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Published in:
Social Sciences and Humanities Open

DOI:
10.1016/j.ssaho.2023.100753

Published: 01/01/2024

Document Version
Final published version

Document License
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Social Sciences & Humanities Open 9 (2024) 100753

Contents lists available at ScienceDirect

Social Sciences & Humanities Open

journal homepage: www.sciencedirect.com/journal/social-sciences-and-humanities-open

Regular Article

Callouts as a coordinating device in a team-based networked first-person shooter game

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ARTICLE INFO

Keywords:
Networked gaming
Competitive gaming
Ethnomethodology
Conversation analysis
Callouts
Coordination

ABSTRACT

This study investigates the role of callouts as a vital communicative and coordinating practice in Counter-Strike: Global Offensive (CS:GO), a team-based networked first-person shooter (FPS) video game. Through callouts, players share relevant information regarding opponents' locations and movements, contributing to a co-construction of a distributed knowledge of the game environment. By analyzing callouts as a coordinating device that is part of sequences of actions, this research delves into their significance in shaping the overall structural organization of activities in competitive CS:GO gameplay. The analysis also demonstrates the utility of ethnomethodological conversation analysis (EMCA) for understanding the communicative richness of social practices in team-based networked video games.

1. Introduction

The rising popularity of networked video games has drawn significant interest from the social sciences, including ethnomethodological conversation analysis (EMCA) studies on game play and in-game interaction (e.g., Rusk & Ståhl, 2020; Bennerstedt, 2013; Reeves et al., 2017, for overviews). Playing video games has evolved from being a hobby of few, to a significant leisure activity for many, and an organized, spectatorial competitive sport; that is, esports (e.g., Taylor, 2011; Sjöblom & Linderoth, 2017). Among the more popular game genres in esports is the first-person shooter (FPS), which is widely played in organized, (semi) professional contexts (T. L. Taylor, 2015) and in more leisurely networked gaming communities (Kinnunen, Tuomela, & Mäyrä, 2022). The game context of this study, Counter-Strike: Global Offensive (CS:GO), is a team-based networked first-person shooter (FPS) game and one of the premiere games within the global esports scene.

Players in fast-paced team-based networked FPS games, such as CS: GO, have small windows for doing actions and recognizing others' actions. Therefore, they orient to effective communication and community-shared known-in-commons when making split second decisions (Taylor, 2012, Rusk & Ståhl, 2020, Rusk & Ståhl, 2022; Kiourti, 2019, 2022; Reeves et al., 2009; Tang et al., 2012; T. L. Taylor, 2015). In these game contexts, the interaction is mediated (Arminen et al., 2016), since players are often geographically dispersed and in-game actions are carried out by players' in-game avatars (Reeves et al., 2009). Further, players often communicate through a shared voice channel, which in concert with in-game on-screen actions become the main resources for co-constructing a mutually shared understanding of in-game activities when coordinating their play (Rusk & Ståhl, 2022, Rusk, Ståhl, & Juslin, 2023; Tang et al., 2012; T.L. Taylor, 2015). Hence, through studying networked gaming, this study adds to the repertoire of mediated interaction analyzed in EMCA studies (see, e.g., Arminen et al., 2016; Giles et al., 2017). More profoundly our study brings forth a particular emphasis on what seems to be a unique practice in which teams, through the use of the affordances of voice communication and expected common ground knowledge, co-produce a socially accomplished and distributed perception by simultaneously merging two action trajectories (verbal communication and in-game actions) that are at the service of the overall structural organization of playing the game.

