relationships and perceived group cohesion, *Manag. Commun. Q.* 27 (3) (2013) 443–465, <https://doi.org/10.1177/0893318913492564>.
- [67] L.T. Ronglan, Gjennom Sesongen. En Sosiologisk Studie Av Det Norske Kvinnelandslaget I Håndball På Og Utenfor Banen [During the Season: A Sociological Analysis of the Female Norwegian National Handball Team on and off the Court], Unpublished PhD thesis, Norwegian School of Sport Sciences, Oslo, 2000.
- [68] C.D. McLaren, K.S. Spink, Team member communication and perceived cohesion in youth soccer, *Commun. Sport* 6 (1) (2018) 111–125, <https://doi.org/10.1177/2167479516679412>.
- [69] G.A. Cranmer, S.A. Myers, Sports teams as organizations, *Commun. Sport* 3 (1) (2015) 100–118, <https://doi.org/10.1177/2167479513520487>.

Paper II

Development and initial validation of the humor climate in sport scale



Development and Initial Validation of the Humor Climate in Sport Scale

Gaute S. Schei^{1*}, Tommy Haugen¹, Andreas Stenling^{1,2}, Anniken Grøtting³, Derek M. Peters⁴ and Rune Høigaard¹

¹ Department of Sports Science and Physical Education, University of Agder, Kristiansand, Norway, ² Department of Psychology, Umeå University, Umeå, Sweden, ³ Department of Education and Sports Science, University of Stavanger, Stavanger, Norway, ⁴ School of Allied Health and Community, University of Worcester, Worcester, United Kingdom

OPEN ACCESS

Edited by:

Lucia Monacis,
University of Foggia, Italy

Reviewed by:

Julio C. Penagos-Corzo,
University of the Americas Puebla,
Mexico
Kathryn Anne Nel,
University of Limpopo, South Africa

*Correspondence:

Gaute S. Schei
gaute.s.schei@uia.no

Specialty section:

This article was submitted to
Movement Science and Sport
Psychology,
a section of the journal
Frontiers in Psychology

Received: 09 April 2021

Accepted: 12 July 2021

Published: 30 July 2021

Citation:

Schei GS, Haugen T, Stenling A,
Grøtting A, Peters DM and
Høigaard R (2021) Development
and Initial Validation of the Humor
Climate in Sport Scale.
Front. Psychol. 12:692892.
doi: 10.3389/fpsyg.2021.692892

In sport teams, humor is an essential element that influences communication processes, and plays an important role in group dynamics. Despite this, no current instrument is presented in the literature to measure humor climate in sport teams. Therefore, the current study presents the development and initial validation of the Humor Climate in Sport Scale (HCSS). The aim was to assess content, structural and concurrent validity of the developed instrument, and to examine differential item functioning (DIF) as a function of sex. Three different phases were completed in this study. The first phase involved focus groups ($n = 5$) that explored humor as communication in a team sport context. In phase 2, information from the focus groups was used to create a pool of potential items for the questionnaire. Two discussion groups with sport science students contributed to the development of 80 potential items, that two different expert groups then assessed for item quality. The final version of the instrument after this phase contained 14 items, representing three different humor dimensions. In phase 3, two independent samples with a total number of 776 participants were recruited for the psychometric evaluation of the instrument. EFA, ICM-CFA, and ESEM analysis were performed, supporting a three-factor structure with positive humor, negative humor in-group, and negative humor out-group. In addition, partial DIF as a function of sex on the negative humor dimensions was found, indicating differences in how male and female interpret the negative humor items. The findings in the current study expand our understanding of humor in sport teams and may be a starting point for further research on humor climate in sport teams and its role in group function.

Keywords: humor, humor climate, sport teams, measurement, communication, group dynamics

INTRODUCTION

Humor is an important element in communication between people and may influence interpersonal relationships and subsequently affect group processes and performance (Meyer, 2000; Caird and Martin, 2014). Humor has been conceptualized as a multifaceted construct that includes communication that others perceive as funny or makes someone laugh, mental processes producing, and perceiving amusing communication stimulus and the emotional satisfaction of it (Sliter et al., 2017; Martin and Ford, 2018). Research on humor in organizational psychology has a long tradition, and humor has been identified as a central factor affecting team interaction

processes among leaders, managers, and employees (Avolio et al., 1999; Robert and Wilbanks, 2012; Lehmann-Willenbrock and Allen, 2014). In the sports context, research on humor is relatively sparse and has primarily focused on coaches' use of humor (Grisaffe et al., 2003; Ronglan and Aggerholm, 2014). Considering the importance of intra-team communication in sport team functioning (and their subsequent performance), research investigating humor as part of communication within such sports teams is clearly warranted.

Theoretically the conceptualization of humor or the "sense of humor" considers humor as a cognitive ability (e.g., ability to generate mirth in others and to recognize and appreciate funny things that others say and do), a consistent behavioral pattern (e.g., people who joke and laugh, and always attempt to have fun), or as an emotion related trait (e.g., as a coping strategy to endure difficult situations) (Martin and Lefcourt, 1983; Thorson and Powell, 1993; Craik et al., 1996; Scheel and Gockel, 2017). These diverse conceptualizations of humor that emphasize its dispositional antecedents have muddled the distinction between "having a sense of humor" and "engaging in humorous communication," and the consequences associated with these events (Sliter et al., 2017). Despite this, consequences of humor have been found to create an open atmosphere by awakening positive emotions that enhance listening, understanding, and acceptance of messages (Meyer, 1997; Greatbatch and Clark, 2002). Furthermore, humor has been related to less burnout (Abel and Maxwell, 2002), higher satisfaction (Decker, 1987; Booth-Butterfield et al., 2007), work-place creativity, and group cohesion (Romero and Pescosolido, 2008). Humor has also been found to buffer the stressor-strain relationship (Sliter et al., 2014), improve motivation, increase subsequent performance, and develop and maintain team culture (Clouse and Spurgeon, 1995; Avolio et al., 1999; Romero and Cruthirds, 2006; Guenter et al., 2013).

One of the most established frameworks for exploring humor is the dispositional humor styles model proposed by Martin et al. (2003). They conceptualized humor styles according to whether a person tends to prefer humor that enhances the self (intrapersonal) or relationships (interpersonal/social), and whether the humor is intended or perceived as being either positive or negative in nature. This created the following four humor styles that an individual may perceive: affiliative (interpersonal; positive), self-enhancing (intrapersonal; positive), aggressive (interpersonal; negative), and self-defeating (intrapersonal; negative). Based on this conceptual model, the four factor Humor Styles Questionnaire (Martin et al., 2003) was developed. Although several studies have demonstrated its reliability and validity (Kuiper and McHale, 2009; Romero and Arendt, 2011), some studies have reported inconsistent internal factor structure (Ruch and Heintz, 2016). For example, Sullivan and Dithurbide (2007) found little support for the original four-factor structure and concluded that a two-factor solution of positive humor (composite of affiliative and self-enhancing categories) and negative humor (composite of aggressive and self-defeating categories) had the best psychometric properties.

Drawing from both emotional contagion theory (Barsade, 2002; Hatfield et al., 2009) and the wheel model of humor (Robert and Wilbanks, 2012), these inherently personal humor styles

when expressed within a social group may converge creating a relatively homogeneous humor "climate" within the group (Martin and Ford, 2018). Subsequently, we suggest that groups differ in combined levels of either positive or negative forms of humor depending on the most dominant humor styles present within the group members that contribute to the group's overall humor climate (Kuiper and McHale, 2009; Robert and Wilbanks, 2012; Cann et al., 2014). Humor climate in an organizational context has been defined as: "a shared perception of how humor is used and expressed within an employee group" (Blanchard et al., 2014, p. 54). Blanchard et al. (2014) and Cann et al. (2014) have shown that in addition to being either positive or negative, humor can be focused inwardly toward members of the group or outwardly toward others outside the group. For example, Blanchard et al. (2014) investigated three dimensions of humor climate consisting of positive humor, negative in-group humor, and negative out-group humor. Their division of negative humor climate into two different dimensions explains how negative humor can have either beneficial or damaging consequences for the group. When the humor climate in the team is perceived as positive, regardless of whether it is targeting someone or something in-group or out-group, it will be able to strengthen the group. This assumption is in line with previous research indicating that positive humor is beneficial for team functioning, especially when the team is dealing with stressful situations or intra-team conflicts (Norrick and Spitz, 2008; Mesmer-Magnus et al., 2012). In contrast, a negative humor climate may be detrimental and have potentially dysfunctional consequences for individuals (e.g., reduced satisfaction and wellbeing; Kuiper and McHale, 2009), and groups (e.g., reduced cohesion and increased conflicts; Wood et al., 2007). The distinction between negative in-group and negative out-group humor may however be of great importance and nuance these findings. If the negative humor targets out-group members it may potentially have some positive effects (Martineau, 1972; Cann et al., 2014). Previous research has shown that negative out-group humor is related to cohesion, solidarity, and team identity (Terrion and Ashforth, 2002; Gockel and Kerr, 2015; Thomae and Pina, 2015). According to Ferguson and Ford (2008), negative out-group humor can create positive distinctiveness and social comparisons to enhance social identity within their own group. Furthermore, Ferguson and Ford (2008) argue that negative out-group humor can promote aggressive dispositions toward the out-groups, which could be a strategy for demonstrating superiority and potentially gain a competitive advantage (Aggerholm and Ronglan, 2012).

To attempt to assess humor climate in organizational team contexts, Cann et al. (2014) developed "The humor climate questionnaire" (HCQ). The HCQ assesses positive humor, negative humor (out-group and in-group), and in addition supervisor support for humor in the workplace. In Cann et al.'s (2014) study, after controlling for individual differences in humor style, the HCQ accounted for significant variance in several global and specific indicators of job experiences, including satisfaction. They found that positive humor explained more variance in relation to job satisfaction and commitment than did the presence of negative humor, and that the supervisor's support for humor was generally a positive factor, predicting global

satisfaction and positive aspects of organizational commitment. Out-group humor, on the other hand, was associated with dissatisfaction and lowered commitment to the organization. In Blanchard et al.'s (2014) study they also found that humor climate plays a role in how employees interpret ambiguous events within an organizational context and found it to affect their identification with the organization.

Despite the clear importance of humor and the humor climate in teams, there has been little research undertaken in team sport contexts. In sport research, humor has primarily been investigated in relation to the coaches' use of humor (Grisaffe et al., 2003; Ronglan and Aggerholm, 2013, 2014; Høigaard et al., 2017), or humor as a personal attribute (Edwards and Jones, 2018; Kim et al., 2020). Høigaard et al. (2017) found that coaches' use of humor predicted team identity, and Grisaffe et al. (2003) found that coach humor increased the athletes' appreciation of the coach. In Ronglan and Aggerholm's (2014) study, Scandinavian elite sport coaches interpreted and applied their humor as a conscious and integral part of their coaching practice, both for developing group and individual performance and for creating closeness between players and themselves. In a more recent study, Kim et al. (2020) investigated the nature of "team comedians" in sport. The study explored how team comedians act, develop, and influence other team members and the whole group. Their findings indicated that humor can be an important factor in team sport, contributing to positive outcomes like team integration, less tension, and greater pleasure among team members, but also that negative humor can hamper team functions.

Sex-differences in use and preference of humor have been given considerable attention over the years, with potential genetic (Schermer et al., 2017) and social (Robert and Wilbanks, 2012) explanations for the differences. From a sociological perspective, there are indications that males and females hold different appreciation and preferences of humor (Kuipers, 2015). According to Scheel and Gockel (2017) males tend to express and enjoy higher amount of aggressive and maladaptive forms of humor than their female counterpart. However, when examining sex differences in humor it is important to ensure that the instrument can capture true differences in the construct. Hence, psychometric analyses are needed to ensure that differences observed between males and females represent true differences in humor and not measurement non-invariance.

Although the HCQ represented an important step in advancing our understanding of humor climate in an organizational context, the HCQ is not directly applicable for the investigation of humor climate in team sport due to the lack of context in its item wording. There is a dearth of research investigating humor as a feature of interpersonal relationships in sport teams (Ronglan and Aggerholm, 2013; Sullivan, 2013), possibly because no sport-specific questionnaire for assessing humor climate has been developed. The main aim of this study therefore was to develop a measure of humor climate in sport teams and examine its psychometric properties. More specifically, we aimed to assess content validity, structural validity, and concurrent validity of the developed instrument, and examine differential item functioning (DIF) as a function of sex.

MATERIALS AND METHODS

Ethical approval was obtained from the Norwegian Social Sciences Data Service and by the Ethical Committee at the first authors' University. This study includes three different phases in developing an instrument to measure humor climate in team sport: (1) focus group interviews to investigate humor climate theory in a sport specific context; (2) item generation; and (3) initial validation of the instrument. The first phase was designed to garner an understanding of how team sport athletes and coaches perceived the concept of humor in sport. In Phase 2, the participants' expressions of their perceptions of humor were used in the development of possible items for the new questionnaire within the existing theoretical framework. In addition, the content validity of these items was examined by expert groups (researchers and former athletes). Phase 3 was concerned with item analysis (i.e., exploratory factor analysis) and subsequent confirmatory tests of the best fitting model (i.e., confirmatory factor analyses, exploratory structural equation modeling). We also examined a part of the nomological network surrounding the construct of humor climate by investigating relations between humor climate and social cohesion and social conflict. The protocol and results for these three phases are outlined in detail in the subsequent sections.

Phase One—Exploring Humor as Communication in a Team Sport Context

Initially to explore humor in team sports, five focus group interviews were conducted, where the purpose was to capture how athletes and coaches experienced humor in their current and former teams, and how humor is perceived within sport teams. Subsequently we were also interested in getting an in-depth insight into the mental and emotional responses of mirth involved with humor. Twenty-one athletes (11 males and 10 females, range 17–31 years old) and five coaches (four males and one female, range 50–56 years old) contributed. Participants represented different team sports (e.g., handball, football, volleyball, ice-hockey, and rhythmic gymnastics). The focus group interviews for the athletes were organized due to their team affiliation. Group 1; six female elite athletes, Group 2: five male elite athletes, Group 3: four female junior elite athletes, Group 4: six male junior elite athletes, Group 5: This group consist of coaches with different team affiliation and sports with elite and junior-elite experiences.

Each focus group was moderated by a trained researcher and followed a standard semi-structured interview format (Longhurst, 2003) with (1) warm up session with introductory questions, (2) question around the following three main themes; (a) What is humor in team sport and what type of humor is prevalent in team sport, (b) How they perceived their own humor use and how they perceive coaches' and teammates' use of humor, (c) How they perceived the effect of various types of humor in relation themselves (e.g., self-esteem, motivation, satisfaction, enjoyment) the team as a whole (e.g., intra-team communication, cohesion, conflict) and performance, and finally (3) ending wrap-up questions. During the focus group a poster

was put forward on a table in the middle of the participants for each theme, and the participants were asked to talk freely around the themes. Participants were encouraged to share experiences from their former and current teams and were reminded that there were no “wrong or right answers.” The focus groups lasted an average of 50 min (range 44–60 min), were audiotaped and were transcribed verbatim into NVivo software (QSR International, Burlington, United States) for qualitative data analysis. Participants were given the opportunity to read through the transcribed material from their focus group interview and make necessary changes to the transcribed material if necessary. No participants wanted to read through the material, and the transcripts were approved for analysis. The transcribed material was analyzed using thematic analysis according to Braun and Clarke (2006). Initially the interviews were thoroughly read through searching for meaning, patterns, similarities, and inequalities, looking for factors that could describe humor as a form of communication in sport teams. The main interest was humor as a part of intra-team communication in sport teams with an investigation of different forms of humor and how they are expressed. Inductive and deductive approaches were utilized in analyzing and organizing the data. More specifically, humor theory from organizations (Blanchard et al., 2014; Cann et al., 2014) formed a deductive foundation in developing dimensions, while an inductive approach was used categorizing and understanding responses in a sport specific context (Fereday and Muir-Cochrane, 2006). A total of 32 codes that represented statements about humor in sport teams were organized into three main dimensions to establish a foundation for subsequent questionnaire item generation.

- (1) *Positive humor*: Characterized as lighthearted humor originating from comical situations or histories, funny mistakes, practical jokes, and teasing that creates a positive atmosphere in the group. This was defined as positive humor including friendly, non-threatening humor that individuals share within their group.

“We tease each other a lot, but it’s not in a bad way.” (Female volleyball player).

“You put a plastic glass of water under the helmet (ice-hockey), so when he takes out his helmet, he gets water all over him.” (Male ice-hockey player).

- (2) *Negative humor in-group*: Characterized as aggressive humor directed toward someone or something in-group that creates primarily a negative atmosphere for the in-group. This was defined as aggressive humor in-group originating from superiority, aggression, bullying or denigration.

“Many can have fun, but on the behalf of one or two others. And I experience that as a negative type of humor, even though there are ten players laughing.” (Male handball coach).

“Yes, there are some players that have quit because of that, but if you play bad, and in addition gets a lot of banter, then it ends like that.” (Male football player).

- (3) *Negative humor out-group*: Characterized as aggressive humor that is directed toward someone or something out-group, that may create either a positive atmosphere or a negative atmosphere for the in-group. Defined as negative humor directed toward someone outside the group, originated by amusing banter, mocking, storytelling, or superiority.

“In tournaments, players from other teams often have to be the referee, and some of them are so bad, and that is so funny so then we have a lot of fun with that.” (Female volleyball player).

“We talk a lot about dicks and ladies, and that kind of things. Same with sexuality, it’s easier to use that kind of insult when we have this aggressive humor.” (Male ice-hockey player).

Phase Two—Item Generation and Content Validity

The main aim of this phase of the study was to use the information gathered in phase one to create a pool of potential items for use in the questionnaire (Eys et al., 2009). Two 45-min open discussions with sport students at the first author’s university were conducted. In the first discussion group 11 sport science students (Master level) participated, and in the second discussion group 48 first-year sport science students participated. The participants were given a brief introduction about humor and the dimensions identified in phase one and subsequently produced items for positive and negative humor. In total these two discussion groups produced 80 items. An expert panel consisting of two professors, one associate professor, and one Ph.D. student organized the generated items into the main theorized and empirically investigated humor dimensions depending on their relevance for each dimension. This expert panel was familiar with the context, had comprehensive theoretical knowledge about the phenomenon, and broad experience of scale development. These experts examined each of the 80 items based on criteria as clarity of item wording, conciseness, grammar, reading level, face validity, and redundancy. Additionally, each item was assessed for relevance for athletes, accuracy, and similarity (Eys et al., 2009; DeVellis, 2017). Duplicates were removed in this process. Each investigator independently analyzed each item and recommended necessary changes. Unanimous agreement between the researchers was mandatory to keep an item. Potential disagreements were solved through discussions. The result of this process resulted in a pool of 40 items.

The remaining 40 items were then rated by a panel of five former athletes. These former athletes came from different team sports (ice hockey, handball, and football), and all five had competed at the highest level in their country. Three had experience from playing on the national team, and international clubs at the highest level. At the time, three of the participants worked in clubs at the highest level in Norway in different roles (e.g., coaches, administration). This panel of former players individually received information about the concept of humor climate, and the process of phase 1 developing humor dimensions. They were instructed to inspect all 40 items and make comments on each item. They evaluated the clarity and

conciseness of the items and were also asked to identify any other items they could think of that would enable us to better explore the phenomenon of humor climate in team sport contexts (DeVellis, 2017). In addition, length, difficulty level, potential double-barreled items and ambiguity were evaluated (DeVellis, 2017). After input from these former players, the item pool was reduced to 15 items, containing five items on each of the three dimensions. Some remaining items were modified for clarity through this process. Last, to further assess content validity, the final items were critically examined by the expert panel. One item¹ was in this process excluded from the instrument. It was hypothesized that this item could be ambiguous because the wording could be perceived as both positive and negative. Thus, the final version of the instrument consisted of 14 items in total, as shown in **Table 1**. Items were then placed in a questionnaire format (**Table 1**), with the stem “In my team”, attached with a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) after each of the 14 items. Higher scores reflect stronger perceptions of either positive or negative humor (see **Appendix Table A1** for the Norwegian version).

Phase Three—Initial Validation of the Instrument

Participants

Two independent samples were recruited for the psychometric evaluation of the instrument. The first sample served as the

¹“Players laugh of their own mistakes.” Considered imprecise and ambiguous, because sometimes it may be ok (training), but not at other times (competitions). Also: which mistakes are we talking about? Which mistakes are acceptable to make fun of (in a competitive context) and when is it acceptable?

TABLE 1 | Items in the HCSS.

In my team

PH1: Players do funny things
PH2: Players make fun of each other (joking, imitation, comments, tomfoolery)
PH3: Players tell funny jokes that make others smile and laugh
PH4: I experience friendly irony
NH1: Players tell negative stories about each other to be funny
NH12: Humor makes some players feel belittled
NH13: The humor is characterized/tinged by discriminatory content
NH14: Players and coaches use negative humor about each other to be funny
NH15: Offensive humor is used about players
NHO1: People outside the team are imitated in a disrespectful way (support staff, players on other teams, referees, supporters, journalists)
NHO2: Malicious humor is used toward people outside the team (support staff, players on other teams, referees, supporters, journalists)
NHO3: Players use offensive humor about people outside the team (support staff, players on other teams, referees, supporters, journalists)
NHO4: Players laugh at discriminatory comments made about people outside the team (support staff, players on other teams, referees, supporters, journalists)
NHO5: Players use hostile humor about people outside the team (support staff, players on other teams, referees, supporters, journalists)

PH, Positive humor; NH1, Negative humor in-group; NHO, Negative humor out-group.

Response on Likert scale with 1 = Strongly disagree to 7 = Strongly agree.

primary exploratory sample, and the second sample was used to confirm the most appropriate model (DeVellis, 2017). Sample one consisted of 441 active handball ($n = 295$) and ice hockey ($n = 146$) players (180 female and 261 male, M age = 21.99, $SD = 4.29$, range 16–39 years). Participants came from 19 handball teams and 9 ice hockey teams, and 14 of the teams competed at the highest level in Norway, whereas the remaining 14 teams played in the second highest division. Teams were located in seven different counties in Norway. Participants had played for their team for M year = 2.86, $SD = 2.43$, Min = 1, Max = 16. Sample two consisted of 335 active football ($n = 221$) and handball ($n = 114$) players (193 female and 142 male, M age = 20.99, $SD = 4.41$, range 16–44 years). Participants were recruited from 14 football teams and 9 handball teams. Teams were competing in division three ($n = 10$), four ($n = 9$), and five ($n = 4$). Teams were located in two counties in Norway. Participants had played for their team for M year = 2.18, $SD = 2.04$, Min = 1, Max = 18.