In this study, we investigate, through a close examination of CS:GO matches being played by two teams, a mundane interactional practice that is commonly used in all team-based networked FPS video games, called 'callouts' (Taylor, 2011; Duell, 2014; Halloran, 2011; Tang et al., 2012). These are short, game-specific and community-based terms (in vernacular English) that refer to distinct in-game locations and are meant to indicate the locations and/or movements of opponents (e.g.,

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https://doi.org/10.1016/j.ssaho.2023.100753
Received 10 May 2023; Received in revised form 10 November 2023; Accepted 13 November 2023
Available online 21 December 2023

Rusk & Ståhl, 2020; Rusk & Ståhl, 2022; Rusk, Ståhl, & Jusslin, 2023). Using EMCA terminology, callouts are informing (see, e.g., Heritage, 1984; Stivers, 2012; Vatanen, 2018), which can be described as social actions through which participants propose that they know about newsworthy "events-in-the-world" (Maynard, 1997, p. 94) that recipients do not know about. That is, callouts inform teammates of what is happening in the game that the speaker assumes teammates do not know about (Taylor, 2011; Duell, 2014; Halloran, 2011; Tang et al., 2012). Taken together, these utterances thereby constitute a shared perceptivity, or "interperceptivity", among teammates (v. Wedelstaedt, 2020, p. 120). Callouts are thus an intrinsic part of the dynamic and rapid organization of team-based, networked competitive play.

Prior research has acknowledged their importance, but the crucial question of *how* they help coordinate collaboration, *in situ*, in an unpredictable and fast-paced setting over the duration of a bounded episode of gameplay (in this case, a 'round' of CS:GO) remains unanswered. This represents an opportunity uniquely suitable for EMCA which, as a methodology, provides the analyst with tools that open up the intricacies of participants' (co)produced actions (such as callouts) on a detailed level and can handle the production of, and responses to, actions in a context where every tenth of a second counts. This way, the analyst can move beyond the use of 'typologies of game talk' (Wright et al., 2002) and better understand how participants situationally organize their in-game interaction based on empirical analyses from a participant's perspective. Likewise, it is expected that the scale of activity under consideration in this analysis – a single 'round' in the frenetic domain of networked, competitive FPS play – will illuminate the interactional richness that game environments pose to the close analysis, as well as the value in adopting a sequence for analysis structured by the domain itself, rather than arbitrarily bounded by the researcher (Raymond & Heritage, 2006; Schegloff, 1987; Waring, 2009). At the same time, by closely considering how players use the specific affordances of verbal communication in conjunction with networked game play, this account builds on and extends the repertoire of mediated communication contexts that scholars can draw upon for a "comparative understanding" of how communicative practices unfold within different media environments (Arminen et al., 2016, p. 292).

The aim of this study is to understand how callouts are part of forming sequences of action that together structure activities and a "supra-sequential coherence" (Robinson, 2012, p. 258), a coherence that stretches beyond the immediate sequential surrounding, when playing the game. How does participants' employment of callouts as coordinating devices display an orientation towards activities that are made coherent through an overall structural organization that works beyond immediate sequential surroundings? Hence, this paper contributes to research on mediated forms of communication by analyzing a fundamental interactional phenomenon in networked gaming – callouts – by showing how social action, in the form of talk and on-screen actions, informs participants' collaborative teamplay in a networked game environment, where players are not physically co-present and have to rely on mediated interaction to coordinate their play. The paper examines closely one entire match round played by two teams of players.

2. Studying communication in team-based networked FPS video games

FPS games usually focus on quick and fast-paced weapon-based combat that requires rapid targeting and swift movement, and the players perceive and experience the game play from a first-person perspective (Rusk & Ståhl, 2020, Rusk & Ståhl, 2022, Rusk, Ståhl, & Jusslin, 2023; Tang et al., 2012). Because of the first-person perspective, each player has a uniquely different audio-visual perspective on the game play and in-game actions are carried out by players' in-game avatars (Reeves et al., 2009). Moreover, individual players' fields of vision are necessarily constrained by their location and surroundings, with sightlines often deliberately obstructed through the design of the maps, as well as through the opposing team's use of utilities that temporarily compromise vision (e.g., 'flash' and 'smoke' grenades, which are often used by teams ahead of their advance into a potentially contested area). Therefore, players often also communicate through a shared voice channel (either the one provided in-game or through a social platform) and player communities frequently acknowledge the importance of communication, and particularly the timely and deliberate use of callouts, to team success; communicative strategies are thus regarded by players themselves as on par with a deep knowledge of the game and a mastery of its controls, in terms of the skillsets demanded of participation in competitive gaming and esports (Taylor, 2011). To succeed, teams need to coordinate their play and communicate efficiently (Kiourti, 2019; Tang et al., 2012) (often) in less-than-optimal technical (noisy on-screen gaming environments, network delays, suboptimal gaming equipment and communication channels) and stressful circumstances where players are under pressure from (possibly) multiple angles (see, e.g., v. Wedelstaedt, 2020).

The rapidly unfolding action in CS:GO (and similar team-based networked FPS games) and the limitations of any one player's field of vision makes it imperative to develop strategies for efficient and accurate relay of in-game information between players, which exhibit a peculiar (but not incidental) similarity to sports- and military-style communication methods and strategies in time-constrained decision-making situations (e.g., Duell, 2012; Haddington et al., 2022; Kamunen et al., 2022; v. Wedelstaedt, 2020). Moreover, the short duration of each round (115 s) and the relatively constrained size of the in-game areas means that combat between teams escalates quickly and often happens in short bursts. Under such conditions, asking for information becomes time- and attention-consuming. Tang et al. (2012) found that teams that employ callouts effectively provide information to the team, instead of requesting information. In other words, the calculated "anticipation ratio" (information pushed vs pulled), indicated that most of the communication was providing information. Players were anticipating relevant information through the callouts. This is in line with research on collaboration that indicates that an anticipation ratio tilted towards pushing information correlates with more implicit coordination, which has been shown to be a characteristic of more high-performing teams in collaboration experiments (e.g., Butchibabu et al., 2016).

Because of the large number of implications in a callout and the implicit coordination inherent in providing and receiving callouts, playing a team-based FPS game in a coherent way is known-in-commons and therefore often referred to implicitly (Arminen & Simonen, 2021; Garfinkel, 1967; Sacks, 1995). It is here that an EMCA analysis can help in clarifying how callouts may be coordinating devices that are used as part of activities that orient towards an overall structural organization.

EMCA is a methodology that is most often used for analyzing how moment-to-moment social interaction is systematically organized *in situ* based on detailed analyses of video recordings of 'naturally occurring' social interaction (e.g., Sacks, 1995; Schegloff, 2007). However, recent EMCA studies on video game play (see, e.g., Rusk & Ståhl, 2020, Rusk & Ståhl, 2022, Rusk, Ståhl, & Jusslin, 2023; Baldauf-Quilliatre & Carvajal, 2015; Bennerstedt & Ivarsson, 2010; Piirainen-Marsh & Tainio, 2014; Reeves et al., 2009; Reeves et al., 2017; Sjöblom, 2011) indicate, in a similar vein as EMCA studies on networked mediated interaction (see, e.g., Arminen et al., 2016; Giles et al., 2015; Giles et al., 2017), that actions on-screen are organized and sequential, similarly as in non-digital

Fig. 1. Screenshot of a screen recording.

everyday social settings. There are distinctive aspects to EMCA's methodological contribution to studies in and on social interaction (Drew & Heritage, 2006; Stivers & Sidnell, 2012). For example, EMCA involves a theoretical assumption of 'order at all points' (Sacks, 1995) in social interaction, which means that coherent social action and mutual understanding is made possible because participants share communicative competencies, such as knowledge of the structures and norms of the situated social organization (Drew & Heritage, 2006; Sidnell, 2012; Stivers & Sidnell, 2012). Therefore, the analysis aims to discover, and make explicit, the sense-making practices that participants use to produce and understand coherent social action (Drew & Heritage, 2006; Sacks & Schegloff, 1974).