Procedure

For the first data collection (sample one), 31 clubs were contacted and asked to take part in the study, three clubs declined to participate for different reasons (e.g., primarily lack of time). Three researchers visited 28 different clubs over a period of 5 months. For the second data collection (sample two), 29 clubs were contacted and asked to participate, and 23 clubs agreed to take part. Three researchers visited these clubs over a period of 3 months. The procedures were equal for both data collections. The purpose of the study was described to the whole team, and each player was provided with a letter of information and a consent form to be signed. Participants were informed they could withdraw from the study at any given time. Players received the questionnaire after giving their consent. Information was gathered through a hard copy questionnaire, containing questions about their team and their own individual characteristics, described in the previous Participants section. They completed the questionnaire before or after a training session or a match, depending on the conditions of each individual club. It took approximately 10–15 min to complete the questionnaire. Participants were guaranteed anonymity and confidentiality, and they were invited to contact researchers for a copy of the general results when the study was finished.

Measures

As a part of testing the nomological network (Cronbach and Meehl, 1955) of the newly developed HCSS-scale, we also sought to investigate the concurrent validity of the scale, based on associations with social cohesion (i.e., group integration social) and social group-conflict. A positive humor climate has previously been associated with beneficial group outcomes like cohesion and reduced conflict (Romero and Cruthirds, 2006; Blanchard et al., 2014). In contrast, a negative in-group climate has been argued to be detrimental for group functioning (Wood et al., 2007; Romero and Arendt, 2011). Negative humor out-group, however, has been found to be associated with both beneficial and detrimental outcomes within groups (Romero and Cruthirds, 2006; Cruthirds et al., 2013). Thus, as a test of the

concurrent validity, we hypothesized that (a) positive humor climate would be positively correlated with social cohesion and negatively correlated with social conflict; and (b) negative in-group humor climate would correlate negatively with social cohesion and positively with social conflict. Based on the conflicting findings from previous research on negative humor out-group, we were not able to establish an *a priori* hypothesis regarding the relationship between negative humor out-group, social cohesion, and social conflict.

Social Cohesion

One subcomponent of the four cohesion-dimensions from the Norwegian version (Haugen et al., 2021) of the Group Environmental Questionnaire (GEQ; Carron et al., 1985; Eys et al., 2007) was used to collect data on social cohesion. Group integration social (GIS) was measured with four items. The participants responded to the items on a 9-point Likert scale with 1 (*strongly disagree*) to 9 (*strongly agree*). Higher scores reflect perceptions of stronger social cohesion.

Social Conflict

One dimension from the Norwegian version (Haugen et al., unpublished) of the Group Conflict Questionnaire (GCQ; Paradis et al., 2014) was used to assess social conflict (GCS). Participants responded to seven items on a 9-point Likert scale with 1 (*strongly disagree*) to 9 (*strongly agree*). Higher scores reflect perceptions of more social intra-group conflict.

Statistical Analyses

Mplus (Muthén and Muthén, 2017) version 8.4 was used to estimate the models with the full information maximum likelihood robust estimator (MLR), which provide standard errors and a chi-square test statistic that are robust to non-normality. Item-level missing data were accounted for by the MLR (Enders, 2010). Because the chi-square test of exact fit is sensitive to sample size and minor model misspecifications (Marsh et al., 2005), model fit was evaluated using several goodness-of-fit indices and criteria; the Tucker Lewis index (TLI) > 0.90, comparative fit index (CFI) > 0.90, root mean square error of approximation (RMSEA) < 0.08, and the standardized root mean square residual (SRMR) < 0.08 (Marsh, 2007).

In sample 1, Exploratory Factor Analysis (EFA) was carried out to assess the underlying factor structure and potentially refine the item pool. The EFA was applied with oblique Geomin factor rotation. A unique factor would only be considered if at least three items loaded onto a distinct factor. Items that exceeded an *a priori* criteria of factor loading at 0.400 and above and without substantial (>0.300) cross-loadings onto other factors were retained.

In sample 2, in line with recommendations in the literature (Marsh et al., 2013), both Independent Cluster Model Confirmatory Factor Analysis (ICM-CFA) and Exploratory Structural Equation Modeling (ESEM) were used to evaluate the EFA-informed best fitting hypothesized model of the HCSS-scale. When relying solely on ICM-CFA to examine the factor structure of a multidimensional scale, the factor correlations may be inflated due to the highly restrictive nature of the model

specification (Marsh et al., 2014). ESEM may reduce some of the problems with ICM-CFA because it allows for the inclusion of cross-loadings between items and non-target factors. Instruments may include cross-loadings that can be justified by substantive theory, item content, or simply represent another source of measurement error. Thus, the items may be fallible indicators of constructs and tend to have small residual associations with other constructs (Asparouhov and Muthén, 2009). As most items have multiple determinants, it is reasonable to assume that most psychological measurements include non-zero cross-loadings (Marsh et al., 2014). Further, previous research shows that forcing cross-loadings to be zero may result in inflated factor correlations that undermine discriminant validity and lead to biased estimates (Marsh et al., 2013). The ESEM was estimated using oblique Target rotation with cross-loadings specified to be close to zero, but not exactly zero.

Because the participants in the present study were recruited from different teams, we accounted for the nested data structure by adjusting the standard errors and goodness-of-fit model testing using Muthén and Satorra's (1995) aggregated analysis (i.e., TYPE = COMPLEX in Mplus).

A multiple indicator multiple causes (MIMIC) approach (Morin et al., 2016) was used to examine differential item functioning (DIF) as a function of sex. Compared to multi-group measurement invariance testing, the MIMIC approach is a more parsimonious approach that suits the relatively small sample in the current study. In line with recommendations in the literature (Morin et al., 2013, 2016), three models were estimated and compared: (i) a null effect model, in which all paths from the predictor to the latent variables and item responses were constrained to zero; (ii) a factors-only model, where the paths from the predictor to the latent variables, but not the item responses, were freely estimated; (iii) a saturated model, where the paths from the predictor to the item responses, but not the latent factors, were freely estimated. DIF is present if the saturated model provides a better model fit compared to the factors-only model. An improved model fit in the factors-only and saturated models compared to the null effects model indicate relations between the predictor and the ratings.

For the nested model comparisons, a CFI difference of less than 0.010 and RMSEA difference of less than 0.015 between the two models were considered evidence of equivalent fit to the data (Chen, 2007). The CFI was used as the main criterion because it is less sensitive to sample size and model complexity. Composite reliability was computed according to McDonald's (1970) $\omega = (\sum |\lambda_i|)^2 / (\sum |\lambda_i|^2 + \sum \delta_{ii})$ using standardized parameter estimates from the ICM-CFA or ESEM models where λ_i are the factor loadings and δ_{ii} are the error variances. McDonald's omega coefficient can be interpreted similar as coefficient alpha, but do not rely on the tau-equivalence assumption (McNeish, 2018).

RESULTS

Table 2 presents descriptive statistics for the items in sample 1 and sample 2. Overall, observed means were relatively high (i.e., above 5.0 on a 7-point scale), compared to the numerical mean of

TABLE 2 | Descriptive Statistics of the Items of the HCSS (Top Part-sample 1, Bottom Part-sample 2).

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Range	<i>n</i>
Sample 1						
PH1	6.21	1.28	-1.75	3.49	1-7	441
PH2	6.43	0.88	-2.32	6.75	1-7	440
PH3	6.32	1.05	-1.89	4.05	1-7	438
PH4	6.08	1.27	-1.48	2.36	1-7	436
NHI1	4.27	3.52	-0.10	-1.12	1-7	434
NHI2	2.84	2.49	0.82	-0.18	1-7	434
NHI3	2.28	2.38	1.19	0.60	1-7	432
NHI4	3.09	3.09	0.57	-0.64	1-7	431
NHI5	2.19	2.12	1.32	1.08	1-7	433
NHO1	2.79	2.87	0.70	-0.46	1-7	440
NHO2	2.56	2.58	1.03	0.41	1-7	438
NHO3	2.89	2.94	0.72	-0.40	1-7	439
NHO4	2.60	2.78	0.87	-0.17	1-7	439
NHO5	2.46	2.65	1.03	0.19	1-7	438
Sample 2						
PH1	5.87	1.26	-0.75	-0.29	3-7	335
PH2	6.08	1.11	-1.08	0.53	3-7	333
PH3	5.92	1.28	-0.97	0.68	1-7	335
PH4	5.85	1.19	-0.88	0.59	1-7	334
NHI1	2.29	1.90	0.97	0.23	1-7	332
NHI2	1.88	1.51	1.74	3.34	1-7	333
NHI3	1.56	1.20	2.60	7.43	1-7	333
NHI4	1.61	0.98	1.99	4.49	1-7	334
NHI5	1.45	0.82	2.51	6.57	1-6	334
NHO1	1.77	1.19	1.79	3.94	1-7	333
NHO2	1.57	0.97	2.35	6.73	1-7	333
NHO3	1.63	0.99	2.12	5.71	1-7	333
NHO4	1.59	1.12	6.08	2.61	1-7	333
NHO5	1.51	0.94	2.61	8.27	1-7	332

PH, Positive humor; NHI, Negative humor in-group; NHO, Negative humor out-group.

the scale, for the positive loaded items. Similarly, observed means for negatively loaded items were relatively low (i.e., below 3.0 on a 7-point scale), except two items [NHI1 = 4.27 (sample 1) and NHI4 = 3.09 (sample 1)]. The skewness values ranged from -2.32 (PH2, sample 1) to 6.08 (NHO4, sample 2), and kurtosis values ranged from -1.12 (NHI1, sample 1) to 8.27 (NHO5, sample 2).

As can be seen in **Table 3**, the three-factor solution yielded a better model-fit compared to the one- and two-factor solution. As shown in **Table 4**, the three-factor solution mirrored the hypothesized factor structure, with only negligible cross-loadings across factors. Factor one comprised the hypothesized positive humor items (factor loading range = 0.685–0.803), factor two comprised the hypothesized negative in-group humor items (factor loading range = 0.636–0.774), and factor three comprised the hypothesized negative out-group humor items (factor loading range 0.541–0.859). Although the estimated four-factor model revealed the best model fit, one of the factors consisted of only one substantial indicator (NHI1), with a factor loading of 2.203, providing additional support for the three-factor solution (Jöreskog, 1999). The three-factor model was thus retained as the final model from the EFA because it yielded a more interpretable

factor structure than the other solutions. Composite reliability of the three factors in sample 1 was 0.849 (PH), 0.857 (NHI), and 0.896 (NHO).

The results from the cross-validation in sample 2 are presented in **Tables 5, 6**. The three-factor ICM-CFA model yielded acceptable model fit, and all items had factor loadings larger than 0.568 on the intended factors. The three-factor ESEM analysis yielded slightly better model fit compared to the ICM-CFA model, with a CFI difference larger than 0.010 and RMSEA difference larger than 0.015 between the two models. In the ESEM, all items except one loaded acceptably on the target factor, with no substantial cross-loadings. The exception was item NHI1, which had a factor loading of 0.315 on the target factor (negative in-group) and 0.355 on the negative out-group-factor.

The latent factor correlations between the positive humor climate dimension and the two negative humor climate dimensions were relatively weak and not statistically significant in both the ICM-CFA model (NHI with PH: -0.099, $p = 0.124$; NHO with PH: -0.055, $p = 0.473$) and the ESEM model (NHI with PH: -0.076, $p = 0.189$; NHO with PH: -0.016, $p = 0.812$), whereas the latent factor correlation between the two negative humor climate dimensions were relatively strong (ICM-CFA: NHO with NHI: 0.799, $p < 0.001$ and ESEM: NHO with NHI: 0.772, $p < 0.001$). Composite reliability of the latent factors from the ICM-CFA model were 0.814 for PH, 0.888 for NHI, and 0.910 for NHO.

Concurrent Validity

The measurement model of the four-item social cohesion (group integration social-GIS) subscale of the GEQ was excellent [$\chi^2(df = 2, N = 333) = 1.847, p = 0.397$; TLI = 1.000; CFI = 1.000; RMSEA < 0.001 (0.000–0.106); and SRMR = 0.009]. The initial measurement model of the seven-item social conflict subscale (GCS) of the GCQ yielded close-to-acceptable fit [$\chi^2(df = 14, N = 333) = 54.152, p < 0.001$; TLI = 0.896; CFI = 0.931; RMSEA = 0.093 (0.067–0.120); and SRMR = 0.043]. An inspection of modification indices revealed high covariance between two items; item 1 (“Personal friction among members of our team leads to angry confrontations at social gatherings”) had high covariance with item 2 (“The heated disagreements among members of our team in social situations become personal”). Allowing these two items to covary resulted in improved model-fit [$\chi^2(df = 13, N = 333) = 36.988, p < 0.001$; TLI = 0.933; CFI = 0.959; RMSEA = 0.074 (0.047–0.103); and SRMR = 0.033]. However, the re-specifications did not affect the interpretations of the latent variable correlations in the overall model. Due to the controversies surrounding *post hoc* modifications to improve model-fit (Hermida, 2015), we decided to proceed with the initial measurement model of the GCS. The composite reliability of the GIS and GCS was 0.894 and 0.916, respectively.

When testing the latent variable correlation between HCSS and GIS and GCS, the ICM-CFA model of the HCSS was assessed. The overall model comprising PH, NHI, NHO, GIS, and GCS yielded acceptable fit-indices [$\chi^2(df = 264, N = 335) = 469.704, p < 0.001$; TLI = 0.942; CFI = 0.949; RMSEA = 0.048 (0.041–0.055); and SRMR = 0.051]. The latent variable correlations are displayed in **Table 7**.

TABLE 3 | Goodness of Fit Statistics and Information Criteria for the EFA on the HCSS (sample 1).

	χ^2	df	CFI	TLI	RMSEA	RMSEA 90% CI	SRMR	AIC	BIC
One-factor solution	939.926*	77	0.670	0.610	0.159	[0.150, 0.169]	0.145	19,904	20,076
Two-factor solution	381.145*	64	0.879	0.827	0.106	[0.096, 0.116]	0.056	19,187	19,412
Three-factor solution	155.979*	52	0.960	0.930	0.067	[0.055, 0.080]	0.025	18,917	19,191
Four-factor solution	96.092*	41	0.979	0.953	0.055	[0.041, 0.070]	0.020	18,874	19,192

df, Degrees of freedom; CFI, comparative fit index; TLI, Tucker-Lewis index; RMSEA, root mean square error of approximation; CI, confidence interval; SRMR, Standardized Root Mean Squared Residual; AIC, Akaike information criterion; BIC, Bayesian information criterion. EFA models were conducted with geomin oblique rotation, MLR estimator. *All χ^2 -values are significant ($p < 0.001$).

TABLE 4 | Factor loadings for EFA (sample 1).

	One factor	Two factors		Three factors			Four factors			
	F1	F1	F2	F1	F2	F3	F1	F2	F3	F4
Positive humor (PH)										
PH1	0.033	0.756*	-0.006	0.755*	-0.037	0.021	-0.010	0.759*	-0.031	0.015
PH2	0.100*	0.799*	0.062	0.801*	0.059	0.001	0.016	0.793*	0.036	0.011
PH3	0.022	0.805*	-0.019	0.803*	0.003	-0.032	-0.018	0.813*	0.023	-0.047
PH4	0.037	0.684*	0.004	0.685*	-0.008	0.004	0.019	0.679*	-0.040	0.022
Negative humor in-group (NHI)										
NHI1	0.548*	0.227*	0.540*	0.241*	0.636*	-0.007	2.203	0.000	0.003	0.002
NHI2	0.555*	-0.011	0.557*	-0.003	0.774*	-0.104	0.046	-0.019	0.740*	-0.107*
NHI3	0.695*	0.004	0.695*	0.006	0.713*	0.096	-0.024	0.005	0.797*	0.022
NHI4	0.644*	0.071	0.642*	0.080	0.735*	0.017	0.064	0.055	0.664*	0.038
NHI5	0.751*	-0.020	0.753*	-0.016	0.659*	0.199*	-0.031	-0.016	0.759*	0.118
Negative humor out-group (NHO)										
NHO1	0.701*	-0.006	0.702*	-0.002	0.202*	0.541*	-0.006	-0.007	0.207	0.536*
NHO2	0.813*	-0.027	0.815*	-0.025	0.029	0.824*	-0.002	-0.030	0.039	0.819*
NHO3	0.711*	0.030	0.709*	0.033	-0.014	0.750*	0.036	0.021	-0.039	0.764*
NHO4	0.800*	0.027	0.798*	0.029	0.016	0.825*	-0.017	0.029	0.062	0.792*
NHO5	0.789*	-0.006	0.789*	-0.004	-0.030	0.859*	0.018	-0.011	-0.019	0.848*

* $p < 0.05$. Sample 1, $N = 441$.

Boldface: Factor loadings on chosen factor solution.

TABLE 5 | Factor loadings for ICM-CFA and ESEM (sample 2).

	Three-factor ICM-CFA				Three-factor ESEM			
	PH	NHI	NHO	δ	PH	NHI	NHO	δ
PH1	0.772*			0.404*	0.775*	0.048	-0.015	0.404*
PH2	0.735*			0.460*	0.743*	0.001	0.052	0.446*
PH3	0.803*			0.355*	0.796*	-0.025	-0.042	0.358*
PH4	0.568*			0.677*	0.565*	-0.056	-0.075	0.660*
NHI1		0.603*		0.636*	0.104*	0.315*	0.355*	0.598*
NHI2		0.771*		0.405*	0.004	0.676*	0.106	0.422*
NHI3		0.816*		0.334*	0.024	0.757*	0.067	0.346*
NHI4		0.820*		0.327*	-0.042	0.953*	-0.150*	0.282*
NHI5		0.855*		0.268*	-0.033	0.915*	-0.063	0.242*
NHO1			0.705*	0.503*	0.025	0.042	0.673*	0.502*
NHO2			0.859*	0.262*	-0.052*	-0.005	0.868*	0.250*
NHO3			0.813*	0.340*	0.061	-0.062	0.869*	0.318*
NHO4			0.813*	0.339*	0.033	0.188	0.653*	0.348*
NHO5			0.882*	0.222*	0.012	0.048	0.844*	0.224*

Boldface: Factor loadings on intended factor, * $p < 0.05$. Sample 2, $N = 335$. δ = item uniquenesses (residual variances).

PH, Positive humor; NHI, Negative humor in-group; NHO, Negative humor out-group.

TABLE 6 | Goodness of Fit Statistics and Information Criteria for the ICM-CFA, ESEM, and MIMIC Models (sample 2).

	χ^2	df	CFI	TLI	RMSEA	RMSEA 90% CI	SRMR	AIC	BIC
ICM-CFA	145.141*	74	0.968	0.961	0.054	[0.041, 0.066]	0.050	11,363	11,534
ESEM	88.065*	52	0.984	0.972	0.046	[0.028, 0.062]	0.020	11,340	11,596
Null effects model	182.952*	66	0.952	0.924	0.073	[0.060, 0.085]	0.086	11,341	11,596
Factors-only model	131.395*	63	0.972	0.953	0.057	[0.043, 0.071]	0.027	11,290	11,557
Saturated model	85.942*	52	0.986	0.972	0.044	[0.027, 0.060]	0.019	11,264	11,573
Partial DIF ^a	100.408*	56	0.982	0.966	0.049	[0.033, 0.064]	0.033	11,272	11,566

df, Degrees of freedom; CFI, comparative fit index; TLI, Tucker-Lewis index; RMSEA, root mean square error of approximation; CI, confidence interval; SRMR, Standardized Root Mean Squared Residual; AIC, Akaike information criterion; BIC, Bayesian information criterion.

ICM-CFA model was conducted with target oblique rotation, ESEM model was conducted with target oblique rotation. MLR estimator. *All χ^2 values are significant ($p < 0.001$). ^aSex included as predictor of the items of the two negative humor dimensions.

As shown in **Table 7**, there was a positive correlation between positive humor climate and social cohesion, and a negative correlation between positive humor climate and social group-conflict. The two negative humor climate dimensions (in-group and out-group) were both positively associated with social group-conflict. In addition, the positive correlation between the two negative humor climates (in-group vs. out-group) remained relatively high.

Finally, model fit comparisons indicated that the saturated model had a better model fit than the factors-only model (Δ CFI = 0.014 and Δ RMSEA = 0.013), which suggest DIF as a function of sex (**Table 6**). Examination of the parameter estimates showed that females provided lower ratings than males on the items of the two negative humor dimensions (**Table 8**). Thus, we estimated a partial DIF model where sex predicted the items of the two negative humor dimensions (but not the positive humor items), which provided a comparable level of fit as the saturated model (**Table 6**). Taken together, these results suggest partial DIF as a function of sex, indicating that females provided lower ratings than males on the negative humor dimension items.

DISCUSSION

The aim of this study was to develop and examine the psychometric properties of a humor climate scale for use in team sport. Humor has been identified as an important phenomenon

in sport contexts that may influence interpersonal relationships and team functioning. Humor climate has the potential to both strengthen various group processes or be detrimental to individuals in sport teams. Still, lacking a suitable questionnaire to assess humor climate, little research has been conducted to explore these relationships. The HCSS provides a measure that has the potential to fill this gap and offers an appropriate tool to conduct more research on this essential phenomenon. The overall scale development process was based on recommendations from previous research by Eys et al. (2009) and DeVellis (2017) and allowed us to develop the 14-item HCSS that measures three dimensions of humor climate: positive humor, negative humor in-group, and negative humor out-group.

First, to establish content validity, a literature review, focus group interviews, discussion groups, expert reviews, and revisions by former elite athletes were conducted in line with suggestions from DeVellis (2017). These steps were performed to optimize the instrument's content in relation with the humor climate construct we wanted to measure (Johnson and Morgan, 2016). With an extensive procedure exploring humor as communication in a team sport context and through item generation, content validity of the HCSS was supported.