Every action is situated in, and shaped by, the context and makes a next action relevant (Schegloff, 2007). Therefore, EMCA provides for a systematic, empirically driven, analysis of networked play to understand how geographically dispersed players make their own and others' mediated interaction recognizable to others as they determine what the relevant next actions are (e.g., Rusk & Ståhl, 2020, Rusk & Ståhl, 2022, Rusk, Ståhl, & Jusslin, 2023; Bennerstedt & Ivarsson, 2010). Traditionally, EMCA analysis hones in on individual sequences. However, there is also a strand that analyses how sequences of action hang together to produce activities that orient towards a "presupposed underlying pattern" (Garfinkel, 1967, p. 78). That is, how individual sequences of action are, in some cases, part of an overall structural organization that provides for a projectability of the activity (see Robinson, 2012, for further discussion).

In this paper, we explore how callouts are oriented to as coordinating devices that are part of sequences of actions that are connected to activities that have an overall structural organization connected to playing a round in a CS:GO match. We build on the concept of activities as being produced by several sequences of action that hang together. That is, sequences are in the service of activities: they produce them, but activities are not reducible to sequences. We ask how sequences involving callouts are mutually structured by the larger matters and hang together to produce a coherent mutual understanding of the in-game interaction when playing a round in CS:GO.

3. Participants, materials and methods

The data used in this article stems from a larger dataset and project that has been reported on, in different ways, in earlier publications (see, e.g., Rusk & Ståhl, 2020, Rusk & Ståhl, 2022, Rusk, Ståhl, & Jusslin, 2023). The analysis, results and conclusions of this paper are novel and original in that they build on the previous works and extend our understanding of the structure of social organization in networked games. The data, two teams playing CS:GO matches, was screen recorded by the participants themselves who studied esports as a minor subject at a Swedish-speaking vocational school in Finland. The participants controlled the screen recordings and chose which matches to record and send to the researchers. They were instructed to send all kinds of matches played on all kinds of different maps. Apart from those (loose) instructions, the decisions regarding the screen recordings were theirs. The teams played together outside of school to get study credits, since part of their studies was to play a well-known esports game as a team. The participants (17–18 years old, all male) were Finnish-Swedish bilinguals and proficient in English. In the data, they used Swedish with some Finnish and English codeswitching with each other. In all recorded matches, all participants were playing from their homes (or other sites) and, therefore, they relied on mediated interaction to communicate and collaborate. In this case, both teams used Discord (a well-known VoIP and instant messaging social platform) to have an always-open voice call with each other.

FPS games usually offer several different variants to the format of team-based competition unfolding on contested terrain (see, e.g., Counter-Strike Wiki, 2023 for a more comprehensive guide to the rules of competitive CS:GO). The variant most relevant for this article is "Sabotage" in which one team (the "terrorists", in CS:GO's post-9/11 thematization) tries to detonate a bomb on one of two (or three) designated sites and the other team (the "counter-terrorists") defends those sites under time constraints (e.g., Rusk & Ståhl, 2022). In typical competitive CS:GO play, two teams (5 players each) play for several rounds in one match (see Fig. 1 for a screenshot, Valve Corporation & Hidden Path Entertainment, 2012). The first team to win 16 rounds wins the match. Matches are played on one map from a pool of maps that have been developed and changed throughout the game's history. The max amount of time for a round is 115 s and, in our data, the matches were approximately 20–45 min long. Teams start as either defenders (counter-terrorists) or attackers (terrorists) and then swap roles after 15 rounds. Teams win rounds by, in our case, detonating or defusing the bomb or eliminating the entire opposing team in the round. When a player dies during an active round, and there are teammates alive, they function as a spectator until the round ends, and can switch between the vantage points of the active teammates until the end of the round. At the start of the next round, all players are revived.

The broader study (see, e.g., Rusk & Ståhl, 2020, Rusk & Ståhl, 2022, Rusk, Ståhl, & Jusslin, 2023) includes almost 9 h of data gathered from

Table 1
Overview of screen recordings.

	Team 1			Team 2			
	Agnar	JemBe	Taskumatti	Hatifnatten	Lux	Örnen	Mastodon
Match 1	X	X	O	X	–	X	O
Match 2	X	O	O	X	O	X	O
Match 3	X	X	O	X	–	X	X
Match 4	X	X	O	X	O	X	X
Match 5	X	X	X	X	X	X	O
Match 6	X	X	X	X	X	X	O
Match 7	X	X	X	X	X	X	–

X = submitted a screen recording to the researchers.
O = participated in the match, did not submit a screen recording/issues with participant file.
- = did not participate in the match.

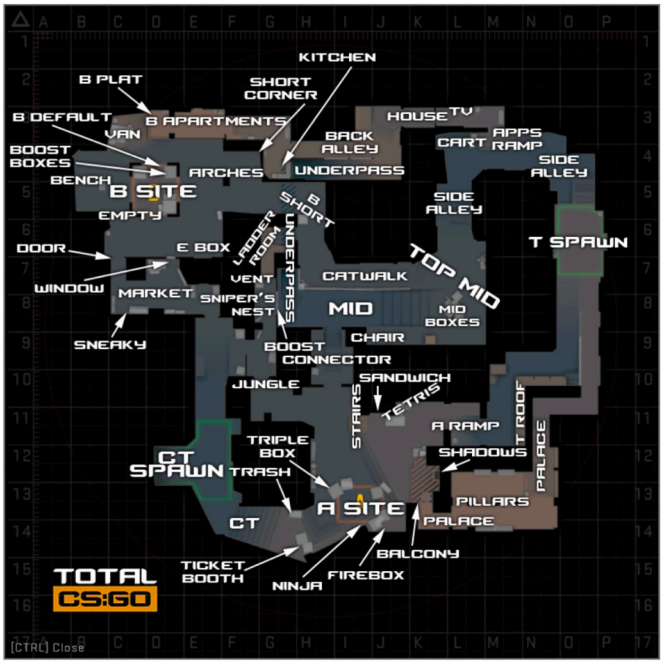

Fig. 2. Most common callouts for the CS:GO map "Mirage" (Retrieved from https://totalcsgo.com/callouts).

multiple players' perspectives across 14 matches (two teams, 7 matches per team, see Table 1), played on various maps (each with its own community-created collection of callouts). We refer to players using pseudonyms for their gamertags. "Agnar" (from Team 1) is the focus player selected for this analysis, having sent us the most recordings of matches he played during the data collection period (seven out of seven).

The data used includes all rounds, from all maps. For this article, the initial data selection included situations characterized by a participant providing a callout regarding enemy presence at a location (approximately 600 instances). Within this body of data, the analysis was focused on analyzing how, and if, callouts appear to 'hang together' and create 'larger' activities that go beyond the immediate sequence. To provide for a moment-to-moment granular analysis of this, we focused on all active rounds played from one focus player's, Agnar's, perspective (145 rounds). We exemplify the phenomenon by analyzing, in detail, one entire round from Mirage (see Fig. 2 for the most common callouts on that map, (Total CS:GO) where Agnar and his teammates play as attackers (T).

We do not have every player's 'full' perspective of every match on record; instead, each match in this study has been analyzed from the perspective of a given focus player (in this case, Agnar). However, thanks to the entirety of the mediated interaction (voice channel, on-screen actions, in-game sounds, as well as the mini map with colored dots for each player on the team), the analysis can include aspects of other players' actions, but not 'completely'. This is a challenge for studies on mediated interaction where participants are geographically dispersed (Rusk & Pörn, 2019; Luff et al., 2003) and we strive for reliability and validity by analyzing, in detail, how participants make each other accountable for actions on-screen and orient towards a common frame of reference.

The social practices analyzed in this study were discovered through adopting an EMCA perspective, which means striving for as much open-mindedness as possible and not to accept preconceived notions of macro-social structures as inescapably relevant (Schegloff, 1999). Previous research indicates that callouts are important for the collaboration and coordination (e.g., Rusk & Ståhl, 2022, Rusk, Ståhl, & Jusslin, 2023; Kiourti, 2019; Tang et al., 2012). However, because of the seen-but-unnoticed nature of callouts, EMCA, facilitated by screen recordings of teams playing the game, can help in better understanding how participants orient towards the use of callouts in their actual game play. That is, instead of retrospectively constructing researcher-based

accounts of game play with the benefit of hindsight, we can concentrate on the interactional components of how participants, in concert with each other, accomplish coordination, situationally and collectively. This article analyses how callouts appear to be an integral part of the mutual understanding of how entire rounds are played and coordinated as a team.