The three-factor ICM-CFA model of the HCSS demonstrated satisfactory results with acceptable model fit with strong factor loadings. The three-factor ESEM model also demonstrated acceptable results with a marginally better model fit on the CFI and the RMSEA. Despite a slightly improved model fit on the ESEM model, the ICM-CFA provides more parsimony to our final model. Kline (2016) argues that a proposed model provides support for the interpretation if the instruments' validity when the items targeting a certain factor have high factor loadings, and when correlations between factors are not overly high. In the ICM-CFA model, factor loadings ranged from 0.568 (PH4) to 0.882 (NHO5), providing acceptable factor loadings on the intended factors. The latent factor correlations between positive humor and negative humor in-group, and between positive humor and negative humor out-group were weak and non-significant. Previous studies have reported non-significant correlations (Curseu and Fodor, 2016) and low-to-moderate correlations (Martin et al., 2003; Blanchard et al., 2014; Cann et al., 2014) between positive humor and negative/aggressive humor. Thus, our findings in relation to correlation between positive humor and negative humor mirror

TABLE 7 | Latent variable correlations (sample 2).

	PH	NHI	NHO	GIS
NHI	-0.103 [-0.229, 0.022]	-		
NHO	-0.058 [-0.208, 0.091]	0.798* [0.672, 0.942]	-	
GIS	0.382* [0.237, 0.528]	-0.096 [-0.260, 0.068]	-0.053 [-0.223, 0.117]	-
GCS	-0.173* [-0.301, -0.045]	0.511* [0.371, 0.650]	0.397* [0.236, 0.557]	0.069 [-0.084, 0.222]

Standardized correlation estimates and [95% CI]. * Statistically significant ($p < 0.01$).

PH, Positive humor; NHI, Negative humor in-group; NHO, Negative humor out-group.

TABLE 8 | Effect of sex on the item responses in the saturated MIMIC model (sample 2).

	β	<i>b</i>	<i>SE</i>	<i>p</i>
Positive humor				
PH1: Players do funny things	0.019	0.044	0.147	0.764
PH2: Players make fun of each other (joking, imitation, comments, tomfoolery)	-0.123	-0.263	0.163	0.106
PH3: Players tell funny jokes that make others smile and laugh	-0.136	-0.311	0.171	0.069
PH4: I experience friendly irony	-0.081	-0.178	0.116	0.126
Negative humor in-group				
NHI1: Players tell negative stories about each other to be funny	-0.339	-0.946	0.132	< 0.001
NHI2: Humor makes some players feel belittled	-0.166	-0.413	0.188	0.028
NHI3: The humor is characterized/tinged by discriminatory content	-0.307	-0.680	0.179	< 0.001
NHI4: Players and coaches use negative humor about each other to be funny	-0.289	-0.576	0.137	< 0.001
NHI5: Offensive humor is used about players	-0.312	-0.573	0.150	< 0.001
Negative humor out-group				
NHO1: People outside the team are imitated in a disrespectful way	-0.300	-0.663	0.105	< 0.001
NHO2: Malicious humor is used toward people outside the team	-0.309	-0.616	0.111	< 0.001
NHO3: Players use offensive humor about people outside the team	-0.234	-0.472	0.112	< 0.001
NHO4: Players laugh at discriminatory comments made about people outside the team	-0.363	-0.776	0.121	< 0.001
NHO5: Players use hostile humor about people outside the team	-0.328	-0.642	0.121	< 0.001

Sex coded as 0 = male, 1 = female. β , standardized regression coefficient; *b*, unstandardized regression coefficient; *SE*, standard error; *p*, *p*-value.

previous research, and the lack of association indicates that positive and negative humor can be seen as two distinct facets of humor (Martin et al., 2003). The latent factor correlation between negative humor out-group and negative humor in-group was, however, quite strong (ICM-CFA: 0.799, ESEM: 0.772), indicating a relatively high degree of shared variance, and thus, possibly low discriminant validity. According to Blanchard et al. (2014), an overlap between negative humor out-group and in-group is to be expected as the two factors have substantial conceptual similarities that may explain this overlap. Although this correlation is considerably higher than the correlation between positive humor and negative humor in-group and negative humor out-group, each correlation is below 0.90 and the factors are identified as unique factors (Kline, 2016). Overall, the factor analysis from the ICM-CFA and ESEM support the three-dimensional structure of the HCSS.

Even though there are no established cut-offs regarding the magnitude of target factor loadings and cross-loadings in ESEM models, some guidelines have recently been provided (Morin et al., 2020). Cross-loadings below 0.300 could be considered negligible, whereas cross-loadings larger than 0.300 should be inspected further. The cross-loadings in the present study were mostly negligible. However, one item identified in the EFA in sample 1 as negative humor in-group factor (NHI1: Players tell negative stories about each other to be funny) had a substantial cross-loading on negative humor out-group (0.355) in the ESEM model in sample 2. One explanation could be that for this item, the “out-group” target is perceived somewhat differently. Negative humor directed toward a teammate who is physically present (as was the intended meaning of the item) should be considered as in-group humor. However, if negative humor expressions directed toward a teammate occur when he or she is not present (i.e., backbiting), the same item may be perceived as out-group humor. Further exploration of this item should be conducted, and this substantial cross-loading should be

scrutinized in future studies. Still, this item captures an important feature of negative humor climate in sport teams that the expert groups in phase two regarded as important, thus supporting the inclusion of this item in the questionnaire.

In terms of concurrent validity, we tested the relation between the humor dimensions and group integration social (GIS) and social conflict (GCS). Positive humor was, as expected, positively related to GIS and negatively related to GCS. This is consistent with previous humor research (Romero and Pescosolido, 2008), and our results (see Table 7) contribute to further confirmation of this relation. This indicates that our conceptualization of positive humor in the HCSS appears both theoretically and conceptually meaningful.

Negative humor has previously been connected to both cohesion and conflict (Meyer, 2000; Cruthirds et al., 2013), and former research is divergent on what kind of outcomes that are related to negative humor out-group (Romero and Cruthirds, 2006; Cann et al., 2014; Scheel and Gockel, 2017). Our results showed negative humor in-group had a statistically significant relation with GCS, but not a statistically significant relationship with GIS. Negative humor out-group was also examined in relation to GIS and GCS. The results revealed a significant relation between negative humor out-group with GCS. The similar relations between negative humor in- and out-group with GIS and GCS may be explained by a previously hypothesized distinction between aggressive humor and mild aggressive humor (Romero and Cruthirds, 2006), where the intended meaning is to communicate a forceful message with a humorous pitch, but it is interpreted as aggressive humor, increasing levels of conflict. This differentiation is not accounted for in the HCSS and this may explain why negative humor out-group might be experienced as fun and joyful in a team, but still consist of maladaptive content, and therefore in some cases lead to conflict (Ronglan and Aggerholm, 2013). Future studies are therefore required to assess how different levels

of “aggressiveness” in negative humor affect humor climate within teams. Lastly, negative humor out-group may have other characteristics that we were not able to capture in the HCSS and these may be related to other group variables that are important in team sports. No previous studies have managed to separate positive and negative humor climate in team sports, but our initial findings seem promising.

When testing the nomological network, the latent variable correlations supported the hypotheses that positive humor is positively connected to cohesion, and negatively connected to conflict. Furthermore, greater negative humor (both in-group and out-group) was related to greater social conflict. Previous studies have established the beneficial impact positive humor can have on different group processes and group outcomes in organizations (Romero and Pescosolido, 2008; Mesmer-Magnus et al., 2012), and have also highlighted the potential destructive effects of negative humor (Wood et al., 2007). Findings in the present study reflect these relations and therefore support the usefulness of this construct in team sport settings. Investigating the nomological validity of the HCSS contributes to establishing repercussions of certain degrees of different humor climate within sport teams. Previous studies on humor climate lack investigation of nomological validity (Cann et al., 2014; Curseu and Fodor, 2016), and consequently it is difficult to compare our results of nomological validity with previous humor climate studies. Despite this, we argue that the CFA results support the nomological validity of our theoretical relations, and we encourage other researchers to examine these further. We suggest that further exploration of the nomological network includes personal dispositions such as extraversion, agreeableness, and neuroticism (Zillig et al., 2002; Hüffmeier and Hertel, 2011). To further investigate concurrent validity in relation to humor climate, we also encourage researchers to examine other factors that theoretically should be related to humor climate. Relevant factors to investigate may be the relation between the HCSS subscales and individual humor styles, other group factors that are central in sport teams, and the way in which coaches/leaders may affect the humor climate in their team.

Humor scales are commonly assumed to measure the same attributes for both males and females (Blanchard et al., 2014; Cann et al., 2014). Studies regarding sex differences in humor usually depend on mean comparisons estimated by humor scales (Martin et al., 2003). However, the mean differences in humor can be attributed to a true difference, measurement bias, or a combination of both. Thus, insufficient evidence of absence of measurement bias compromises the conclusions made on group-comparisons.

Our analyses revealed partial DIF as a function of sex (scalar non-invariance), indicating that females provided lower ratings than males on the negative humor-climate items. A superior model fit for the saturated model indicates that the sex-differences in the present study are driven by differences at item-level, not on latent constructs level. The sex-difference at item-level indicates that males and females perceive and interpret the items differently. Specific words and sentences used in the negative humor dimensions can leave room for ambiguity that may render the interpretation of its intended meaning. Thus,

social, biological, and cultural differences between the sexes may be responsible for differential response patterns toward negative humor climate and therefore elicit biased responses to items. Although not completely explainable, one could argue that as a general trend, offensive, discriminatory, and negative humor are more socially acceptable among males in a masculine culture (Martin et al., 2003; Wood et al., 2007), and that this manifests into how the items are perceived. In contrast, typical female characteristics such as empathy and sensitivity may lead to the perception that negative humor behavior are undesirable, causing the females to underreport their engagement in such behaviors.

CONCLUSION, FUTURE RESEARCH, LIMITATIONS

The aim of this study was to develop and examine the psychometric properties of an instrument to measure humor climate in sport teams. We have advanced our understanding of the construct of humor climate in a new context and provided researchers with an instrument to assess humor climate in team sport contexts. First, our findings support a division of humor climate into three different dimensions: positive humor, negative humor in-group, and negative humor out-group. Second, our results revealed two different dimensions of negative humor, supporting previous research (Cruthirds et al., 2013). Moreover, our study supports research indicating that negative humor in-group may have a stronger negative effect on group processes, than negative humor directed outwards (Blanchard et al., 2014; Scheel and Gockel, 2017), confirming that knowing both the direction and the style of humor is vitally important (Romero and Cruthirds, 2006; Cann et al., 2014). Third, our newly developed instrument demonstrated statistically significant correlations between humor climate and group integration social and social conflict. These relations are of interest in further investigations, and future research could also examine other constructs of group dynamics in relation to humor climate. Lastly, participants responded to the Norwegian version of the HCSS questionnaire. There is a need to examine the psychometric properties of the English, and indeed any other language versions of the HCSS in future research.

This study has several strengths that contribute to a significant addition to humor research. This is the first study assessing humor climate in a team sport context, and comprehensive work has been completed to optimize the quality of the HCSS. No previous study on humor in sport has recruited a sample size with the magnitude in this present study, including athletes from three different team sports. We also consider it a strength that females and males are represented, including both elite and sub-elite athletes. Second, items were grounded with a foundation from previous research, qualitative interviews, discussion groups, and lastly expert revision. In addition, solid statistical analysis including EFA, ICM-CFA and ESEM has been conducted and we have provided complete transparency in our process of developing items for, and creation of the final version of the HCSS.

There are, of course, some limitations that are important to mention. First, the present study only examined a limited set of validity (structural, concurrent) and reliability aspects of the HCSS and additional tests of validity (e.g., predictive) and reliability (e.g., ICC) are warranted. Second, one item (NHI1) loaded significantly on both negative humor in-group and out-group in the ESEM model. Even if we argue that this item can be difficult for athletes to separate if the target is in-group or out-group, it was included in the questionnaire based on the results from the ICM-CFA model and support from the expert group. Nevertheless, this item should be explored in further research and comprehensively examined to more fully understand how it contributes to team sports humor climate.

Because of practical issues, clubs varied when they filled out the questionnaire during different weeks in the season. Therefore, conditions like tiredness, stress, time of day, may influence how players responded to the questionnaire. Whether this factor is considered a confounder remains unclear. Moreover, the present study does not investigate the temporal stability (test-retest reliability) of the developed scale. We encourage future studies to incorporate this when further examining the instrument. Lastly, future studies would do well to develop the scale to other languages and examine the scale in different cultural- and sport contexts. In conclusion, our study supports the construct validity of the HCSS and we encourage further examination of its psychometric properties in other samples, contexts and cultures. Particularly, the practical impact of the scalar non-invariance according to sex identified in the present study require further

investigation. Future studies should aim for larger sample sizes and even distribution between groups to ensure rigorous multi-group tests of measurement invariance in this (and other) humor scales.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, upon request.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Ethical Committee of the Faculty of Health and Sport Science, University of Agder. Written informed consent to participate in this study was provided by the participants.

AUTHOR CONTRIBUTIONS

GS, TH, and RH contributed to the conceptualization, development, data curation, former analysis, and the writing of the manuscript. AS contributed to statistical analyses and writing of the manuscript. AG contributed to data curation and reviewing of the manuscript. DP contributed to the writing of the manuscript and feedback on the conceptualization of the study. All authors contributed to manuscript revisions and approved the submitted version.

REFERENCES

- Abel, M. H., and Maxwell, D. (2002). Humor and affective consequences of a stressful task. *J. Soc. Clin. Psychol.* 21, 165–190. doi: 10.1521/jscp.21.2.165.22516
- Aggerholm, K., and Ronglan, L. T. (2012). Having the last laugh: the value of humour in invasion games. *Sport Ethics Philos.* 6, 336–352.
- Asparouhov, T., and Muthén, B. (2009). Exploratory structural equation modeling. *Struct. Equ. Model. A Multidiscip. J.* 16, 397–438. doi: 10.1080/10705510903008204
- Avolio, B. J., Howell, J. M., and Sosik, J. J. (1999). A funny thing happened on the way to the bottom line: humor as a moderator of leadership style effects. *Acad. Manag. J.* 42, 219–227. doi: 10.2307/257094
- Barsade, S. G. (2002). The ripple effect: emotional contagion and its influence on group behavior. *Administr. Sci. Q.* 47, 644–675. doi: 10.2307/3094912
- Blanchard, A. L., Stewart, O. J., Cann, A., and Follman, L. (2014). Making sense of humor at work. *Psychol. Manag. J.* 17, 49–70. doi: 10.1037/mgr0000011
- Booth-Butterfield, M., Booth-Butterfield, S., and Wanzer, M. (2007). Funny students cope better: patterns of humor enactment and coping effectiveness. *Commun. Q.* 55, 299–315. doi: 10.1080/01463370701490232
- Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualit. Res. Psychol.* 3, 77–101.
- Caird, S., and Martin, R. A. (2014). Relationship-focused humor styles and relationship satisfaction in dating couples: a repeated-measures design. *Hum. Int. J. Hum. Res.* 27, 227–247. doi: 10.1515/humor-2014-0015
- Cann, A., Watson, A. J., and Bridgewater, E. A. (2014). Assessing humor at work: the humor climate questionnaire. *Hum. Int. J. Hum. Res.* 27, 307–323. doi: 10.1515/humor-2014-0019
- Carron, A. V., Widmeyer, W. N., and Brawley, L. R. (1985). The development of an instrument to assess cohesion in sport teams - the group environment questionnaire. *J. Sport Psychol.* 7, 244–266. doi: 10.1123/jsp.7.3.244
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Struct. Equ. Model. Multidiscip. J.* 14, 464–504. doi: 10.1080/10705510701301834
- Clouse, R. W., and Spurgeon, K. L. (1995). Corporate analysis of humor. *Psychology* 32, 1–24.
- Craik, K. H., Lampert, M. D., and Nelson, A. J. (1996). Sense of humor and styles of everyday humorous conduct. *Hum. Int. J. Hum. Res.* 9, 273–302. doi: 10.1515/humr.1996.9.3-4.273
- Cronbach, L. J., and Meehl, P. E. (1955). Construct validity in psychological tests. *Psychol. Bull.* 52, 281–302. doi: 10.1037/h0040957
- Cruthirds, K. W., Wang, Y. J., and Romero, E. J. (2013). Insights into negative humor in organizations: development of the negative humor questionnaire. *J. Bus. Manag.* 19, 1–18.
- Curseu, P. L., and Fodor, O. C. (2016). Humor and group atmosphere development of a short scale for evaluating affiliative and aggressive humor in groups. *Team Perform. Manag.* 22, 370–382. doi: 10.1108/Tpm-04-2015-0022
- Decker, W. H. (1987). Managerial humor and subordinate satisfaction. *Soc. Behav. Pers.* 15, 225–232. doi: 10.2224/sbp.1987.15.2.225
- DeVellis, R. F. (2017). *Scale Development : Theory and Applications (Fourth edition)*. Thousand Oaks, CA: Sage.
- Edwards, C. N., and Jones, R. L. (2018). Humour in sports coaching: 'It's a funny old game'. *Sociol. Res. Online* 23, 744–762. doi: 10.1177/1360780418780047
- Enders, C. K. (2010). *Applied Missing Data Analysis*. New York, NY: Guilford Press.
- Eys, M., Loughhead, T., Bray, S. R., and Carron, A. V. (2009). Development of a cohesion questionnaire for youth: the youth sport environment questionnaire. *J. Sport Exerc. Psychol.* 31, 390–408. doi: 10.1123/jsep.31.3.390
- Eys, M. A., Carron, A. V., Bray, S. R., and Brawley, L. R. (2007). Item wording and internal consistency of a measure of cohesion: the group environment questionnaire. *J. Sport Exerc. Psychol.* 29, 395–402. doi: 10.1123/jsep.29.3.395