The reason for a granular description here is to help our aim in presenting and trying out a novel way of understanding the fast-paced and situated collaboration through the lens of EMCA. For this, we deemed it necessary to pay close attention to a single round and richly narrate and explain how participants jointly accomplish the task of coordinating their actions. The strength of this lies in the possibility to illuminate the intricacies of a single episode (round) and develop a richer understanding of an existing phenomenon within its extended local context (Raymond & Heritage, 2006; Schegloff, 1987; Waring, 2009). The goal of a single case analysis is to promote the overall sensitivity to the intricacy of in-game interaction as an interactional setting and provide this complexity the space and consideration it deserves.

The transcription of talk is a simplified version of the Jefferson (2004) system and embodied features of interaction are transcribed using a version of Mondada's (2019) system that has been applied for the game context (see Appendix 1). Additionally, to illustrate players' movements and actions, we embed screenshots of situations and the mini map in the transcripts (see Figs. 3–10). The colored lines in the maps visualize the general movements of each player during the current sequence and the colors correspond with each player's action lines in the transcript. In EMCA, the transcription is an integral part of the research process and analysis. It is a way for the analyst to get to grips with the intricacy of the seen-but-unnoticed details of everyday life that are part of the systematics and organization of social interaction (Hepburn & Bolden, 2017). It is a methodological approach and attitude that represents the EMCA way of 'registering' and 'documenting' the interaction and relying on what participants do, according to them, with their actions then and there (Ayaβ, 2015). The degree of detail in the transcripts stems from EMCAs interest in the moment-to-moment social organization from a participant perspective and, therefore, EMCA transcripts reflect as much of what is said and done as closely as possible (Ayaß, 2015; Hepburn & Bolden, 2017). Therefore, the degree of detail is an important part of doing EMCA research and from an EMCA perspective less details may misrepresent the data, whereas a more detailed transcript may uncover relevant phenomena that would otherwise have been unattainable for analysis (Jefferson, 2004). Hence, exactness in transcription is understood as a core feature of the quality of EMCA studies (Ayaβ, 2015).

It is worth mentioning our own positionality with regards to the competences that are under scrutiny in this paper. This article builds on our shared foundations in playing competitive networked games and studying the role that the in-game interaction plays in competitive FPS games, such as the ways that callouts enable players to link their own situational awareness of in-game actions to that of their teammates to construct a team-based understanding of events. Through this shared background, we have acquired a context-sensitive expertise of the game play, similar to the specific forms of knowledge that the participating players possess and employ in a taken for granted kind of manner (Arminen & Simonen, 2021). Through that level of competence in understanding the game environment and game play, we can analyze how participants collaborate and coordinate their play.

Online interactional research from participants' perspectives creates new ethical challenges (see Rusk & Ståhl, 2022 for a longer discussion regarding this). In this study, we use pseudonyms of the students' gamertags (the players' in-game names), and the participants, parents and teachers were informed of the study's aim and what participation entailed. Participants volunteered to be part of the study through informed consent, and they handled the screen recordings and decided which matches to send to the researchers over an encrypted file sharing service. The recordings are stored on encrypted external hard disks and are not shared outside of the project group.

4. Analysis

In the following, we uncover practices with which the participants organize and orient to an (from an EMCA perspective) extended timeframe, an overall structural organization, when playing a networked FPS game: a single (maximum) 115 s round. We explore how participants use callouts to organize rounds, as a team, when playing matches. We do this by presenting one analysis of one round being played by Team 1 from an attacking perspective (playing as T). In the analysis, we discuss how sequences involving callouts appear to be oriented to as sequences of action that together form activities that compose playing a round; that is, they appear to both form and be formed by the project of playing the game and coordinating the teamplay.