- Fereday, J., and Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: a hybrid approach of inductive and deductive coding and theme development. *Int. J. Qual. Methods* 5, 80–92. doi: 10.1177/160940690600500107
- Ferguson, M. A., and Ford, T. E. (2008). Disparagement humor: a theoretical and empirical review of psychoanalytic, superiority, and social identity theories. *Hum. Int. J. Hum. Res.* 21, 283–312. doi: 10.1515/Humor.2008.014
- Gockel, C., and Kerr, N. L. (2015). Put-down humor directed at outgroup members increases perceived—but not experienced—cohesion in groups. *Humor* 28, 205–228. doi: 10.1515/humor-2015-0020
- Greatbatch, D., and Clark, T. A. R. (2002). Laughing with the gurus. *Bus. Strategy Rev.* 13, 10–18. doi: 10.1111/1467-8616.00217
- Grisaffe, C., Blom, L. C., and Burke, K. L. (2003). The effects of head and assistant coaches' uses of humor on collegiate soccer players' evaluation of their coaches. *J. Sport Behav.* 26, 103–108.
- Gunter, H., Schreurs, B., Van Emmerik, I. H., Gijssbers, W., and Van Iterson, A. (2013). How adaptive and maladaptive humor influence well-being at work: a diary study. *Hum. Int. J. Hum. Res.* 26, 573–594. doi: 10.1515/humor-2013-0032
- Hatfield, E., Rapson, R. L., and Le, Y.-C. (2009). “Emotional contagion and empathy,” in *The Social Neuroscience of Empathy*, eds J. Decety and W. Ickes (London: MIT Press), 19–30.
- Haugen, T., Peters, D. M., Ommundsen, Y., Martin, L. J., Stenling, A., and Høigaard, R. (2021). Psychometric evaluation of the Norwegian versions of the modified group environment questionnaire and the youth sport environment questionnaire. *Meas. Phys. Educ. Exerc. Sci.* [Epub ahead of print]. doi: 10.1080/1091367X.2021.1917414
- Hermida, R. (2015). The problem of allowing correlated errors in structural equation modeling: concerns and considerations. *Comput. Methods Soc. Sci.* 3, 5–17.
- Høigaard, R., Haugen, T., Johansen, B. T., and Giske, R. (2017). Team identity in youth soccer: the role of coaches' feedback patterns and use of humour. *Int. J. Sports Sci. Coach.* 12, 697–707. doi: 10.1177/1747954117738843
- Hüffmeier, J., and Hertel, G. (2011). Many cheers make light the work: how social support triggers process gains in teams. *J. Manag. Psychol.* 26, 185–204. doi: 10.1108/026839411111112631
- Johnson, R. L., and Morgan, G. B. (2016). *Survey Scales: A Guide to Development, Analysis, and Reporting*. New York, NY: Guilford Publications.
- Jöreskog, K. G. (1999). *How Large Can a Standardized Coefficient Be. In the Help-File of the LISREL Program*. New York, NY: Guilford Publications.
- Kim, J., Godfrey, M., and Eys, M. (2020). A double-edged sword: the nature of team comedians in sport teams. *J. Appl. Sport Psychol.* [Epub ahead of print]. doi: 10.1080/10413200.2020.1759158
- Kline, R. B. (2016). *Principles and Practice of Structural Equation Modeling (Fourth edition)*. New York, NY: The Guilford Press.
- Kuiper, N. A., and McHale, N. (2009). Humor styles as mediators between self-evaluative standards and psychological well-being. *J. Psychol.* 143, 359–376. doi: 10.3200/Jrlp.143.4.359-376
- Kuipers, G. (2015). *Good Humor, Bad Taste: A Sociology of the Joke*. Berlin: De Gruyter.
- Lehmann-Willenbrock, N., and Allen, J. A. (2014). How fun are your meetings? Investigating the relationship between humor patterns in team interactions and team performance. *J. Appl. Psychol.* 99, 1278–1287. doi: 10.1037/a0038083
- Longhurst, R. (2003). Semi-structured interviews and focus groups. *Key Methods Geogr.* 3, 143–156.
- Marsh, H. W. (2007). “Application of confirmatory factor analysis and structural equation modeling in sport/exercise psychology,” in *Handbook of Sport Psychology (Third edition)*, eds G. Tenenbaum and R. C. Eklund (Hoboken, NJ: Wiley), 774–798.
- Marsh, H. W., Hau, K.-T., and Grayson, D. (2005). “Goodness of fit in structural equation models,” in *Contemporary Psychometrics. A Festschrift for Roderick P. McDonald*, ed. J. M. E. A. Maydeu-Olivares (Mahwah, NJ: Erlbaum).
- Marsh, H. W., Lüdtke, O., Nagengast, B., Morin, A. J., and Von Davier, M. (2013). Why item parcels are (almost) never appropriate: two wrongs do not make a right—Camouflaging misspecification with item parcels in CFA models. *Psychol. Methods* 18, 257–284. doi: 10.1037/a0032773
- Marsh, H. W., Morin, A. J., Parker, P. D., and Kaur, G. (2014). Exploratory structural equation modeling: an integration of the best features of exploratory and confirmatory factor analysis. *Annu. Rev. Clin. Psychol.* 10, 85–110. doi: 10.1146/annurev-clinpsy-032813-153700
- Martin, R. A., and Ford, T. (2018). *The Psychology of Humor: An Integrative Approach*. Cambridge, MA: Academic press.
- Martin, R. A., and Lefcourt, H. M. (1983). Sense of humor as a moderator of the relation between stressors and moods. *J. Pers. Soc. Psychol.* 45, 1313–1324. doi: 10.1037/0022-3514.45.6.1313
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., and Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: development of the humor styles questionnaire. *J. Res. Pers.* 37, 48–75. doi: 10.1016/S0092-6566(02)00534-2
- Martineau, W. H. (1972). “A model of the social functions of humor,” in *The Psychology of Humor: Theoretical Perspectives and Empirical Issues*, eds J. Goldstein and P. McGhee (Cambridge, MA: Academic Press), 101–125.
- McDonald, R. P. (1970). The theoretical foundations of principal factor analysis, canonical factor analysis, and alpha factor analysis. *Br. J. Math. Stat. Psychol.* 23, 1–21. doi: 10.1111/j.2044-8317.1970.tb00432.x
- McNeish, D. (2018). Thanks coefficient alpha, we'll take it from here. *Psychol. Methods* 23, 412–433. doi: 10.1037/met0000144
- Mesmer-Magnus, J., Glew, D. J., and Viswesvaran, C. (2012). A meta-analysis of positive humor in the workplace. *J. Manag. Psychol.* 27, 155–190. doi: 10.1108/02683941211199554
- Meyer, J. C. (1997). Humor in member narratives: uniting and dividing at work. *Western J. Commun.* 61, 188–208. doi: 10.1080/10570319709374571
- Meyer, J. C. (2000). Humor as a double-edged sword: four functions of humor in communication. *Commun. Theory* 10, 310–331. doi: 10.1111/j.1468-2885.2000.tb00194.x
- Morin, A. J., Myers, N. D., and Lee, S. (2020). Modern factor analytic techniques: bifactor models, exploratory structural equation modeling (ESEM), and bifactor-ESEM. *Handb. Sport Psychol.* 51, 1044–1073. doi: 10.1002/9781119568124.ch51
- Morin, A. J. S., Maiano, C., White, R. L., Owen, K. B., Tracey, D., Mascaret, N., et al. (2016). English validation of the short form of the physical self-inventory (PSI-S). *Psychol. Sport Exerc.* 27, 180–194. doi: 10.1016/j.psychsport.2016.08.016
- Morin, A. J. S., Marsh, H. W., and Nagengast, B. (2013). “Exploratory structural equation modeling,” in *Structural Equation Modeling: A Second Course*, 2nd Edn, eds G. R. Hancock and R. O. Mueller (Charlotte: Information Age Publishing, Inc), 395–436.
- Muthén, B. O., and Satorra, A. (1995). Complex sample data in structural equation modeling. *Sociol. Methodol.* 25, 267–316. doi: 10.2307/271070
- Muthén, L. K., and Muthén, B. O. (2017). *1998–2017. Mplus User's Guide*. Los Angeles, CA: Muthén & Muthén.
- Norrick, N. R., and Spitz, A. (2008). Humor as a resource for mitigating conflict in interaction. *J. Pragm.* 40, 1661–1686. doi: 10.1016/j.pragma.2007.12.001
- Paradis, K., Carron, A., and Martin, L. (2014). Development and validation of an inventory to assess conflict in sport teams: the Group Conflict Questionnaire. *J. Sports Sci.* 32, 1966–1978. doi: 10.1080/02640414.2014.970220
- Robert, C., and Wilbanks, J. E. (2012). The wheel model of humor: humor events and affect in organizations. *Hum. Relat.* 65, 1071–1099. doi: 10.1177/0018726711433133
- Romero, E. J., and Arendt, L. A. (2011). Variable effects of humor styles on organizational outcomes. *Psychol. Rep.* 108, 649–659. doi: 10.2466/07.17.20.21.PR0.108.2.649-659
- Romero, E. J., and Cruthirds, K. W. (2006). The use of humor in the workplace. *Acad. Manag. Perspect.* 20, 58–69. doi: 10.5465/Amp.2006.20591005
- Romero, E. J., and Pescosolido, A. (2008). Humor and group effectiveness. *Hum. Relat.* 61, 395–418. doi: 10.1177/0018726708088999
- Ronglan, L. T., and Aggerholm, K. (2013). “Humour and sports coaching: a laughing matter,” in *Routledge Handbook of Sports Coaching*, eds P. Potrac, W. Gilbert, and J. Denison (London: Routledge), 222–235.
- Ronglan, L. T., and Aggerholm, K. (2014). ‘Humour helps’: elite sports coaching as a balancing act. *Sports Coach. Rev.* 3, 33–45. doi: 10.1080/21640629.2014.885776
- Ruch, W., and Heintz, S. (2016). The German version of the Humor Styles Questionnaire: psychometric properties and overlap with other styles of humor. *Eur. J. Psychol.* 12, 434–455. doi: 10.5964/ejop.v12i3.1116

- Scheel, T., and Gockel, C. (2017). *Humor at Work in Teams, Leadership, Negotiations, Learning and Health*. Berlin: Springer International Publishing AG.
- Schermer, J. A., Martin, R. A., Vernon, P. A., Martin, N. G., Conde, L. C., Statham, D., et al. (2017). Lonely people tend to make fun of themselves: a behavior genetic analysis of humor styles and loneliness. *Pers. Individ. Diff.* 117, 71–73. doi: 10.1016/j.paid.2017.05.042
- Sliter, M., Jones, M., and Devine, D. (2017). “Funny or funnier? A review of the benefits (and detriments) of humor in the workplace,” in *The Handbook of Stress and Health: A Guide to Research and Practice*, eds C. L. Cooper and J. C. Quick (Hoboken, NJ: Wiley), 523–537.
- Sliter, M., Kale, A., and Yuan, Z. (2014). Is humor the best medicine? The buffering effect of coping humor on traumatic stressors in firefighters. *J. Organ. Behav.* 35, 257–272. doi: 10.1002/job.1868
- Sullivan, P. (2013). Humor styles as a predictor of satisfaction within sport teams. *Hum. Int. J. Hum. Res.* 26, 343–349. doi: 10.1515/humor-2013-0023
- Sullivan, P. J., and Dithurbide, L. (2007). The psychometric properties of the humor styles questionnaire with a sample of athletes. *J. Sport Exerc. Psychol.* 29:S207.
- Terrion, J. L., and Ashforth, B. E. (2002). From ‘I’ to ‘we’: the role of putdown humor and identity in the development of a temporary group. *Hum. Relat.* 55, 55–88. doi: 10.1177/0018726702055001606
- Thomae, M., and Pina, A. (2015). Sexist humor and social identity: the role of sexist humor in men’s in-group cohesion, sexual harassment, rape proclivity, and victim blame. *Hum. Int. J. Hum. Res.* 28, 187–204. doi: 10.1515/humor-2015-0023
- Thorson, J. A., and Powell, F. C. (1993). Development and validation of a multidimensional sense of humor scale. *J. Clin. Psychol.* 49, 13–23.
- Wood, R. E., Beckmann, N., and Pavlakis, F. (2007). “Humor in organizations: no laughing matter,” in *Research Companion to the Dysfunctional Workplace: Management Challenges and Symptoms*, eds J. Langan-Fox, C. L. Cooper, and R. J. Klimoski (Cheltenham: Edward Elgar Publishing), 216–231.
- Zillig, L. M. P., Hemenover, S. H., and Dienstbier, R. A. (2002). What do we assess when we assess a Big 5 trait? A content analysis of the affective, behavioral, and cognitive processes represented in Big 5 personality inventories. *Pers. Soc. Psychol. Bull.* 28, 847–858. doi: 10.1177/0146167202289013
- Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.
- Publisher’s Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Schei, Haugen, Stenling, Grøtting, Peters and Høigaard. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

APPENDIX

TABLE A1 | Norwegian version of the HCSS.

I mitt lag.

PH1: Finner spillere på humoristiske påfunn

PH2: Tuller spillere med hverandre (vitser, imitasjon, kommentarer, narrestreker)

PH3: Forteller spillere morsomme vitser som skaper smil og latter

PH4: Opplever jeg vennlig ironi

NH1: Forteller spillere negative historier om hverandre for å være morsom

NH2: Er humoren slik at enkelte føler seg mindre

NH3: Er humoren preget av diskriminerende innhold

NH4: Bruker spillere og trenere negativ humor om hverandre for å være morsom

NH5: Bliir humor om medspillere brukt på en krenkende måte

NHO1: Imiteres personer utenfor laget på en respektløs måte (støtteapparat, spillere på andre lag, dommere, supportere, journalister)

NHO2: Brukes ondsinnet humor om personer i idrettsmiljøet (støtteapparat, spillere på andre lag, dommere, supportere, journalister)

NHO3: Bruker spillere støtende humor om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister)

NHO4: Ler spillere av diskriminerende kommentarer om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister)

NHO5: Bruker spillere fiendtlig humor om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister)

PH, Positiv humor; NH, Negativ humor inn-gruppe; NHO, Negativ humor ut-gruppe.

Svar på Likert skala med 1 = Helt uenig til 7 = helt enig.

Paper III

A qualitative exploration of collective collapse in a Norwegian qualifying premier league soccer match – the successful team's perspective



A Qualitative Exploration of Collective Collapse in a Norwegian Qualifying Premier League Soccer Match—The Successful Team’s Perspective

Gaute S. Schei^{1*}, Tommy Haugen¹, Gareth Jones², Stig Arve Sæther³ and Rune Høigaard¹

¹ Department of Sports Science and Physical Education, University of Agder, Kristiansand, Norway, ² School of Sport and Exercise Science, University of Worcester, Worcester, United Kingdom, ³ Department of Sociology and Political Science, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

OPEN ACCESS

Edited by:

Rui Marcelino,
University Institute of Maia, Portugal

Reviewed by:

Carlos Lago-peñas,
University of Vigo, Spain
Kirsten Spencer,
Auckland University of Technology,
New Zealand

*Correspondence:

Gaute S. Schei
gaute.s.schei@uia.no

Specialty section:

This article was submitted to
Movement Science and Sport
Psychology,
a section of the journal
Frontiers in Psychology

Received: 15 September 2021

Accepted: 07 December 2021

Published: 18 January 2022

Citation:

Schei GS, Haugen T, Jones G,
Sæther SA and Høigaard R (2022) A
Qualitative Exploration of Collective
Collapse in a Norwegian Qualifying
Premier League Soccer Match—The
Successful Team’s Perspective.
Front. Psychol. 12:777597.
doi: 10.3389/fpsyg.2021.777597

The current case study focused on a crucial match in the qualification for the Norwegian Premier League (Eliteserien). In the match, the participants of the study experienced a radical change in performance toward the end of the second half, from being behind by several goals to scoring 3 goals in 6 min and winning the qualifying game. The purpose of this study was therefore to examine the perceptions and reflections of players and coaches (sporting director) on what occurred within their own team and within the opposing team. The momentum shift in the opposition team can be described as a collective collapse. In the study, the theoretical collective collapse process model was used as a guide for the design of the interview questions where five semi-structured interviews were conducted with participants involved in the match (players, coach, and sporting director). The participants watched excerpt clips from the match to recall the main events, which they subsequently reflected on. The results highlighted the importance of the “before-game” aspects (i.e., pressure, first game result), the “during-the-game” behavior (i.e., goals scored, playing with a low degree of risk) and the cognitive (i.e., feelings of pressure, despair) and emotional reactions (i.e., frustration, joy) to the match unfolding. In addition, social contagion processes were evident in both teams relating to emotion and behavior. Overall, the data from this study investigated the general structure of the process model of collective sport team collapse and found support for the notion of a temporal cascade of causes for a team collapse. Future research is encouraged to examine this model, to provide guidance to teams, coaches, and sport psychologists in order to make recommendations for dealing with collective collapse in sport teams.

Keywords: elite sport, soccer, negative momentum, positive momentum, emotional contagion, performance contagion

INTRODUCTION

What happened in the soccer match between Lillestrøm (LSK) and idrettsklubben (IK) Start (**Figure 1**) is something that occasionally happens in sport, a sudden and unexpected change in performance. This may be especially pertinent in soccer where the outcome of the match has large financial implications (Hoffmann et al., 2002). The term “momentum” is frequently used when the sequence of scoring or winning (success) has an influence on future performance success (Vallerand et al., 1988; Taylor and Demick, 1994; Gernigon et al., 2010; Briki et al., 2013; Iso-Ahola and Dotson, 2014). According to Higham et al. (2005), a positive momentum can, to some degree, be caused by a negative momentum in the opposition team. An extreme decline in performance and underperformance of many of the players in a team is referred to as collective collapse (Apitzsch, 2006, 2019). Usually, a collective collapse seems to be triggered by a critical situation that disrupts the interaction of the team, wherein they lose control of the match and are unable to regain it. Collective collapses most often occur in matches that are crucial. Particularly, where much is at stake and often with limited opportunity to return to previous levels of performance and is, thus, a more chronic condition (Adler and Adler, 1978; Cotterill, 2012; Den Hartigh et al., 2014).

Wergin et al. (2018) developed a collective collapse process model that distinguishes between precursors (predisposing conditions) and factors that create vulnerability to experiencing collective collapse, critical triggers, and cognitive, emotional, and behavioral outcomes in practitioners. Although the factors in the model are presented in a series of causes, the factors will be linked in dynamic and cyclical processes. Particularly, they influence and reinforce each other. Precursor related factors for a collective collapse that has been reported in the literature are a lack of attentional focus, over confidence, and poor preparation (Apitzsch, 2006; Wergin et al., 2018, 2019). Furthermore, it appears to occur more often in important matches, where a lot is at stake and where there is a lot of pressure. In addition, collective collapse seems to be more prevalent at the end of a match when the players begin to experience physical fatigue (Wergin et al., 2018).

Critical events or triggers are identified as crucial factors that accelerate the process toward a collective collapse (Apitzsch, 2009; Wergin et al., 2018, 2019). Triggers can be when the opposition scores a goal, changes in the tactics, or a key refereeing decision is made. Critical events can also be caused by internal factors. For example, when key players start to make mistakes or that several players make mistakes at the same time (Taylor and Demick, 1994; Jones and Harwood, 2008). In the models by Wergin et al. (2018, 2019), critical incidents can affect the players cognitively, emotionally, and behaviorally. Cognitive outcomes of a critical event may, for example, increase insecurity, lack of accountability, despair, individualization, and pressure that may hinder them to revert to normal performance (Wergin et al., 2018, 2019). For example, increased insecurity and lack of accountability may reduce the responsibility of players to take action and might also be associated with social loafing (Karau and Wilhau, 2020). Emotional outcomes can be frustration and

anxiety (Wergin et al., 2019). Several studies have shown that negative emotions are associated with decreased performance (Barsade and Gibson, 2012; Hill and Shaw, 2013; McEwan and Beauchamp, 2014). More specifically, negative emotions contribute to increased uncertainty, confusion, or even panic, and such refocusing and changing to a new situation can be very difficult (Higham et al., 2005; Wergin et al., 2018). The behavioral outcomes of critical incidents can cause hectic play or cautious play (Wergin et al., 2019). Hectic play, for example, can be related to choking. Baumeister and Showers (1986), p. 262 defined choking as “the occurrence of sub-optimal performance under pressure conditions.” When athletes choke under pressure, they begin to focus on their own achievements and become too self-conscious, which can be detrimental to the flow of movement and performance. However, choking may both be an antecedent to collective collapse or a consequence of the collective collapse (Hill et al., 2009; Wergin et al., 2019). Another behavioral outcome of a critical event is that constructive intra-team communication may be less frequent and replaced with negative communication (e.g., blaming, criticism) or silence among the players. Consequently, a negative atmosphere, reduced unity, and a mindset of fear of failure may occur (Apitzsch, 2009; Wergin et al., 2019).

According to research (Apitzsch, 2006; Wergin et al., 2019), a main factor in a collective collapse is the deterioration of the playing structure in the team. Salas et al. (2008) and Filho et al. (2015) stated that shared mental models are required for optimal team performance. Former research has indicated that a lack of operative and appropriate shared mental models is related to role ambiguity, poor interaction and coordination, inappropriate decision making, and reduced team performance (Reimer et al., 2006; Gershgoren et al., 2013; Giske et al., 2017). In team sport, key performance indicators (KPI) are often used to evaluate performance (Menmert and Rein, 2018). Wright et al. (2014) define KPI as factors that are aligned with success for a specific team and individual. To better understand the performance, coaches and performance analysts at the elite level often have large data sets at their disposal. This data focuses predominately on technical, tactical, and physical performance variables (Sarmiento et al., 2014). Although these performance variables give an important insight into how the team and the individual has performed, the data does not explain how social and psychological aspects (e.g., emotions and communication) may have affected the flow, momentum, and performance of teams (Wright et al., 2014; Pettersen et al., 2021).

The emotions and behaviors of individual players can, through social contagion, permeate through the whole team. Social contagion has been defined by Levy and Nail (1993), p. 271 as a process where “the spread of affect, attitude, or behavior from Person A (the “initiator”) to Person B (the “recipient”), where the recipient does not perceive an intentional influence attempt on the part of the initiator.” In sport, it has been documented that the contagion effect of individual emotions can affect the emotion of the team (Moll et al., 2010) and subsequently affect team performance (Boss and Kleinert, 2015). For example, Barsade (2002) found that the transfer of positive emotions increases the likelihood of improved cooperation, decreased conflict, and increased perceived task performance.

IK Start ready for the Eliteserien after three Ramsland goals in six minutes.

Incredible comeback sent Lillestrøm to the OBOS league

Lillestrøm had full control and led 4-0 in the 75th minute of play. Suddenly - almost completely out of nowhere – Start and Martin Ramsland scored three goals in six minutes. Start is ready for the Elite Series. Lillestrøm is relegated to the OBOS league. Lillestrøm - Start 4-3 (5-5 on aggregate).

Lillestrøm led 4-0 until the 75th minute and seemed to have complete control of Åråsen and secure a place in the Eliteserien. The coach seemed to save LSK from relegation. The party at Åråsen was well underway - and the jubilation scenes were ecstatic at the four Lillestrøm goals in the battle of destiny. Then the incredible thing happened. The absolutely spectacular. The six golden minutes that everyone with a heart for IK Start will never forget. Start - with Martin Ramsland from Marnardal in the lead - turned 4-0 to 4-3 in six wild minutes. - It is the sickest thing I have been involved in in my football career, says the hero Ramsland to Eurosport after the achievement.

- It is a miracle, says Start captain Erlend Segberg.

Start's three late goals gave 5-5 and overall victory on the away goal rule. Then it erupted on Åråsen - and flares were sent out over the entire stadium, so that the seven original overtime minutes became even more when the battle of fate was stopped in the overtime minutes. But it did not stop Start in completing the complete turning operation. Start is ready for the Elite Series. (<https://www.dagbladet.no/sport/utrolig-opphenting-sendte-lsk-til-obos-ligaen/71921387>)

DECEMBER 11, 2019 20.58 Dagbladet Øyvind Godø and Daniel Nerli Gussiås

FIGURE 1 | Report in the daily newspaper (translation conducted by the authors). Published with permission from Dagbladet.

The transfer of negative emotions is labeled as negative emotional contagion (Totterdell, 2000). Of great interest, negative emotions have been reported to spread faster than positive emotions (Tickle-Degnen and Puccinelli, 1999; Baumeister et al., 2001) and negatively influence the cognition of an athlete and promote a downward spiral leading to, or maintaining, a collective collapse (Wergin et al., 2019). In addition to the internal emotional contagion, there may also be an emotional transference between the teams, but then, with a contrasting effect (Taylor and Demick, 1994). For example, in a study by Moll et al. (2010) investigating emotional contagion in penalty shootouts, it was found that there was an expression of positive emotions within one team and increased feelings of inferiority in the opposing team. This indicates that when players demonstrate behaviors of dominance, opposition players may feel less confident, with the probability of success diminishing due to this inter-team contagion process.

Finally, there is also a behavioral contagion in a team where, for example, poor performance can be transferred among the players. When key players make mistakes, the negative transference seems to be more devastating because some players adapt easier to the mood and performance of key players compared to others (Apitzsch, 2009; Wergin et al., 2019). Even if there is a growing knowledge about the collective collapse phenomenon, more empirical research has been requested (Apitzsch, 2019; Wergin et al., 2019). Moreover, most of the research on collective collapse has focused the investigation from the collapsing team perspective and research to investigating how the interactions between the collapsing team and the opposing team unfold prior and during the collapse would be of great interest. Therefore, the purpose of this study was to investigate

the perceptions and reflections of players and coach on collective collapse from a bystander perspective.

METHOD

Pre-match Context

December 1, 2019, when the Norwegian football leagues (Eliteserien and first division) played their final rounds, it became clear that LSK from Eliteserien and IK Start from the first division would meet in a two-match qualification series to decide which team would play in Eliteserien in 2020. IK Start finished the first division league in third place and won the qualification battle in the first division between teams 3 and 6, thereby earning the opportunity to participate in the last qualification leg against a team from the Eliteserien. LSK finished their season in 14th place of 16th teams in total after securing one point in the last round of the league, avoiding relegation on goal difference. In the first qualification game between IK Start and LSK, IK Start won their home game 2-1 after being down 0-1 at half time.

Research Design

Considering the sparse amount of research on the phenomenon of collective collapse in sport, the current study was deemed suitable for a qualitative method of exploration. A phenomenological approach (Kvale and Brinkmann, 2009) was considered the most appropriate for the present study to investigate the reality of participants through their experiences, reflections, and opinions. To be able to explain the investigated phenomenon, an ideographic approach was chosen (Robson and McCartan, 2016). A case study design was used since it

is a useful strategy to understand a phenomenon in depth (Yin, 2014). Furthermore, semi-structured interviews were applied to obtain descriptions and interpretations of the phenomena of a collective collapse through the eyes of the interviewees (Kvale and Brinkmann, 2009). With an exploratory research design, data sampling was conducted on three different levels: (1) video recording of the investigated game, (2) objective match statistics of the investigated game conducted by Wyscout, and (3) verbalization during post performance interviews. In addition, expert group discussions were utilized to conduct subjective match-analysis of the examined game to optimize the understanding of researchers on how the game unfolded before the interviews with the participants were undertaken.

Participants

A purposive sampling approach was guided by the goal of recruiting participants who were particularly knowledgeable about the investigated game and had a central role in the team to maximize the content and the quality of the data (Robinson, 2014). The sample comprised of three players, the head coach, and the sporting director. All participants were male and from the club IK Start. The ages of the players were 22, 26, and 32 years, respectively. They had played for the team on average 2.3 years. The head coach and the sporting director had been in their positions for 1 year, were both former elite soccer players who played for national and international clubs, and have represented their national teams at senior level.

Procedure

Following ethical approval from the university of the first author and the Norwegian Social Sciences Data Service, the sporting director of IK Start was contacted and permission was given to contact players and coaches in order to arrange interviews. Potential participants were approached (including the sporting director) and informed of the study aim and objectives. All five participants were approached and agreed to contribute before interview arrangements were subsequently sorted. Interviews were conducted during 2 days in February of 2020 during the pre-season, 2 months after “the game” (the subject of the interview) was played. Participants were individually interviewed by two separate researchers in a meeting room in the home stadium of the participants. Informed consents were provided and signed before the interviews commenced. Participants were informed that they could access the transcribed material after the interview to make necessary changes and that they had the freedom to withdraw from the study at any given time. Interviews lasted an average of 48.2 min (range 42–55 min) and were digitally recorded.

Interview Guide

In relation to developing the interview guide, the process model of causes of collective collapse by Wergin et al. (2018) was examined in addition to former research on collective collapse in sport. This enhanced the understanding of the researcher of the phenomenon of collective collapse for the development

of questions and probes for the interview guide prior to the actual interviews.

The interview guide was divided into four different sections. Section 1 included information about the current study, informed participants of their freedom to read through the transcribed material after the interview, and provided opportunity for participants to ask any questions before the interview started. It was clearly specified by the researchers in this section that it is possible to identify the participants in the produced paper. Section 2 consisted of an open conversation about the game from the perspective of the participant and their experience of it (e.g., “What were your thoughts and emotions before the game?”). Questions about different phases and aspects of the game were asked, and the respondents were allowed to talk freely about the key situations as they experienced them during the game. Section 3 involved a systematic video-recall review of the investigated game where the participants were exposed to 11 short clips of game situations that could trigger reflections that had not been mentioned (e.g., what occurred in your team during and after this situation? What did you observe among the opposition when this happened?). Using video-recordings as stimuli to recall situations has been demonstrated to be a useful technique in semi-structured interviews (Schei and Giske, 2020). In Sections 2 and 3, it was important that the respondent expressed his experience from the following viewpoints: from the perspective of his own team, how they perceived the opposing team, and how both teams reacted to the different situations during the game. Different follow-up questions allowed for further clarification and exploration of key points made in addition to providing important nuances (Patton, 2002). Section 4 included a short summary and final questions (e.g., What was the main reason you managed to turn the game and qualify for the Eliteserien?). Participants were also given the opportunity to add any other important information that they felt was missing.

Data Collection

Cognition and experience during the match were examined with the aid of a video montage. The match was video recorded on national television and the film was used to create a video montage. The purpose of the montage was to assist the recall of cognitive information stored in the memory by viewing video footage of the situations under examination. This method has been used effectively in previous research (Trudel et al., 2001). To create the video montage, key critical situations during the match were identified (e.g., goals, substitutions). Video segments were, on average, 22 s long. For example, the clip of a goal also included actions prior to the goal, the shot, and the celebration. The following sections were included in the video montage: (1) before the match, (2) first goal to LSK, (3) second goal to LSK, (4) start of the second half, (5) third goal to LSK, (6) fourth goal to LSK, (7) double substitution for IK Start, (8) first goal to IK Start, (9) second goal to IK Start, (10) third goal to IK Start, and (11) end of the match. The video segments were presented to the participants in their sequence of occurrence during match, and after each segment, the players were challenged to recall and reflect (think out loud) freely about themselves, their own team, and the opposition.

Data Analysis

The objective of utilizing qualitative analysis was to examine the information embedded in the responses of the athletes to the video montage, which represented their thoughts during the targeted match and the selected critical moments. Transcripts from the interviews were analyzed using thematic analysis, following the six-phase model described by Braun et al. (2016). The analytic process of thematic analysis was deemed useful for identifying common patterns in the current data set. During each interview session, the interviewer made notes on the general points that were being made by the participant. These notes, while not coded, were used to focus the analytic thoughts of the researcher before the formal data analyses occurred. The researchers reviewed the transcripts for a minimum of two times to allow familiarity with the data. Responses to each specific segment of the montage were transcribed verbatim and analyzed independently. The research team met several times to establish a consistent understanding of the data, following phases 1-2 of the thematic analysis (Braun et al., 2016). Once the researchers agreed, raw data was tagged with a descriptive label to represent the type of cognition conveyed by the participants into lower order themes or subthemes. These lower order themes or subthemes were then organized into higher order themes, following phases 3-5 of theme development, refinement, and naming (Nowell et al., 2017). Lastly, the sixth phase of writing up the analysis was completed by connecting results from the data set to the existing literature and compiling the specific different aspects of the current paper (Braun and Clarke, 2006).

Several checks were incorporated to ensure the trustworthiness of the qualitative data interpretation through an interrelated process during different phases of the thematic analysis, following recommendations from Braun et al. (2016) and Nowell et al. (2017). First, prolonged engagement with the data set and triangulation of the collected data was an ongoing process throughout the development of the current research study. During expert group discussion, interview data was interconnected with match recordings and objective match statistics. This process gave an enhanced meaning to the transcribed material by linking data from different perspectives and, therefore, increasing the understanding of the game events. Secondly, peer debriefing and reflexive writing created a foundation for reflection during the process of coding, which improved the structure of the continuing thought process and collation of ideas arising from the raw data (Cutcliffe and McKenna, 1999). Finally, quotes were selected to capture the essence of the developed themes and to provide transparency to the conclusions made by the researchers in the study. Potential researcher disagreements regarding coding, theme development, and conclusions were solved through discussion until consensus was achieved.

RESULTS

The objective match analyses were received from Wyscout (Figure 2). A closer inspection of the match analyses revealed that IK Start had the highest percentage of *ball possession*, except

on the last 15 mins of the game. Regarding *expected goals* (xG), both teams were more effective than anticipated from the expected scoring probability. LSK achieved an xG number of 1.86 and IK Start got a xG of 1.00. IK Start gradually increased their number of *attacks per minute* until the 75th minute where they peaked right before their first goal of the game. Total percentage of *pass accuracy* was quite even for the two teams with LSK achieving a 68% pass accuracy in the first half and 66% in the second half, while IK Start returning 72 and 57% in the first and second halves, respectively. LSK was more successful with regard to *duels win rate* in total compared to IK Start, especially in the second half where LSK achieved 53% compared to 39% for IK Start. More specifically, building up to their first goal, IK Start increased their “duels win rate” from 26 to 42%, while LSK decreased from 70 to 52%. In addition, IK Start increased “attacks per minute” from 0.40 to 0.80, while LSK were stable on 0.40 in the period from the 46th to the 75th minute. Finally, IK Start increased “recoveries per minute” from 0.20 to 0.33, while LSK decreased from 0.33 in the period from 46th to 60th minute to 0.13 in the period from 61st to 75th minute.

The results from the semi-structured interviews are presented in order of importance and critical events for the outcome (see Figure 3). Interview data was organized into four higher order themes relating to the four last goals scored in the game (4-0, 4-1, 4-2, and 4-3). These higher order themes were then outlined in 40 lower order themes divided between the two competing teams. In addition, the results section starts with an introduction with descriptions and general information of what happened before the score was 4-0. This is done to gain a holistic view of how the game had unfolded prior to 4-0.

Before the Game

As stated earlier, the study aim was to investigate the second game of the two-match qualification between IK Start and LSK. This very important game would decide if IK Start would be promoted to the Eliteserien or whether LSK would retain their place in the Eliteserien. This decisive game was naturally described as very special and crucial by the players:

“It was a special match for both teams and a lot were at stake” (Captain)

“The coach was telling us before the game, no matter what happens, positive or negative, we have to keep on going no matter what, because it is only ninety minutes that could separate us from getting to Eliteserien or to not make it” (Goalkeeper).

First Half, 2-0 to LSK, “The First Shock”

In the second minute of the game, LSK scored the first goal after they had regained possession outside the 18-yard box of IK Start and the LSK left-back managed to score a goal. After 22 min, LSK increased their lead when they managed to cross the ball into the penalty area where the LSK striker headed the ball toward the goal and the IK Start center-half attempted a clearance but instead redirected it into the goal.

Even from the beginning of the match, the players recognized that LSK, as a team, were playing with confidence and commitment and that they were on a “higher level” compared



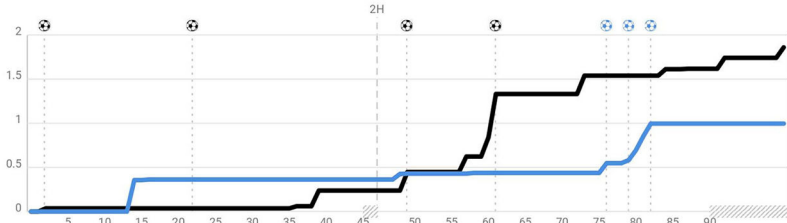
MATCH REPORT
MATCH DYNAMICS

NORWAY. PLAY-OFFS 1/2 (11.12.2019)
Lillestrøm 4 – 3 Start

Opportunities (xG)

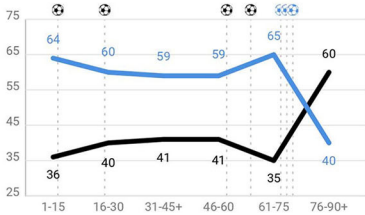
	Total	1st half	2nd half
● Lillestrøm	1.86	0.24	1.62
A. Melgalvis	0.49	-	0.49
D. Gustafsson	0.48	0.02	0.46
T. Lehne Olsen	0.33	-	0.33
● Start	1.00	0.36	0.63
E. Marković	0.32	0.26	0.06
M. Ramsland	0.29	-	0.29
D. Lowe	0.16	<0.01	0.16

xG dynamics



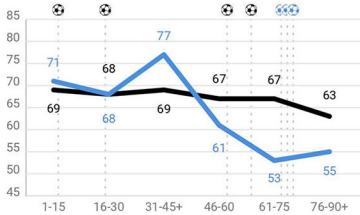
Ball possession, %

	Total	1st half	2nd half
● Lillestrøm	42%	39%	46%
● Start	58%	61%	54%



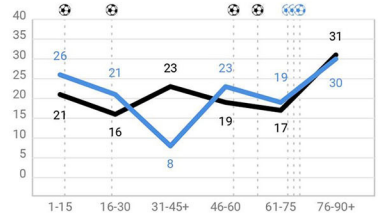
Pass accuracy, %

	Total	1st half	2nd half
● Lillestrøm	67%	68%	66%
● Start	65%	72%	57%



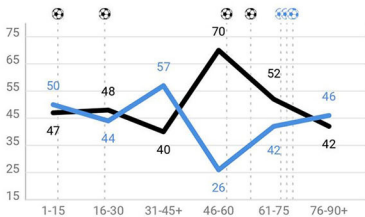
Long pass share, %

	Total	1st half	2nd half
● Lillestrøm	21%	19%	24%
● Start	20%	18%	22%



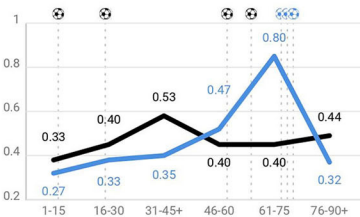
Duels win rate

	Total	1st half	2nd half
● Lillestrøm	49%	45%	53%
● Start	44%	50%	39%



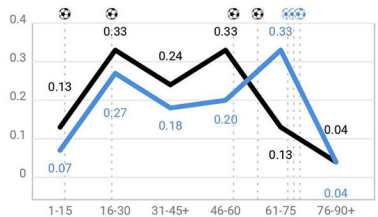
Attacks per minute

	Total	1st half	2nd half
● Lillestrøm	0.42	0.43	0.42
● Start	0.41	0.32	0.49



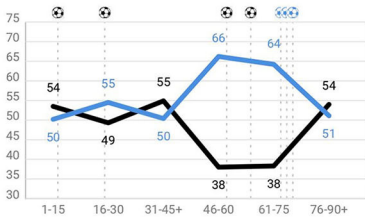
Recoveries per minute

	Total	1st half	2nd half
● Lillestrøm	0.19	0.23	0.15
● Start	0.17	0.17	0.16



Average formation line, m

	Total	1st half	2nd half
● Lillestrøm	48.7	52.3	44.6
● Start	56.3	51.9	60.6



Pressing intensity (PPDA)

	Total	1st half	2nd half
● Lillestrøm	5.1	5.0	5.3
● Start	4.9	5.3	4.5

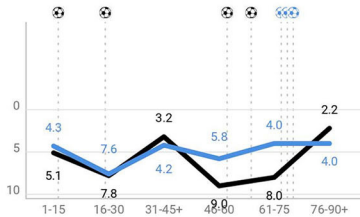
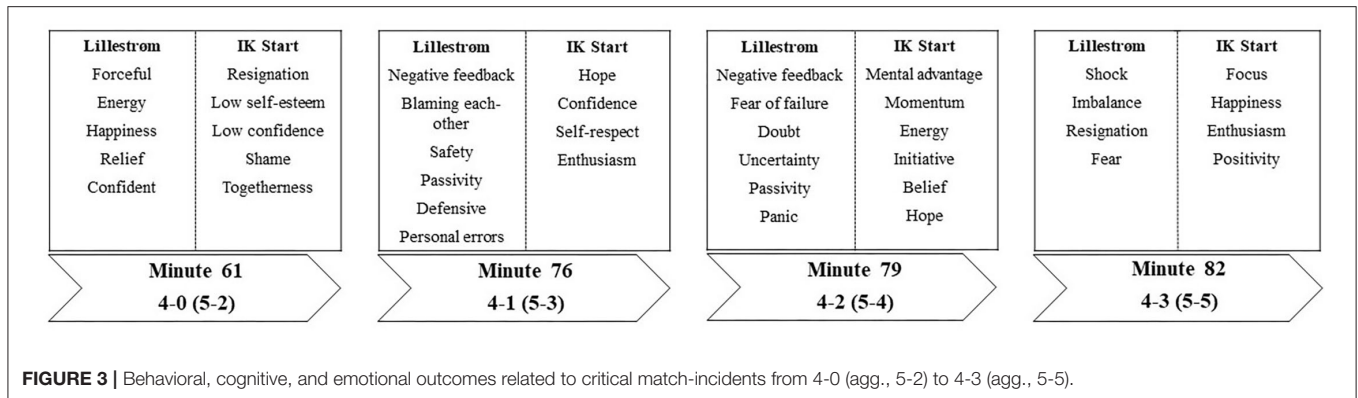


FIGURE 2 | Excerpt of the match report received from Wyscout. Published with permission from Wyscout.



to their performance in the first qualification match. LSK had the home advantage in the second game, and with the help of their supporters (who are acknowledged as some of loudest and most passionate supporters in Norway, authors comment), they attacked from the first second of the game. The IK Start players also perceived that the LSK players played with extreme dedication and aggression, which became difficult for IK Start to handle:

“You notice already from the start, before the goals, that they have an extreme commitment, everybody is running, it seems like they have three players more than us on the pitch, and it’s an enormous engagement and push. The home audience was crazy, we almost didn’t manage to talk to each other on the pitch, and it seemed like the LSK players managed to play with a higher intensity than us” (Striker)

“You feel small. That is maybe the best word I can use to describe it. The energy that they had, and the joy and positivity they exhibited, and the push from the home supporters made you feel small. It felt like we were less than them” (Captain).

Half Time Break, “A Strong Energy”

At half time, LSK were leading 2-0. Nevertheless, match statistics (Figure 2) from the first half showed that IK Start had the highest number of important key performance indicators such as ball possession, pass accuracy, duels win rate, and expected goals (Figure 2). LSK returned better match statistics regarding attacks per minute and recoveries per minute. Even so, all the players agreed that LSK dominated the first half and that the focus for the half time break was how to recover and turn the game around:

“We were not broken in any ways even though we were down with two goals, it was a strong energy in the dressing room and in the group that this is something we will manage” (Coach)

“It was a bit like I thought for myself that LSK has gone the whole autumn without winning football games, they have been leading games before they have gotten a slap in the face, a quite powerful one also. They have been leading a lot and struggled to win these games they are leading. So, I had that in the back of my head the whole time, that they feared to make a mistake, not having the enjoyment of completing something” (Striker).

Second Half, “From Bad to Worse”

As shown in Figure 2, IK Start increased the number of attacks per minute in the first quarter of the second half. Nevertheless, the result went from bad to worse for IK Start. After 61 min, the score was 4-0 to LSK, and everything indicated that LSK would stay in the top division. All respondents highlighted how enormously passionate and emotional the celebration of the LSK players was when they scored the third and fourth goals. They also reflected that the LSK players must have experienced a great relief:

“They were extremely fired up, and it was an exceptionally energy in them, and it was a force that just hit us like a wave. I noticed when they got 3-0, then I remember one of the LSK players cried out of joy. Then you noticed that they started to feel like the game was going their way” (Captain)

“They cried on the pitch, we were down three or four goals, and then you have players on the opposite team that cries. It was probably an enormous relief for them that it was going their way. They have had a huge pressure, maybe a lot bigger than we have had on us, and a club that never has been relegated. So, they probably felt much on that relief” (Sporting director).

Their own reflections concerning their own thoughts can be illustrated in the following statements:

“It’s finished now, we have thrown away our opportunity, you just want to be finished and travel back home” (Captain)

“I think it’s over, hope that the clock will go quickly, get on the bus, get home, take vacation, and come back stronger next season. But we have decided to not give up. With our fans, they create a good atmosphere, and they don’t give in, so after we gather ourselves, we agree that we don’t give up” (Striker).

Substitution and Tactical Adjustment

In the 71st minute, the coaching staff of IK Start made a double substitution to shift the dynamics of the game. The formation of the team was changed from 1-4-2-3-1 to 1-3-4-1-2 with a central defender as a target man up front, where IK Start adopted a more direct approach compared to earlier in the game.

“Plan B—It involved that we would move one central defender from defense up as a striker, and yes be more direct in our way of playing.

Get the ball as often as possible against their goal, or into dangerous areas around their goal, and that we had players that were ready to chase the long balls that we played” (Coach)

One of the IK Start players emphasized that this strategic double substitution gave a new mindset to the team:

“I remember that we got some new guidelines that we were supposed to follow and a different focus, and that felt good since we got stuck in what we tried to do before this change. Now the plan was very clear, it was to play long balls, and just work from there. So, I remember that change, and I recall that it was something that changed our mindset” (Captain).

4-1, “A Lucky Goal and Increased Confidence”

In the 75th minute, IK Start was awarded a freekick inside the half of LSK and the freekick was crossed into the box resulting in a headed goal. According to the players, there was nothing in the game that would indicate that IK Start would score a goal at that point of the game and they all seemed incredibly surprised:

“It came out of the blue. Like I said, I felt the game was over. I remember prior the first goal that they had just done an easy mistake and made a freekick out on the side. The ball was kicked into the box, and then we scored. But I still thought it would be difficult and that we really just made the end result a bit better” (Captain)

“I experienced that it came from a completely harmless position, we just kicked the ball up, and then it is headed into the goal. Then I got some of my self-respect back, it was embarrassing before that” (Striker)

“Was just a coincidence that came out of the sky. Lucky goal, out of nothing” (Goalkeeper).

The players perception of what this goal meant to them was centered around regaining self-respect, confidence, and hope, all positive effects following the tactical change:

“It was good to get a goal for my confidence going into next season. Not so embarrassing when I scored on the one chance I got. When it’s all dark then we don’t have anything to lose, so I am very calm, and I will be ready the last twenty minutes. If the ball arrives then I will take care of the chance as best as I can. So, I feel, especially after that goal, that I am very mentally present and focused, even though it may seem like we don’t create anything in large parts of the game and that we lose the ball to easy. But I say to myself that if the ball comes, then I will score” (Striker)

“It was no kind of celebration or things like that. It was more like, yes that happened, now we just keep on going. I don’t think it was a strong belief that we would turn the game, but it was nice to score. With the tactical changes we had done, and that the momentum of the game had changed a bit and things like that, it became a positive thing” (Captain)

“After the first goal there was like hope coming or racing inside of me” (Goalkeeper).

While this goal increased the belief and the self-respect within the IK Start team, it is important to note that the IK Start players

observed the creation of a negative atmosphere among the LSK players that had not been present earlier in the game:

“I remember that they are shouting and screaming that this is bad and shit, and who did this mistake and trying to blame somebody. From having completely control and almost celebrate the victory and keep their place in the league, it quiet downs a little. The commitment, intensity and energy they had in the first half, it disappears. Now they are just going to safe it” (Striker)

“We were all of a sudden very enthusiastic, and they kind of had a feeling of “Oh my god” we could lose something here now. Because until then I think we didn’t even have a shot on goal, so we had absolutely no chance, and then like a miracle happens and we scored our first goal out of nowhere and that was, at that day the first negative experience for LSK and the first positive experience for us. Because they got more passive, they didn’t push us from that moment on. They, suddenly they became a little defensive and yeah not that aggressive anymore.” (Goalkeeper)

“LSK starts doing mistakes they ordinary would not do, or that they had not done through the game. They became, just on that first goal, very affected by it” (Coach).