Before presenting the analysis of callouts in the round where Team 1 plays as terrorists, we need to acknowledge how this form of playing impacts the overall structural organization. Playing as terrorists involves initiating the action (selecting and moving to a bomb site), thereby determining the pace and direction of action, at least at the outset. In the round we consider below, the attacking team appears to employ different strategies, both those that are part of a communally-shared repertoire of opening gambits, as well as some that are more improvised and contingent. These are then modified based on how they understand that the opposing team is defending as they, collaboratively, begin constructing a mutual understanding of where the opponents are and how opponents are reacting to the employed strategy. When playing as terrorists, they use callouts to determine, collectively, how the strategy plays out and how it relates to the opposing team's movements. For example, they may initially engage in rushing *site B*, but callouts during the round provide information that it may be more advantageous to divide the team and send two players with the bomb to *site A*, using the rush to *site B* as a ruse. They are more dependent on being flexible from the start, because of their role as aggressors and therefore the need to express themselves in relation to how the defending team has positioned themselves.

The following round is, in its entirety of active play, approximately 47 s long. Team 1 is playing as terrorists, and it is the sixth round of the match. Their opponents have won four of the previous five rounds (the first team to win 16 rounds wins the match). Before the round starts, they verbally agree on buying weapons, armor, and grenades (instead of saving money to use in subsequent rounds) and "going A", which means that they will concentrate their efforts to take *site A* and plant the bomb there (see Fig. 3). Agnar is the one going for an "entry kill" (pushing onto the site to get a kill) to open the possibility of securing *site A* using the numerical superiority (5v4 players).

4.1. Moving into position (00:00–00:09)

The first excerpt (1.1) shows how participants orient towards the activity of moving into position to push onto *site A* and plant the bomb. Three go straight for *site A* through *ramp*, one goes towards site A through *palace*, and one checks the flank at *top mid* (see Fig. 3).

Excerpt 1.1. Moving into position.

		((round starts))
15	Finn:	*^ja far [in ti palace.]
		I'll go in to palace
	agn	*runs straight to A—>
	jembe	^runs straight to A—>
	tasku	^runs to top mid—>
	finn	^runs to A through palace—>
	king	^runs straight to A—>
16	JemBe:	[aaweepee] e säkert ceetee eller
		[aweepee] is probably ceetee or
17		(titta jungle)
		(look jungle)
18	Finn:	a:
		o:
19		(0.6)
20	JemBe:	[ska ja smoka dom]
		[should I smoke them]
21	Finn:	[e han dendä som] pusha: stairs #[också]
		[is he the one] pushing stairs [also]
22	JemBe:	#[a: du ta]
		[o: you do]
	fig	fig.3#
23	Taskumatti:	+en peeka: window +
		one peeking window
	en	+throws flashbang on A+
	en	+throws smoke on A +

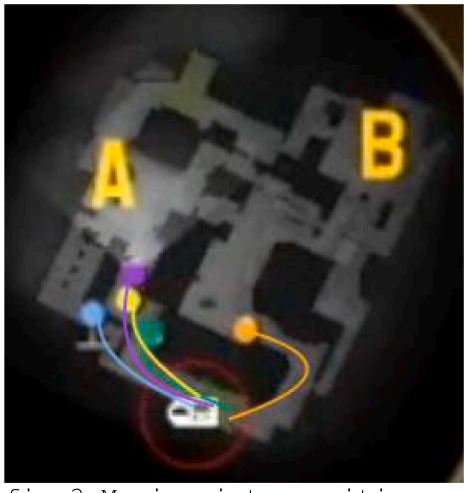

fig.3 Moving into position.