4-2, “Game On!”

Just 3 mins after the first IK Start goal, the center back of LSK made a personal error and mistimed a header that gave the striker of IK Start an opportunity alone with the goalkeeper. He managed to exploit this chance and scored the goal to make it 4-2. The perception of the player of their own team indicated that this goal was different from the first goal because it meant something more. Now, they started to believe that they could beat LSK and experienced that the game momentum was suddenly on their side. They gained more energy and recognized the reaction from the supporters, adding yet more belief:

“Now, I felt that we got the mental advantage of the game even though we still needed one more goal. We had scored two goals on two chances. I sensed that we had control, but still, you think that this is too good to be true, that we should turn this around. So, in retrospective, it’s natural for me to say that I felt we had the upper hand in some ways, but I don’t know if I really believed it. Because it becomes surreal that we are going to make it even though we were so close and had the momentum. It was special, like, do you dare to believe?” (Striker)

“The energy that we had been facing from the beginning of the game (from LSK), it was in us now, we had the upper hand. Here we actually understand that we have a chance, a quite good chance after how the game has unfolded the last minutes, with the match completely turned around. We had the initiative and the momentum since we got another goal” (Captain).

Their observation of LSK players were relatively unambiguous. They perceived that a negative atmosphere with less constructive communication and increased shouting, yelling, and complaining had spread in the team. They also highlighted that the LSK players seemed passive, inhibited, and cautious in the way they played. The observations indicated that the negative atmosphere among LSK players was reinforced, and they perceived that the fear of failure was evident in the LSK team:

“How I saw it, a couple of the players (on LSK) that had that high energy in the start of the game in terms of giving signals to their team members, not that they were the ones that were shouting a lot, but they gave many signals to the players around them, they suddenly became uncertain and passive. And those that had been very verbally active (on LSK) in a positive manner became more verbally active in a negative manner” (Captain).

The IK Start captain also describes an uncertainty and passivity among LSK players after the 4-2 goal:

“We had the advantage, they started to yell at each other, much shouting back and forward, a kind of uncertainty and passivity. You felt in some situations that they instead of taking one step forward for example, they rather awaited and held back a bit to secure the lead that they had. The two central defenders (on LSK) that had been dominant started to lose duels, started to blame others. They were very involved in the first goal at least, and after that they struggled to maintain, what should you call it, a constructive and positive behavior” (Captain).

The same was also observed on the sideline by the coach and the sporting director:

“You get very passive, you become doubtful, and you see that the players start looking around and are unsure on what to do with the ball when they get it. The movements stops and you become... You are too late on the first ball and the second ball, and the uncertainty just grows” (about what he perceived in LSK) (Coach)

“Now we see in a way that the LSK players start to... They fear the consequences. While IK Start can just keep doing what they do” (Sporting director).

The second IK Start goal also influenced the audience where the IK Start fans started to believe and therefore created more sound, helping the IK Start players, whereas the LSK fans became more silent. That uncertainty had also spread among the home supporters. The energy the IK Start players acquired from their supporters can be illustrated in the following statement:

“This is where the hope is ignited. I notice it especially with the IK Start supporters that goes crazy. I think I never have experienced supporters like that before. It was an insane atmosphere, and they were jumping and cheering like crazy on the side with Kevin and Aron (IK Start players). Then I realized, okey, now we start to believe we can do this. This is, now is the possibility to take them, we saw that on the fans and on our players. And it was a bit like, we have not been good, but now we have scored two goals in four minutes” (Striker).

4-3, “The Comeback Is Fulfilled”

In the 82nd minute, IK Start scored the third goal after a long pass from their own half which no LSK defenders attacked. This led to the ball being headed behind the LSK defense, where the IK Start attacker controlled the ball and scored his third goal in just a 6-min period. The game had been completely turned around, and at this moment, IK Start were heading for the premier division in Norway on the away goal rule. The perception of players of their own team was characterized by shock and happiness of what they

managed to do, but also the rapid realization that there were still 8 mins plus extra time left, and that the game could still be lost:

“Like an out-of-body experience. It is like four seconds where you don’t understand what has occurred, just a feeling that is impossible to describe. But then it suddenly hits me what is yet to come, and that this is not over. But when we scored, it was huge, huge happiness first” (Captain)

“We were enthusiastic, and we just did something very special, coming back from 4-0 defeat out of nothing. So, there was extremely positivity, but still a very focused group” (Goalkeeper).

The IK Start players also described the LSK team to be overflowing with emotions and fear. The collapse permeated throughout the whole LSK team and the perception of the player of the LSK players can be illustrated by the following quotes:

“They were stunned and just shocked over what had transpired. I think they just needed a little time to realize it. They were not in balance; they were in imbalance and didn’t understand what had occurred” (Captain)

“It was a surreal feeling. Then you got a sense that they had given up in a way, that they didn’t manage to think clearly. They yelled at each other and LSK players were crying on 4-0, but six minutes later it was almost like they cried out of sorrow, it seemed like they had given up then” (Striker).

Final Retrospective Reflections

Idrettsklubben (IK) Start managed to defend the last part of the game, including 10 mins of extra time. The game ended 4-3 to LSK, 5-5 over two legs, meaning that IK Start qualified for the highest division in Norway on the away goal rule. In their reflections on why LSK collapsed, the respondents highlighted “luck” as a catalyst for the start of their comeback:

“I think luck is a factor, that we got the first goal, without it we would not have made it” (Captain)

“That was like all that we talked about before the game and in the half time and also in the circle, that one goal can change the whole game” (Goalkeeper).

Furthermore, the goals created a clear change in the way LSK players appeared on the pitch after IK Start managed to score their first goal. In the first 75 min of the game, they had been dominant, aggressive, and in control of the match. However, after the first goal by IK Start, everything changed both collectively and individually for LSK:

“On 3-0 and 4-0 especially one player on LSK lies down on the pitch and cries and hits down on the grass. He has tears because he is so happy. On 4-1 I get the impression that the whole stadium quiets down a bit, so you notice it on the home supporters. They get some fear even though it is far from being any danger, so you notice it on the audience. Then especially on 4-2 you notice it on the LSK players that it is panic, fear of yet again lose a lead and not winning the qualification. But you notice, maybe before that 4-3 goal that they are a bit out of balance, it is not that intensity, energy, and push that they had in the first half and in the start of the second half. It is kind of gone.” (Striker)

“You can say that the positive communication and the “high fives” through the game (in LSK), and look at each other with the winning posture and cheer for each other in all sorts of ways, tackles and duels that they win, it completely disappears” (Coach).

In addition, the respondents state that seeing LSK players change their behavior after IK Start scored gave them more belief and energy that they could win the qualification match:

“After this (the 4-2 goal) then we have that drive and an enormous energy and then you see, I remember them showing some kind of uncertainty and dissatisfaction, and that gave me even more belief that we actually could do this” (Captain)

“We scored two goals in three minutes or something like that, and it is still 25 minutes to go, maybe half an hour including extra time. I feel we are being lifted by our supporters, but also from that the home audience is completely quiet, not like anything before in the game. LSK players are yelling at each other and hold their hands in front of their faces. Then I think for myself, we can do this” (Striker).

DISCUSSION

The present study investigated the perceptions and reflections (from the IK Start players, coach, and sporting director) of the radical change in performance in the qualification match between LSK and IK Start. Based on the analysis, the radical change can be described as a collective collapse in the LSK team. According to theory, collective collapse occur more often at the end of “high pressure” matches and where a great deal is at stake (Wergin et al., 2018). It is reasonable to say that the match between LSK and IK Start was a high-pressure game with a great deal at stake. The pressure was probably more extreme for the LSK players representing a club that had not only played the current season at the elite level, but also had a long and successful 45-year club history that never experienced relegation. On the other hand, IK Start was a first division club and are therefore perceived as the underdogs¹ In addition, IK Start had been the best team in the first match and had a 2-1 lead before the final match. They, therefore, had an advantage in terms of the result and most likely also the psychological benefits of self-confidence and collective efficacy (Chow and Feltz, 2008; Feltz et al., 2008; Van Lier et al., 2015). The match started very well for the LSK team. They experienced a positive flow and had the momentum for the first 60 min by scoring four goals. Suddenly, in a period of 6 min, a momentum shift occurred, and IK Start scored three goals in succession.

The participants reported that in the first 60 min of the match, the emotions and behaviors of the LSK players were highly affected by the goals they scored. For each goal, they perceived increased relief and happiness against the opposing team, and a “We are going to make it” attitude seemed to gradually spread within the team. Several researchers have revealed that athletes report emotions such as happiness, enjoyment, and pride following successful performances (Szabo and Bak, 1999; Wilson and Kerr, 1999; Ruiz and Hanin, 2004; Cerin and

Barnett, 2006). Furthermore, expressing positive emotion (e.g., happiness, enjoyment, pride) has been suggested to promote and boost confidence and to signal dominance and superiority (Brown and Marshall, 2001; Tracy and Robins, 2007a,b; Tracy and Matsumoto, 2008). The emotional expression may also be reinforced by an emotional contagion process in the team. More specifically, this phenomenon claims that expression of the emotions experienced by an individual can transfer to other individuals nearby, particularly when one holds a close relationship with them (Hatfield et al., 1994; Kelly and Barsade, 2001). In an achievement setting, Barsade (2002) found that positive emotion contagion improved cooperation, decreased conflict, and increased perceptions of task performance. In contrast, contagion of negative emotions led to the reverse. It is reasonable to suggest that during the first 60 min, positive emotional (LSK team) and negative emotional (IK Start team) contagion was present. However, even if all respondents expressed that despair, shame, and an acceptance of defeat were soon-to-be a reality, there was still an attitude in the team that they had to fight to the end of the match, at least to prevent an even more humiliating result and to maintain their self-respect. This “fight to the end” attitude at the individual level demonstrates the attributes of mental toughness which is reported in elite athletes (Thelwell et al., 2005; Danielsen et al., 2017). At the team level, it may be a characteristic of a resilient sports team. Morgan et al. (2013) defined team resilience as “a dynamic psychosocial process which protects a group of individuals from the potential negative effect of the stressors they collectively encounter. It comprises of processes whereby team members use their individual and combined resources to positively adapt when experiencing adversity” (p. 552).

The match statistics (**Figure 2**) indicate that something was changing in the game from the 46th to 60th minute to the 61st to 75th minute regarding KPI variables (e.g., duels win rate, attacks per minute, recoveries per minute). In sum, the KPI variables may indicate that game dynamics were shifting. However, none of the respondents reported to perceive those changes during that period of the game. According to the theory of collective collapse, specific triggers or critical events are usually reported as prevalent. These triggers or critical events start the accumulation process toward the actual collapse (Apitzsch, 2009; Wergin et al., 2018). Although it is difficult to exactly pinpoint what is the specific starting point that caused the collapse, the study has identified some factors and critical events that may shed light on the process. Nevertheless, it is likely that they are all interrelated and mutually reinforced in the accumulation process. Firstly, the emotional and behavioral expression (happiness, relief, overconfidence) of the LSK players as a reaction to their goals may subsequently have contributed to a small gradual reduction in their effort and performance and, as such, “invited” IK Start into the game. Based on the responses of respondents, there is no evidence for such an explanation, but the effect can have been mostly psychological. The invitation may have caused, for example, a small increment in efficacy by the overconfidence expressed by LSK (Wergin et al., 2018). Moreover, the positively expressed emotions in the LSK team and

¹<https://www.tv2.no/a/11034145/>

their own feeling of shame and hopelessness in IK Start could have contributed to an increased “stand together” feeling and strengthened the team cohesion (Høigaard, 2020). For example, Turner et al. (1984) demonstrated in a laboratory setting that negative experiences, like failure or defeat, may contribute to increase group cohesion, particularly if the commitment and team identification is high. Secondly, the tactical shift and substitution after 71 min could have created an imbalance in the match that LSK were unable to re-address. This may have been due to their overconfident attitude (e.g., we are going to win anyway). The perception of the player was that the reorganization and the updated instructions were significant, albeit psychological, within the IK Start team. There is some evidence that in situations perceived as chaotic and unsure or when the level of anxiety is high, an attempt to break the negative pattern through basic task and structure initiate hope, increase the feeling of control, and, subsequently, change of effort and attitude (Jones and Harwood, 2008; Apitzsch, 2019). Finally, the most important trigger according to the respondents was the first IK Start goal. Even if the goal was explained as a “gift from heaven” and the players perceived it as coming from nowhere, it was a game changer. According to the respondents, the goal triggered a set of positive cognitive, emotional, and behavioral reaction chains (e.g., positive momentum) in IK Start, which was further increased in line with the next match goals. In contrast, they perceived a negative reaction chain in the opposing team. The perception and interpretation of players of the three IK Start goals and how the two teams responded indicated two different behavioral and emotional trajectories. The reaction of IK Start players to their own goals was centered around positive emotions and thoughts (e.g., hope, belief, happiness) that generated productive behavioral outcomes. On the other hand, the IK Start players perceived negative emotions and counterproductive behavior among the LSK players (e.g., passivity, panic, negative feedback). According to these findings, one may argue that there was a positive intra-team contagion in the IK Start team. In addition, an inter-team contagion seemed to have been evident based on the perception of the opposing team (i.e., the perception of the negativity in LSK additionally increased the positive momentum in IK Start; Jones and Harwood, 2008). According to Taylor and Demick (1994), such inter-team emotional contagion may have a contrasting effect and, therefore, could reinforce the emotions that were prevalent in both teams.

The reactions of IK Start players to the first IK Start goal was that it was a motivational boost that increased their belief that they could challenge LSK. This belief, in addition to celebration, happiness, and pride, considerably increased when they scored their two next two goals. Further, the positive emotions seemed to be transferred between the players and additionally reinforced the emotion and thoughts in line with the proposal of the emotional contagion theory (Barsade, 2002). This is relevant as former research has linked positive emotion to several positive performance-related outcomes, such as increased confidence, courage, attentional focus, reduced fear of failure, and increased effort (Izard, 1991; Moll et al., 2010). In contrast, a reverse mechanism was prevalent in the LSK team. The players

perceived changes in the body language and gesticulatory and facial expressions of LSK players after the 4-1 goal, which they interpreted as small signs of shock, amazement, astonishment, and insecurity. The next goal accelerated this negative body language, and the respondents also reported that they perceived that more negative communication occurred (i.e., yelling, blaming) in addition to less coordinated play. Within LSK, there appeared to be hectic play within a disorganized unit which led to a breakdown in coordination, often associated with disjointed shared mental models (Reimer et al., 2006; Eccles, 2010). When team coordination deteriorates and negative communication spreads through emotional contagion, the influence of athlete leaders has been reported to be of great importance (Cotterill et al., 2020). Former research has, for example, identified athlete leaders as vital for several different team functioning factors (Crozier et al., 2013; Loughhead et al., 2014; Cotterill and Franssen, 2016).

Finally, during the end of the match, it was clear that the behavior and emotional expression the respondents perceived were in line with research that has been identified as factors in a collective collapse process (e.g., anxiety, fear of failure, reduce attentional focus, hectic play, limited and/or negative communication, and decreased performance; Apitzsch, 2009; Wergin et al., 2019). It is reasonable to believe that in the collective collapse process, emotional contagion was prevalent in both teams but with different content and context. However, negative emotions have been found to be spread more rapidly than positive emotions and thus, compound on field issues in the team. There is also evidence that less frequent and tense negative emotion develops more easily than positive emotions (Baumeister et al., 2001; Felps et al., 2006). Parallel to the intra-team social contagion, the process in each team may have also been reinforced by contrasting emotional contagion. Following this reasoning, the goals, the celebrating, and the positive emotion in one team may be further reinforced by shock, disappointment, and negative emotion in the other team and vice versa. The contrasting emotional contagion has been identified in a study of male soccer players' post-penalty emotional expressions by Moll et al. (2010), where they stated that emotional contagion does not only occur between teammates but can also occur between opponents.

The present study has gained an insight into how critical events may contribute to the development of a collective collapse in elite football. The study shows that the critical events (i.e., the IK Start goals) directly contributed to more offensive and positive emotions, thoughts, and behavior among the IK Start players, while respondents observed that the LSK players reacted with insecurity, passivity, and panic behavior. Furthermore, the individual reactions of players seemed to affect the whole team through an intra-team emotional contagion process. In addition, the findings also indicated an inter-team emotional contagion process where emotions and behavior in the LSK team were transmitted to the IK Start team, but with a contrasting effect. Specifically, when the emotional and behavioral expressions (verbal and nonverbal) of LSK players were perceived as despair, panic, insecurity, low self-confidence,

and negative communication, the IK Start players further gained their self-confidence, enthusiasm, and engaged in more positive and constructive communication. In summary, this soccer case study highlights the importance and relevance of understanding and investigating collective collapses in sport. Furthermore, the general structure of the process model by Wergin et al. (2019) was identifiable within the data collected in the present study. Nevertheless, the perception and interpretation of the participants on the antecedents, critical events, and subsequent outcomes highlight the complexity of the dynamic processes involved in a collective collapse. Importantly, both intra-team and inter-team social contagion may be prevalent, and thus possibly act as catalysts in the process leading to a collective collapse.

There are some limitations in the current study that must be considered. Firstly, a small sample size ($n = 5$) was utilized in the data collection. However, participants were central figures (i.e., athlete leaders and formal leaders) in both planning and participating in the investigated game which provided enriched information of the phenomenon of collective collapse from different perspectives. Moreover, the study only includes participants from one of the competing teams in the investigated game. The lack of information of how LSK players and coaches experienced the game raises the question of how accurate were the IK Start player perceptions of the emotions of the LSK players. However, it is understandable that the team experiencing the collective collapse, and consequently being relegated, were reluctant to talk about what had transpired and rather wanted to focus on the next season. Additionally, one potential limitation was the possibility to identify the respondents through their specific quotes. This may, in some situations, affect how respondents would answer certain questions. However, none of the respondents raised any counter perceptions regarding anonymity since they were asked to talk about a positive experience that ended in promotion and what some of them described as the greatest achievement in their careers. The possibility of a “glow” effect when recalling former performances is described by Cornelius et al. (1997) and must be taken into account when interpreting these results. Since the investigated game started badly for the IK Start players but ended with a positive result after a clear change of momentum around the 75th minute, all respondents managed to recall and describe both negative and positive periods of the game without being subject to response bias. In addition, even if the objective match statistics from Wyscout provides useful information, it does not provide insight into physical efforts performed by the two teams and by individual players. This raises the question whether physical fatigue was a factor influencing the end result. These KPI limitations should be considered when interpreting the study findings. Finally, the study was neither able to identify nor objectively measure the impact of the emotional contagion based on the study design. This is something future research should seek to explore. However, in elite sport, even small signs or changes (objectively and/or psychologically) may have a significant impact on team performance and results

(Boss and Kleinert, 2015; Bourbousson et al., 2015), and it is reasonable to believe that emotional contagion contributes to the collective collapse.

Some practical implications are useful to mention as they can help either to avoid collective collapse or reduce the impact it could have on team performance. Firstly, luck and unexpected changes occur in all sport. For example, the opponent may score even if they do not deserve to despite it being against the “run of play.” Critical incidents that are difficult to handle will happen, therefore, it is important to be prepared and to never give up because the momentum shift can rapidly change again. Secondly, do not show despair or overtly express negative emotions. Body language is interpreted by the opposition and can be exploited, providing hope, motivation, and a sense of belief. In these circumstances, cultural architects (Danielsen et al., 2019) could be useful to counteract collective collapse, negative body language, and negative communication processes. Lastly, coaches need to facilitate team processes, like shared mental models, that can prevent collective collapse and execute strong leadership when it is needed in time of crisis. Future research is encouraged to examine our developed model of how collective collapse is perceived from a bystander perspective to provide guidance to teams, coaches, and sport psychologists in dealing with collective sport team collapse. The investigation of collective collapse in future research should include the perspective from both teams, providing an enriched insight to how the two competing teams experience collective collapse. It would be fruitful to investigate collective collapse in relation to different group dynamic aspects, such as social identity, team resilience, athlete leadership, and cultural architects.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, upon request.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Norwegian Social Sciences Data Service. The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

GS, TH, GJ, and RH: conceptualized and designed the study. GS, TH, and RH: assisted in the planning and acquisition of data. GS, TH, GJ, SS, and RH helped with the analysis and interpretation of the data, critically revising the manuscript, and added important intellectual content. All authors gave approval for the final version of this manuscript to be published and agree to be accountable for all aspects of the work.

REFERENCES

- Adler, P., and Adler, P. A. (1978). The role of momentum in sport. *Urban Life* 7, 153–175. doi: 10.1177/089124167800700202
- Apitzsch, E. (2006). “Collective collapse in team sports: A theoretical approach,” in *Current Research Topics in Exercise and Sport Psychology in Europe*, eds F. Boen, B. de Cuyper and J. Opdenacher (Leuven: LanooCampus Publishers), 35–46.
- Apitzsch, E. (2009). “A case study of a collapsing handball team,” in *Dynamics Within and Outside the Lab*, eds S. Jern and J. Næslund (Linköping: LiU-Tryck), 35–52.
- Apitzsch, E. (2019). “Collective collapse in football,” in *Football Psychology: From Theory to Practice*, eds E. Konter, J. Beckmann (Loughhead: Routledge), 38–49.
- Barsade, S. G. (2002). The ripple effect: emotional contagion and its influence on group behavior. *Admin. Sci. Q.* 47, 644–675. doi: 10.2307/3094912
- Barsade, S. G., and Gibson, D. E. (2012). Group affect: its influence on individual and group outcomes. *Curr. Dir. Psychol. Sci.* 21, 119–123. doi: 10.1177/0963721412438352
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., and Vohs, K. D. (2001). Bad is Stronger than Good. *Rev. General Psychol.* 5, 323–370. doi: 10.1037/1089-2680.5.4.323
- Baumeister, R. F., and Showers, C. J. (1986). A review of paradoxical performance effects: choking under pressure in sports and mental tests. *Eur. J. Soc. Psychol.* 16, 361–383. doi: 10.1002/ejsp.2420160405
- Boss, M., and Kleinert, J. (2015). Explaining social contagion in sport applying Heider’s balance theory: first experimental results. *Psychol. Sport Exerc.* 16, 160–169. doi: 10.1016/j.psychsport.2014.10.006
- Bourbousson, J., R., Kiouak, M., and Eccles, D. W. (2015). The dynamics of team coordination: a social network analysis as a window to shared awareness. *Eur. J. Work Organ. Psychol.* 24, 742–760. doi: 10.1080/1359432X.2014.1001977
- Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qual. Res. Psychol.* 3, 77–101. doi: 10.1191/1478088706QP063OA
- Braun, V., Clarke, V., and Weate, P. (2016). “Using thematic analysis in sport and exercise research,” in *Routledge Handbook of Qualitative Research in Sport and Exercise*, eds B. Smith and A. C. Sparkes (London: Routledge), 213–227.
- Briki, W., Den Hartigh, R. J. R., Markman, K. D., Micallef, J. P., and Gernigon, C. (2013). How psychological momentum changes in athletes during a sport competition. *Psychol. Sport Exerc.* 14, 389–396. doi: 10.1016/j.psychsport.2012.11.009
- Brown, J. D., and Marshall, M. A. (2001). Self-esteem and emotion: some thoughts about feelings. *Pers. Soc. Psychol. Bull.* 27, 575–584. doi: 10.1177/0146167201275006
- Cerin, E., and Barnett, A. (2006). A processual analysis of basic emotions and sources of concerns as they are lived before and after a competition. *Psychol. Sport Exerc.* 7, 287–307. doi: 10.1016/j.psychsport.2005.07.002
- Chow, G. M., and Feltz, D. L. (2008). Exploring the relationships between collective efficacy, perceptions of success, and team attributions. *J. Sports Sci.* 26, 1179–1189. doi: 10.1080/02640410802101827
- Cornelius, A., Silva, III, J. M., Conroy, D. E., and Petersen, G. (1997). The projected performance model: relating cognitive and performance antecedents of psychological momentum. *Percept. Mot. Skills* 84, 475–485. doi: 10.2466/pms.1997.84.2.475
- Cotterill, S. (2012). *Team Psychology in Sports: Theory and Practice*. London: Routledge.
- Cotterill, S. T., Clarkson, B. G., and Fransen, K. (2020). Gender differences in the perceived impact that athlete leaders have on team member emotional states. *J. Sports Sci.* 38, 1181–1185. doi: 10.1080/02640414.2020.1745460
- Cotterill, S. T., and Fransen, K. (2016). Athlete leadership in sport teams: current understanding and future directions. *Int. Rev. Sport Exerc. Psychol.* 9, 116–133. doi: 10.1080/1750984X.2015.1124443
- Crozier, A. J., Loughhead, T. M., and Munroe-Chandler, K. J. (2013). Examining the benefits of athlete leaders in sport. *J. Sport Behav.* 36, 346–364.
- Cutcliffe, J. R., and McKenna, H. P. (1999). Establishing the credibility of qualitative research findings: the plot thickens. *J. Adv. Nurs.* 30, 374–380. doi: 10.1046/j.1365-2648.1999.01090.x
- Danielsen, L. D., Giske, R., Peters, D. M., and Høigaard, R. (2019). Athletes as “cultural architects”: a qualitative analysis of elite coaches’ perceptions of highly influential soccer players. *Sport Psychol.* 33, 313–322. doi: 10.1123/tsp.2018-0166
- Danielsen, L. D., Rodahl, S. E., Giske, R., and Høigaard, R. (2017). Mental toughness in elite and sub-elite female soccer players. *Int. J. Appl. Sport Sci.* 29, 77–85. doi: 10.24985/ijass.2017.29.1.77
- Den Hartigh, R. J. R., Gernigon, C., Van Yperen, N. W., Marin, L., and Van Geert, P. L. C. (2014). How psychological and behavioral team states change during positive and negative momentum. *PLoS ONE* 9:e97887. doi: 10.1371/journal.pone.0097887
- Eccles, D. (2010). The coordination of labour in sports teams. *Int. Rev. Sport Exerc. Psychol.* 3, 154–170. doi: 10.1080/1750984X.2010.519400
- Felps, W., Mitchell, T. R., and Byington, E. (2006). How, when, and why bad apples spoil the barrel: Negative group members and dysfunctional groups. *Res. Organ.* 27, 175–222. doi: 10.1016/S0191-3085(06)27005-9
- Feltz, D. L., Sullivan, P. J., and Short, S. E. (2008). Self-efficacy in sport. Research and strategies for working with athletes, teams, and coaches. *Human Kinetics.* 22, 244–245.
- Filho, E., Tenenbaum, G., and Yang, Y. (2015). Cohesion, team mental models, and collective efficacy: towards an integrated framework of team dynamics in sport. *J. Sports Sci.* 33, 641–653. doi: 10.1080/02640414.2014.957714
- Gernigon, C., Briki, W., and Eykens, K. (2010). The dynamics of psychological momentum in sport: The role of ongoing history of performance patterns. *J. Sport Exerc. Psychol.* 32, 377–400. doi: 10.1123/jsep.32.3.377
- Gershgoren, L., Medeiros Filho, E., Tenenbaum, G., and Schinke, R. J. (2013). Coaching shared mental models in soccer: a longitudinal case study. *J. Clin. Sport Psychol.* 7, 293–312. doi.org/10.1123/jcsp.7.4.293
- Giske, R., Rodahl, S., Haugen, T., and Høigaard, R. (2017). Shared mental models, role ambiguity, team identification and social loafing in elite sports groups: a mediation analysis. *Sport Exerc. Psychol. Rev.* 13, 2–12.
- Hatfield, E., Cacioppo, J., and Rapson, R. (1994). *Emotional Contagion*. New York: Cambridge University Press.
- Higham, A., Harwood, C., and Cale, A. (2005). *Momentum in Soccer: Controlling the Game*. Leeds: Coachwise 1st4sport.
- Hill, D. M., Hanton, S., Fleming, S., and Matthews, N. (2009). A re-examination of choking in sport. *Eur. J. Sport Sci.* 9, 203–212. doi: 10.1080/17461390902818278
- Hill, D. M., and Shaw, G. (2013). A qualitative examination of choking under pressure in team sport. *Psychol. Sport Exerc.* 14, 103–110. doi: 10.1016/j.psychsport.2012.07.008
- Hoffmann, R., Ging, L. C., and Ramasamy, B. (2002). The socio-economic determinants of international soccer performance. *J. Appl. Econ.* 5, 253–272. doi: 10.1080/15140326.2002.12040579
- Høigaard, R. (2020). *Gruppedynamikk og ledelse i idrett [Group Dynamics and Leadership in Sport]*. Norway: Cappelen Damm Akademisk.
- Iso-Ahola, S. E., and Dotson, C. O. (2014). Psychological momentum: why success breeds success. *Rev. General Psychol.* 18, 19–33. doi: 10.1037/a0036406
- Izard, C. E. (1991). *The Psychology of Emotions*. New York, NY: Plenum Press.
- Jones, M. I., and Harwood, C. (2008). Psychological momentum within competitive soccer: Players’ perspectives. *J. Appl. Sport Psychol.* 20, 57–72. doi: 10.1080/10413200701784841
- Karau, S. J., and Wilhau, A. J. (2020). “Social loafing and motivation gains in groups: an integrative review,” in *Individual Motivation Within Groups: Social Loafing and Motivation Gains in Work, Academic, and Sports Teams*, eds S. J. Kara (New York, NY: Academic Press), 3–51.
- Kelly, J. R., and Barsade, S. G. (2001). Mood and emotions in small groups and work teams. *Organ. Behav. Hum. Decis. Process.* 86, 99–130. doi: 10.1006/obhd.2001.2974
- Kvale, S., and Brinkmann, S. (2009). *Interviews: Learning the Craft of Qualitative Research Interviewing (2nd ed.)*. London: Sage.
- Levy, D. A., and Nail, P. R. (1993). Contagion: a theoretical and empirical review and reconceptualization. *Genet. Soc. Gen. Psychol. Monogr.* 119, 233–284.
- Loughhead, T. M., Munroe-Chandler, K. J., Hoffmann, M. D., and Duguay, A. M. (2014). “Athlete leadership in sport,” in *Group Dynamics in Exercise and Sport Psychology*, eds M. J. Beauchamp and M. A. Eys, 110–127.
- McEwan, D., and Beauchamp, M. R. (2014). Teamwork in sport: a theoretical and integrative review. *Int. Rev. Sport Exerc. Psychol.* 7, 229–250. doi: 10.1080/1750984X.2014.932423

- Menmert, D., and Rein, R. (2018). Match analysis, big data and tactics: current trends in elite soccer. *German J. Sports Med.* 69, 65–72. doi: 10.5960/dzsm.2018.322
- Moll, T., Jordet, G., and Pepping, G. J. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *J. Sports Sci.* 28, 983–992. doi: 10.1080/02640414.2010.484068
- Morgan, P. B., Fletcher, D., and Sarkar, M. (2013). Defining and characterizing team resilience in elite sport. *Psychol. Sport Exerc.* 14, 549–559. doi: 10.1016/j.psychsport.2013.01.004
- Nowell, L. S., Norris, J. M., White, D. E., and Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International journal of qualitative methods* 16, 1609406917733847. doi: 10.1177/1609406917733847
- Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods*. London: Sage Publications.
- Pettersen, S. D., Adolfsen, F., and Martinussen, M. (2021). Psychological factors and performance in women's football: a systematic review. *Scand. J. Med. Sci. Sports* 2021, 1–15. doi: 10.1111/sms.14043
- Reimer, T., Park, E. S., and Hinsz, V. B. (2006). Shared and coordinated cognition in competitive and dynamic task environments: an information-processing perspective for team sports. *Int. J. Sport Exerc. Psychol.* 4, 376–400. doi: 10.1080/1612197X.2006.9671804
- Robinson, O. C. (2014). Sampling in interview-based qualitative research: a theoretical and practical guide. *Qual. Res. Psychol.* 11, 25–41. doi: 10.1080/14780887.2013.801543
- Robson, C., and McCartan, K. (2016). *Real World Research: A Resource for Users of Social Research Methods in Applied Settings*. New York, NY: Wiley.
- Ruiz, M. C., and Hanin, Y. L. (2004). Metaphoric description and individualized emotion profiling of performance states in top karate athletes. *J. Appl. Sport Psychol.* 16, 258–273. doi: 10.1080/10413200490498366
- Salas, E., Cooke, N. J., and Rosen, M. A. (2008). On teams, teamwork, and team performance: discoveries and developments. *Hum. Factors* 50, 540–547. doi: 10.1518/001872008X288457
- Sarmento, H., Marcelino, R., Anguera, M. T., Campaniço, J., Matos, N., and Leitão, J. C. (2014). Match analysis in football: a systematic review. *J. Sports Sci.* 32, 1831–1843. doi: 10.1080/02640414.2014.898852
- Schei, G. S., and Giske, R. (2020). Shared situational awareness in a professional soccer team: an explorative analysis of post-performance interviews. *Int. J. Environ. Res. Public Health* 17:24. doi: 10.3390/ijerph17249203
- Szabo, A., and Bak, M. (1999). Exercise-induced affect during training and competition in collegiate soccer players. *Eur. Yearbook Sport Psychol.* 3, 91–104.
- Taylor, J., and Demick, A. (1994). A multidimensional model of momentum in sports. *J. Appl. Sport Psychol.* 6, 51–70. doi: 10.1080/10413209408406465
- Thelwell, R., Weston, N., and Greenlees, I. (2005). Defining and understanding mental toughness within soccer. *J. Appl. Sport Psychol.* 17, 326–332. doi: 10.1080/10413200500313636
- Tickle-Degnen, L., and Puccinelli, N. M. (1999). The nonverbal expression of negative emotions: peer and supervisor responses to occupational therapy students' emotional attributes. *Occup. Therapy J. Res.* 19, 18–39. doi: 10.1177/153944929901900102
- Totterdell, P. (2000). Catching moods and hitting runs: mood linkage and subjective performance in professional sport teams. *J. Appl. Psychol.* 85, 848–859. doi: 10.1037/0021-9010.85.6.848
- Tracy, J. L., and Matsumoto, D. (2008). The spontaneous expression of pride and shame: evidence for biologically innate nonverbal displays. *Proc. Nat. Acad. Sci.* 105, 11655–11660. doi: 10.1073/pnas.0802686105
- Tracy, J. L., and Robins, R. W. (2007a). Emerging insights into the nature and function of pride. *Curr. Dir. Psychol. Sci.* 16, 147–150. doi: 10.1111/j.1467-8721.2007.00493.x
- Tracy, J. L., and Robins, R. W. (2007b). The prototypical pride expression: development of a nonverbal behavior coding system. *Emotion* 7, 789–801. doi: 10.1037/1528-3542.7.4.789
- Trudel, P., Gilbert, W., and Tochon, F. (2001). The use of video to study pedagogical interactions in sport. *Int. J. Appl. Semiot.* 2, 89–112.
- Turner, J. C., Hogg, M. A., Turner, P. J., and Smith, P. M. (1984). Failure and defeat as determinants of group cohesiveness. *Br. J. Soc. Psychol.* 23, 97–111. doi: 10.1111/j.2044-8309.1984.tb00619.x
- Vallerand, R. J., Colavecchio, P. G., and Pelletier, L. G. (1988). Psychological momentum and performance inferences: a preliminary test of the antecedents-consequences psychological momentum model. *J. Sport Exerc. Psychol.* 10, 92–108. doi: 10.1123/jsep.10.1.92
- Van Lier, J., Moulds, M. L., and Raes, F. (2015). Abstract “why” thoughts about success lead to greater positive generalization in sport participants. *Front. Psychol.* 6:1783. doi: 10.3389/fpsyg.2015.01783
- Wergin, V. V., Mallett, C. J., Mesagno, C., Zimanyi, Z., and Beckmann, J. (2019). When you watch your team fall apart—coaches' and sport psychologists' perceptions on causes of collective sport team collapse. *Front. Psychol.* 10:1331. doi: 10.3389/fpsyg.2019.01331
- Wergin, V. V., Zimanyi, Z., Mesagno, C., and Beckmann, J. (2018). When suddenly nothing works anymore within a team—causes of collective sport team collapse. *Front. Psychol.* 9:2115. doi: 10.3389/fpsyg.2018.02115
- Wilson, G. V., and Kerr, J. H. (1999). Affective responses to success and failure: a study of winning and losing in competitive rugby. *Pers. Individ. Dif.* 27, 85–99. doi: 10.1016/S0191-8869(98)00226-8
- Wright, C., Carling, C., and Collins, D. (2014). The wider context of performance analysis and its application in the football coaching process. *Int. J. Perform. Anal. Sport* 14, 709–733. doi: 10.1080/24748668.2014.11868753
- Yin, R. K. (2014). *Case Study Research: Design and Methods (5th ed)*. London: SAGE.

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2022 Schei, Haugen, Jones, Sæther and Høigaard. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Appendix I

Approval by the Norwegian Centre for Research Data

[Meldeskjema](#) / [Humorklima i idrett](#) / Vurdering

Vurdering

Referansenummer	Type	Dato
485076	Standard	14.01.2020

Prosjekttittel

Humorklima i idrett

Behandlingsansvarlig institusjon

Universitetet i Agder / Fakultet for helse- og idrettsvitenskap / Institutt for ernæring og folkehelse

Prosjektansvarlig

Rune Høigaard

Prosjektperiode

01.02.2019 - 31.12.2020

Kategorier personopplysninger

Alminnelige

Særlige

Rettslig grunnlag

Samtykke (Personvernforordningen art. 6 nr. 1 bokstav a)

Uttrykkelig samtykke (Personvernforordningen art. 9 nr. 2 bokstav a)

Behandlingen av personopplysningene kan starte så fremt den gjennomføres som oppgitt i meldeskjemaet. Det rettslige grunnlaget gjelder til 31.12.2020.

[Meldeskjema](#) 

Kommentar

NSD har vurdert endringen registrert 14.01.2020.

Vi har nå registrert 31.12.2020 som ny sluttdato for forskningsperioden.

Vi gjør oppmerksom på at ytterligere forlengelse ikke kan påregnes uten at utvalget informeres om forlengelsen.

NSD vil følge opp underveis ved ny planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til videre med prosjektet!

Kontaktperson hos NSD: Elizabeth Blomstervik

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

Appendix II

Informed consent study 1 and study 2

Informert samtykke til utøver

Vil du delta i forskningsprosjektet «Humor i idrett»?

Dette er et spørsmål til deg om å delta i et forskningsprosjekt i forbindelse med min doktorgradsavhandling i idrettsvitenskap, ved Universitetet i Agders. I dette skrivet blir det gitt informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Mitt arbeid som stipendiat vil være en del Group Dynamic Research Project (GDRP) som er forankret i forskningsgruppen SEP-HEP. Det primære formålet med GDPR er å fremskaffe ny og nyansert kunnskap om ulike gruppedynamiske forhold. GDPR består av en rekke ulike delprosjekter, med ulike metodiske tilnærminger primært knyttet til idrettslig aktivitet i grupper. Det overordnede målet med prosjektet er å drive forskning i skjæringspunktet mellom trener – gruppe – utøver. Prosjektet er forankret i pedagogiske, sosiologiske og sosialpsykologiske beskrivelser og teorier om individ og grupper (Tenenbaum et al., 2007). Delprosjektet EliteTeam Project 2022 (ETP-22) er knyttet til eliteidrett og studiene vil primært bli gjennomført innenfor prestasjonsorienterte idrettsgruppekontekster. Gjennom denne forskningen skal ETP-22 bidra til å utvikle ny og mer nyansert forståelse av psykologiske og sosiale aspekter knyttet til eliteteam og coachingprosessen.

Ansvarlig for forskningsprosjektet

Faglig ansvarlig for i prosjektet er Professor Rune Høigaard ved Universitet i Agder.

Hvorfor får du spørsmål om å delta?

For å få relevant informasjon om temaet, ønsker jeg å teste ut et spørreskjema som pilottestes på ca 300 aktive lagidrettsutøvere (menn og kvinner) i alderen 15 til 40 år. Jeg ønsker å kartlegge erfaringer knyttet til humorklima i lagidretter.

Hva innebærer deltakelsen i studien?

Ved å delta i studien kan du med dine erfaringer og refleksjoner bidra til å gi økt kunnskap om hvordan idrettsutøvere opplever å være en del av et lag. Spørreskjemaet vil ta cirka 15-20 minutter å fylle ut. Resultatene fra spørreskjemaet vil være en del av min doktorgradsavhandling, og eventuelt publiseres i en vitenskapelig artikkel. Det vil ikke påvirke ditt forhold til laget du er en del av hvorvidt du ønsker å delta eller ikke.

Frivillig deltakelse og anonymitet

Det er frivillig å delta i prosjektet, og du kan når som helst trekke seg uten å måtte oppgi en spesiell grunn. Innsamlede data vil da bli slettet og ikke benyttet i videre rapportering. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Forskerne i prosjektet er underlagt taushetsplikt, og besvarelsene vil bli behandlet og oppbevart konfidensielt ved Universitetet i Agder. Publisering av opplysninger fra prosjektet vil bli rapportert på en slik måte at ingen enkeltpersoner, lag eller klubber kan gjenkjennes. Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Det er bare faglig ansvarlig, veileder og stipendiat som vil ha tilgang til de innsamlede opplysningene. Alle er ansatt ved Universitet i Agder

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet er planlagt avsluttet innen utgangen av 2022. Da blir spørreskjemaer og direkte personopplysninger slettet/omskrevet.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Universitetet i Agder har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Universitetet i Agder ved Professor Rune Høigaard (rune.hoigaard@uia.no eller 38141253 / 41474163)
- Vårt personvernombud: Ina Danielsen ina.danielsen@uia.no ved Universitetet i Agder
- NSD – Norsk senter for forskningsdata AS, på epost (personvernombudet@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Professor Rune Høigaard
Universitetet i Agder

Førsteamanuensis Tommy Haugen
Universitetet i Agder

Stipendiat Gaute Schei
Universitetet i Agder

Samtykkeerklæring:

Jeg har lest informasjonsskrivet om prosjektet og samtykker til å delta i undersøkelsen. Jeg samtykker også til at opplysninger fra spørreskjemaet kan brukes i doktorgradsavhandlingen. Jeg stiller frivillig opp til prosjektet og vet at jeg kan trekke meg når som helst, uten spesiell begrunnelse, og at all data jeg har bidratt med da vil bli slettet.

Jeg har mottatt og forstått informasjon om prosjektet *Humor i idrett*, og har fått anledning til å stille spørsmål. Jeg samtykker til:

- å delta i spørreskjema undersøkelsen

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ca. desember 2022

.....
Sted

.....
Dato

.....
Utøvers underskrift

Appendix III*

Questionnaire study 1 (condensed)

*The questionnaire has been condensed. It includes measures that are relevant for article 1. For information regarding the full-scale questionnaire, please contact rune.hoigaard@uia.no

Elite Team Prosjekt 2022

Kjære deltaker!

Denne undersøkelsen er en del av Elite Team Project 2022 initiert av Universitetet i Agder i samarbeid med Olympiatoppen Sør, der målet er utvikle ny og nyansert kunnskap om psykologiske og sosiale faktorer i eliteteam.

Først og fremst håper vi at du vil delta i denne undersøkelsen og tar deg tid til å svare på spørsmålene.

Alle svarene vil bli behandlet konfidensielt. Du og ditt lag vil ikke kunne bli identifisert i den senere rapporteringen av resultatene i det vitenskapelige arbeid. Prosjektet er meldt inn og godkjent av NSD og Fakultetets etikkkomite ved universitetet i Agder.

Rune Høigaard

Professor
Universitetet i Agder
Fakultet for helse og idrett
Serviceboks 422
4604 Kristiansand
Tlf (j) 38141253
e-post: rune.hoigaard@uia.no

Gaute Schei

Doktorgradsstipendiat
Universitetet i Agder
Fakultet for helse og idrett
Serviceboks 422
5602 Kristiansand
Tlf 38141579
e-post: gaute.s.schei@uia.no

Tommy Haugen

Førsteamanuensis
Universitetet i Agder
Fakultet for helse og idrett
Serviceboks 422
5602 Kristiansand
Tlf 38142327
e-post: tommy.haugen@uia.no

Informasjon

De fleste spørsmålene i spørreskjemaet er basert på at du skal vurdere ulike beskrivelser, påstander og utsagn på en skala (for eksempel fra helt enig til helt uenig). *Sett en ring rundt det tallet som passer best for deg.* Det finnes ingen rette eller gale svar, det er din oppfatning som er av interesse.

Legg merke til at skalaene kan variere noe fra spørsmål til spørsmål, så det er viktig at du er oppmerksom på det. Selv om enkelte spørsmål kan oppleves som like er det viktig at du svarer på alle spørsmålene.

Lag og gruppe blir brukt litt omhverandre men er det samme, dvs den idrettgruppen du tilhører og som du trener, spiller eller konkurrerer sammen med. Spillere, utøver og medlemmer blir også brukt om hverandre, men betyr det samme, dvs. de som er knyttet til din gruppe/lag. Dersom du har spørsmål ved studien kan du ta kontakt med Gaute Schei, Tommy Haugen eller Rune Høigaard.

Litt om deg selv

Alder: _____

Nasjonalitet: _____

Hvor lenge har du spilt på dette laget? _____ år

Hvor mange år har du spilt i eliteserien eller 1 divisjon (totalt) ? _____ år

Har du spilt (vært tatt) til et landslag på seniornivå de siste 3 årene? Nei Ja

Har du spilt for en utenlandsk klubb i øverste divisjon eller 1 divisjon på seniornivå? Nei Ja _____ år

Mitt team/lag

I denne delen skal du vurdere humor, kommunikasjon og samhold i ditt team/ lag.

I mitt lag..	Helt uenig						Helt enig
Finner spillere på humoristiske påfunn	1	2	3	4	5	6	7
Tuller spillere med hverandre (vitser, imitasjon, kommentarer, narrestreker)	1	2	3	4	5	6	7
Forteller spillere morsomme vitser som skaper smil og latter	1	2	3	4	5	6	7
Opplever jeg vennlig ironi	1	2	3	4	5	6	7
Forteller spillere negative historier om hverandre for å være morsom	1	2	3	4	5	6	7
Er humoren slik at enkelte føler seg mindre	1	2	3	4	5	6	7
Er humoren preget av diskriminerende innhold	1	2	3	4	5	6	7
Bruker spillere og trenere negativ humor om hverandre for å være morsom	1	2	3	4	5	6	7
Blir humor om medspillere brukt på en krenkende måte	1	2	3	4	5	6	7
Imiteres personer utenfor laget på en respektløs måte (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7
Brukes ondsinnet humor om personer i idrettsmiljøet (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7
Bruker spillere støtende humor om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7
Ler spillere av diskriminerende kommentarer om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7
Bruker spillere fiendtlig humor om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7

Når vi i vårt lag kommuniserer...	Nesten aldri						Nesten alltid
Bruker vi kallenavn	1	2	3	4	5	6	7
Stoler vi på hverandre	1	2	3	4	5	6	7
Uttrykker vi følelsene våre åpent og ærlig	1	2	3	4	5	6	7
Bruker vi internt språk som bare lagets medlemmer forstår	1	2	3	4	5	6	7
Bruker vi fakter og tegn som bare lagets medlemmer forstår	1	2	3	4	5	6	7
Deler vi tanker med hverandre	1	2	3	4	5	6	7
Prøver vi å sørge for at alle er inkludert	1	2	3	4	5	6	7

Meg og min gruppe/lag	Svært uenig								Svært enig
Jeg er fornøyd med den grad av interesse laget mitt har for å vinne	1	2	3	4	5	6	7	8	9
Dette laget gir meg tilstrekkelige muligheter til å utvikle meg til en bedre spiller/utøver	1	2	3	4	5	6	7	8	9
Jeg liker måten dette laget utøver idretten sin på (f.eks. spillestilen)	1	2	3	4	5	6	7	8	9
Laget vårt står sammen i forsøket på å oppnå de målene vi har satt oss	1	2	3	4	5	6	7	8	9
Vi tar alle ansvar dersom laget "taper" eller oppnår dårlige resultater	1	2	3	4	5	6	7	8	9
Spillerne på laget vårt har like ambisjoner når det gjelder lagets resultater	1	2	3	4	5	6	7	8	9
Dersom noen av spillerne på laget vårt har problemer med en øvelse på trening, ønsker alle å hjelpe	1	2	3	4	5	6	7	8	9
Spillerne på laget vårt snakker åpent om den enkelte spillers ansvar under kamp eller trening	1	2	3	4	5	6	7	8	9

Min trener

I denne delen skal du vurdere din trener

Min hovedtrener...	Helt uenig						Helt enig
Representerer det laget står for	1	2	3	4	5	6	7
Er representativ for laget	1	2	3	4	5	6	7
Er modell for laget	1	2	3	4	5	6	7
Er et foregangseksempel som gruppe medlem	1	2	3	4	5	6	7
Fremmer spillernes interesser	1	2	3	4	5	6	7
Forfekter lagets interesser	1	2	3	4	5	6	7
Taler lagets sak	1	2	3	4	5	6	7
Har alltid laget sine interesser i tankene	1	2	3	4	5	6	7
Gir spillerne følelsen av å tilhøre samme gruppe	1	2	3	4	5	6	7
Skaper følelsen av samhold i laget	1	2	3	4	5	6	7
Utvikler forståelse for gruppe medlemskap	1	2	3	4	5	6	7
Utvikler lagets forståelse for felles verdier og idealer	1	2	3	4	5	6	7
Tenker ut aktiviteter som samler gruppe medlemmene	1	2	3	4	5	6	7
Gjennomfører tiltak og "events" slik at laget fungerer effektivt	1	2	3	4	5	6	7
Utvikler nyttige gruppe strukturer	1	2	3	4	5	6	7

Tusen takk for at du har tatt deg tid til å besvare undersøkelsen

Appendix IV*

Questionnaire study 2 (condensed)

*The questionnaire has been condensed. It includes measures that are relevant for article 2. For information regarding the full-scale questionnaire, please contact rune.hoigaard@uia.no

Kjære deltaker!

Denne undersøkelsen er en del av Elite Team Project 2022, der målet er utvikle ny og nyansert kunnskap om psykologiske og sosiale faktorer i eliteteam.

Dette spørreskjemaet er utviklet for kartlegge ulike sider ved kommunikasjon, humør og trivsel i idrettsgrupper. Først og fremst håper vi at du vil delta i denne undersøkelsen og tar deg tid til å svare på spørsmålene.

Selv om enkelte spørsmål kan oppleves som svært like er det viktig at du svarer på alle spørsmålene.

Alle svarene vil bli behandlet konfidensielt. Du og laget vil ikke kunne bli identifisert i den senere rapporteringen av resultatene i det vitenskapelige arbeid.

De fleste spørsmålene er basert på at du skal vurdere ulike beskrivelser, påstander og utsagn på en skala (for eksempel fra helt enig til helt uenig). *Sett en ring rundt det tallet som passer best for deg.* Legg merke til at skalaene kan variere noe fra spørsmål til spørsmål, så det er viktig at du er oppmerksom på det. Legg også merke til at det er spørsmål på begge sider av arkene. Det finnes ingen rette eller gale svar, det er din oppfatning som er av interesse.

Rune Høigaard

Professor

Universitetet i Agder

Fakultet for helse og idrett

Serviceboks 422

4604 Kristiansand

Tlf (j) 38141253

e-post: rune.hoigaard@uia.no

Med hilsen



Om deg selv

1. Fødselsdato: _____

2. Kjønn: Jente Gutt

3. Hvilken idrett driver du med og i hvilken divisjon spiller du? _____ / _____

4. Hvor lenge har du spilt på dette laget? _____ år

5. Hvor mange år har drevet med denne idretten? _____ år

6. Hvilken posisjon pleier du vanligvis å spille? _____

7. Når dere spiller kamper (serie/cup), hvem spiller mest?

De beste spiller mest

Alle spiller like mye

Det varierer fra kamp til kamp

8. Hvor ofte trener du sammen med laget (fellestreninger) i en vanlig uke? _____ dager

9. Hvor lenge varer vanligvis en fellestrening med laget? _____ timer

10. Hvor mye trener du på "egenhånd eller i gruppe" utenom fellestreninger en vanlig uke? _____ timer

Om deg og gruppen/laget du er med i

Lag og gruppe blir brukt litt omhverandre, men betyr det samme, dvs den gruppen du tilhører og som du trener, spiller eller konkurrerer sammen med. Spillere, utøver og medlemmer blir også brukt om hverandre, men betyr det samme, dvs. som er knyttet til din gruppe/lag. Sett en ring rundt det tallet som passer best for deg.

Humor

I mitt lag..	Helt uenig						Helt enig
Finner spillere på humoristiske påfunn	1	2	3	4	5	6	7
Tuller spillere med hverandre (vitser, imitasjon, kommentarer, narrestreker)	1	2	3	4	5	6	7
Forteller spillere morsomme vitser som skaper smil og latter	1	2	3	4	5	6	7
Opplever jeg vennlig ironi	1	2	3	4	5	6	7
Forteller spillere negative historier om hverandre for å være morsom	1	2	3	4	5	6	7
Er humoren slik at enkelte føler seg mindre	1	2	3	4	5	6	7
Er humoren preget av diskriminerende innhold	1	2	3	4	5	6	7
Bruker spillere og trenere negativ humor om hverandre for å være morsom	1	2	3	4	5	6	7
Blir humor om medspillere brukt på en krenkende måte	1	2	3	4	5	6	7
Imiteres personer utenfor laget på en respektløs måte (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7
Brukes ondsinnet humor om personer i idrettsmiljøet (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7
Bruker spillere støtende humor om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7
Ler spillere av diskriminerende kommentarer om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7
Bruker spillere fiendtlig humor om personer utenfor laget (støtteapparat, spillere på andre lag, dommere, supportere, journalister etc.)	1	2	3	4	5	6	7

Samhold

Meg og min gruppe /lag	Svært uenig								Svært enig
Spillerne på laget vårt vil heller gjøre noe sammen med laget enn å være sammen med andre	1	2	3	4	5	6	7	8	9
Medlemmene på laget har ofte felles sosiale sammenkomster	1	2	3	4	5	6	7	8	9
Laget vårt kunne tenke seg å tilbringe tid sammen også utenom sesongen	1	2	3	4	5	6	7	8	9
Spillerne på laget vårt er sammen utenom trening og kamp	1	2	3	4	5	6	7	8	9

Uenighet og konflikt

	Svært uenig								Svært enig
Personlige konflikter mellom utøverne på laget ender med sinte konfrontasjoner i sosiale sammenhenger	1	2	3	4	5	6	7	8	9
Opphetede uenigheter mellom utøverne har blitt personlige	1	2	3	4	5	6	7	8	9
Det er utøvere på laget som har sluttet å snakke til hverandre i sosiale situasjoner, på grunn av personlig uenighet	1	2	3	4	5	6	7	8	9
Sterke følelser settes i sving når personlige forskjeller blir diskutert	1	2	3	4	5	6	7	8	9
Negativiteten fra personlig uenighet gjør det vanskelig for utøvere på laget å være venner	1	2	3	4	5	6	7	8	9
Utøvere på laget har negative konfrontasjoner som ødelegger stemningen i sosiale sammenkomster	1	2	3	4	5	6	7	8	9
Uenigheter på sosiale sammenkomster eskalerer raskt, og ødelegger/splitter laget vårt	1	2	3	4	5	6	7	8	9

Appendix V

Approval by the Norwegian Centre for Research Data study 3

[Meldeskjema](#) / [Psykogisk momentum og kollektiv kollaps i fotball](#) / Vurdering

Vurdering

Referansenummer	Type	Dato
655574	Standard	11.01.2021

Prosjekttittel

Psykogisk momentum og kollektiv kollaps i fotball

Behandlingsansvarlig institusjon

Universitetet i Agder / Fakultet for helse- og idrettsvitenskap / Institutt for ernæring og folkehelse

Prosjektansvarlig

Rune Høigaard

Prosjektperiode

05.03.2020 - 20.12.2021

Kategorier personopplysninger

Alminnelige

Rettslig grunnlag

Samtykke (Personvernforordningen art. 6 nr. 1 bokstav a)

Behandlingen av personopplysningene kan starte så fremt den gjennomføres som oppgitt i meldeskjemaet. Det rettslige grunnlaget gjelder til 20.12.2021.

[Meldeskjema](#) 

Kommentar

NSD har vurdert endringen registrert 11.01.2021.

Vi har nå registrert 20.12.2021 som ny sluttdato for behandling av personopplysninger.

Vi gjør oppmerksom på at ytterligere forlengelse ikke kan påregnes uten at utvalget informeres om forlengelsen.

NSD vil følge opp ved ny planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til videre med prosjektet!

Kontaktperson hos NSD: Simon Gogl

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

Appendix VI

Interview guide study 3

Intervju guide kollektiv kollaps

Introduksjon

Informasjon om intervjuet og hva det innebærer konfidensialitet, anonymitet, mulighet for å lese transkriberingen og oppbevaring av data. Hvordan formidle informasjonen (vitenskapelige artikler)

Demografisk informasjon

Kort litt om spillerens karriere og tid i IK START

Antall kamper, posisjon, Innbytter / i startoppstillingen

Hoveddel

Informasjon

Vi skal snakke om kampen 12 desember hvor dere lå under 4 null, men så scoret dere 3 og kvalifiserte dere for tippeligaen. Jeg er interessert i dine tanker og refleksjoner rundt denne kampen. Hvordan kunne det skje og hvorfor. I idrettslitteratur blir det som skjedde med Lillestrøm kanskje kunne beskrives som en kollektiv kollaps. En kollektiv teamkollaps er øyeblikket eller prosessen, når team prestasjoner uventet avtar mer enn normalt. Det er situasjonen, når et team opplever en betydelig prestasjonskollaps under en konkurranse / kamp. Det er øyeblikket eller prosessen når 'ingenting fungerer lenger' i et team.

I dette intervjuet ønsker jeg å snakke om dere og hvordan dere opplevde den kampen

STEG 1. Åpent intervju.

Kan du fortelle om kampen slik du opplevde den?

Momenter til refleksjon. (brukes kun som støtte og hjelp for intervjuer):

- ✓ Tanker og følelser før kampen (deg / laget). Hva var strategi og taktikk?
- ✓ Dine opplevelser i forbindelse med målene til Lillestrøm (Hva ble sagt og gjort. Hva tenkte, følte du, hvordan var «atmosfæren i laget, hva gjorde, sa medspillere -verbalt nonverbalt.
- ✓ La du merke til noe spesielt hos motstanderlaget (atferd, spill kommunikasjon, atmosfærer. På hvilken måte påvirket noe av det deg eller ditt lag?
- ✓ Hva ble sagt / gjort i pausen
- ✓ Tidspunkt i kampen som var avgjørende for kampen snudde i deres favør? Hvorfor?
- ✓ Egne mål? Hva skjedde, hvem var involvert? (selvtillit, tro, holdninger kroppsspråk, samhold, kommunikasjon i eget lag)
- ✓ Hvordan opplevde du at deres mål påvirket motstander laget, hva observerte du? Hva gjorde / sa de etc. Hvordan påvirket det deg / ditt lag? (sirkulære utspørring)
- ✓ Coaching fra trener. Husker du noe treneren sa / gjorde? effekt av det?
- ✓ Innbytte som ble gjort, hvordan påvirket det spillet, eget lag / motstanderne (taktikk skifte?)
- ✓ Beskriv hvordan de siste 10 minuttene var for deg for laget ditt og hva observerte du hos motstanderne

Steg 2. Systematisk gjennomgang av kamp på video med refleksjon

Få informanten til å reflektere og tenke på hva skjedde, tanker følelser og atferd i eget lag og det de observert hos motstanderne

Få frem konkret beskrivelse, tanker om effekt opplevelser og holdninger i eget lag, samhold selvtillit, tro på at det vil gå bra, oppmuntring, kommunikasjon, spill o.l)

Videosekvenser

- a) Oppstart første omgang 2) Målene til Lillestrøm 3) Oppstart andre omgang 4) målene til Lillestrøm 5) Innbytte Start; 6) Målene til Start 7) Sluttminuttene.**

Helt til slutt hva tror du var hovedgrunnen til at dere klarte å snu kampen og kvalifisere dere for tippeligaen?

Husk å takke for intervjuet og presiser at de kan hvis de ønsker lese gjennom transkriberingen

Appendix VII

Informed consent study 3

Informert samtykke til utøver

Forespørsel om deltakelse i forskningsprosjektet: **Psykologisk momentum og kollektiv kollaps i fotball**

Prosjektet er knyttet Group Dynamic Research Project (GDRP) og EliteTeam Project 2022 (ETP-22). Disse prosjektene er forankret i forskningsgruppen SEP-HEP (Sport and Exercise Psychology - Health, Education Performance) ved Universitet i Agder.

Det primære formålet med GDPR er å fremskaffe ny og nyansert kunnskap om ulike gruppedynamiske forhold i idrett. GDPR består av en rekke ulike delprosjekter, med ulike metodiske tilnærminger primært knyttet til idrettslig aktivitet i grupper. Det overordnede målet med prosjektet er å drive forskning i skjæringspunktet mellom trener – gruppe – utøver. Prosjektet er forankret i pedagogiske, sosiologiske og sosialpsykologiske beskrivelser og teorier om individ og grupper (Tenenbaum et al., 2007).

Delprosjektet EliteTeam Project 2022 (ETP-22) er knyttet til eliteidrett og studiene vil primært bli gjennomført innenfor prestasjonsorienterte idrettsgruppekontekster. Gjennom denne forskningen skal ETP-22 bidra til å utvikle ny og mer nyansert forståelse av psykologiske og sosiale aspekter knyttet til eliteteam og coachingprosessen. Psykologisk momentum og kollektiv kollaps i fotball er et ETP-22 prosjekt

Bakgrunnen for denne undersøkelsen

I lagidrett skjer det av og til plutselige og uventede skifter i prestasjoner. Slike skifter kan være det som i idrettspsykologisk litteratur benevner som 'psykologisk momentum'. Et momentum kan være positivt (presterer bra) eller negativt (under presterer) og slike skifter kan gå fra det ene laget til det andre laget under en kamp. En ekstrem form for negativt momentum, kan være en kollektiv kollaps. En kollaps innebærer at en ikke kommer tilbake til tidligere prestasjonsnivå og er dermed en mer kronisk tilstand. Ofte skjer kollektiv kollaps i kamper som er avgjørende og hvor mye står på spill. Det som skjedde med Lillestrøm i den siste kvalifiseringskampen er det grunn for å beskrive som en kollektiv kollaps. Det er dette som er fokus og tema i intervjuet.

Ansvarlig for forskningsprosjektet

Faglig ansvarlig for i prosjektet er Professor Rune Høigaard ved Universitet i Agder.

Hvorfor får du spørsmål om å delta?

Du er invitert til å delta fordi du var spiller, trener eller sportslig ansvarlig i IK Start i den siste kvalifiseringskampen mot Lillestrøm desember 2019.

Hva innebærer deltakelsen i studien?

Ved å delta i studien kan du med dine erfaringer og refleksjoner fra kampen mot Lillestrøm og bidra med viktig kunnskap om det som benevnes som psykologisk momentum og kollektiv kollaps i fotball. Kunnskap om slike forhold vil være viktig både for å få mer forståelse for fenomenene, men også hvordan en eventuelt kan forebygge en kollaps eller bidra til å skape positivt momentum i fotball.

Det vil bli gjennomført et intervju med en varighet på ca. 45 minutter. Intervjuet vil bli tatt opp på bånd. Under intervjuet vil du også få se noen utdrag fra kampen som du blir bedt om å reflektere over. Resultatene fra intervjuene vil bli publisert i foredrag og i en vitenskapelig artikkel. Det vil ikke påvirke ditt forhold til laget du er en del av hvorvidt du ønsker å delta eller ikke.

Frivillig deltakelse og anonymitet

Det er frivillig å delta i prosjektet, og du kan når som helst trekke seg uten å måtte oppgi en spesiell grunn. Innsamlede data vil da bli slettet og ikke benyttet i videre rapportering. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Forskerne i prosjektet er underlagt taushetsplikt, og besvarelsene vil bli behandlet og oppbevart konfidensielt ved Universitetet i Agder.

Vi vil bare bruke opplysningene om deg til formålene vi har informert deg om i denne samtykke erklæringen. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Det er bare faglig ansvarlig og forskere i forskningsgruppen SEP-HEP Førsteamanuensis Tommy Haugen og stipendiat Gaute Schei, som vil ha tilgang til de innsamlede opplysningene.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet er planlagt avsluttet innen utgangen av 2020. Lydfilene vil bli slettet når de er transkribert og ingen navn eller personlige opplysninger vil foreligge i den transkriberte versjonen. Etter 2020 vil både transkriberingen og personopplysninger bli slettet.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Universitetet i Agder har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Universitetet i Agder ved Professor Rune Høigaard (rune.hoigaard@uia.no eller 38141253 / 41474163)
- Vårt personvernombud: Ina Danielsen ina.danielsen@uia.no ved Universitetet i Agder
- NSD – Norsk senter for forskningsdata AS, på epost (personvernombudet@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Professor Rune Høigaard, Universitetet i Agder

Samtykkeerklæring:

Jeg har lest informasjonsskrivet om prosjektet og samtykker til å delta i undersøkelsen. Jeg samtykker også til at opplysninger fra intervjuet kan brukes slik det er beskrevet i samtykke erklæringen.

Jeg stiller frivillig opp til prosjektet og vet at jeg kan trekke meg når som helst, uten spesiell begrunnelse, og at all data jeg har bidratt med da vil bli slettet.

Jeg har mottatt og forstått informasjon om prosjektet: 'Psykologisk momentum og kollektiv kollaps i fotball', og har fått anledning til å stille spørsmål. Jeg samtykker til:

- å delta i intervju undersøkelsen.
- jeg samtykker til at opplysninger om meg (posisjon under kampen, funksjon i klubben) publiseres slik at jeg kan gjenkjennes indirekte.

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, 30 desember 2020

.....

Sted Dato Informantens underskrift