Already in the start of the round JemBe announces to the team what may possibly be against them (lines 16–17), before any opponent sightings have been done. For example, he mentions *aaweepee*, which is a sniper weapon (the AWP) that is a high risk and high reward weapon that can eliminate enemies with only one shot. These kinds of announcements are a form of callouts that are based on knowledge about the opponents from previous rounds. Verbal responses to these are not conditionally relevant, however, Finn responds (line 18) and asks a follow-up question about a specific opponent but gets no response to it (line 21). As they approach *ramp* JemBe asks if he should throw a smoke grenade to smoke the enemy and cover his team's movements (line 20), but he notices that Agnar and King are already moving fast towards *site A* (line 22). At the same time as the rest of the team is moving in on site A, Taskumatti calls out enemy presence at *window* (line 23). The overall structural organization of playing a round as terrorists is to gain access to a bombsite and plant the bomb. The activity of moving into position relates to these larger matters as they are setting up the execution of "going A″ through Agnar's "entry kill". All action sequences relate to this

activity, including the ones calling out what may occur to prepare the team for the encounter.

4.2. Entry kill (00:09–00:15)

In the next excerpt (1.2), the team orients towards the next activity: getting an entry kill (see Fig. 4) to be able to push *site A* (see Fig. 5) with numerical superiority (5v4).

Excerpt 1.2. Getting entry kill.

24		**# **^^(1.6) *^**
	agn	>**shoots and kills en *
	fig	#fig.4
	jembe	——>^^turns around to pick up bomb^
	tasku	——>^^holds position ^
	finn	——>^^holds position ^
	king	——>^^holds position ^
25	**Finn:**	***nice**
	agn	*backtracks to throw flashbang onto A——>
26		**(1.5)**
27	**Finn:**	**de va just han**
		it was him
28		**#(1.1)**
	fig	#fig.5
29	**Agnar:**	**^ja flashaa över* en gång^**
		I'll flash over once
	agn	——>*
	jembe	^returns to A with bomb and waits at entry——>
	king	^pushes on to A ^
30		**(0.6)**

fig.4 Entry kill.

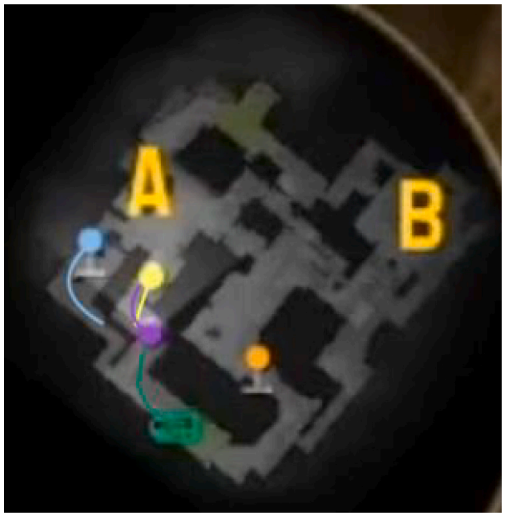

fig.5 Securing site.

In this excerpt there are no callouts. However, the embodied actions and the movements of the players indicate a clear orientation towards the current activity: to get a quick entry kill and push fast on to *site A*. Agnar uses his AWP and scopes in and gets his entry kill as he eliminates an enemy (line 24, Fig. 4). The rest of the team hold their positions and JemBe retrieves the bomb that was left behind (line 24). Finn provides a positive assessment of the kill (line 25) and confirms that Agnar eliminated the enemy they talked about before (line 27). Agnar takes cover to throw a flashbang so they can push into the open area (*site A*) and informs his teammates about this, so that they know to look away and not get blinded, themselves (lines 25 and 29). King is the first one to push *site A* and JemBe, who has the bomb, stays in cover (line 29, Fig. 5). Now everything is set for the next activity, which is pushing onto *site A*.

4.3. Push onto site a (00:15–00:25)

In excerpt 1.3 the participants begin pushing, en masse, onto *site A*. In this activity they employ callouts extensively to coordinate and collaborate and provide information regarding enemy presence, which is crucial for the push to be successful. The more information they have

on enemy movements, the better they can use that information to coordinate, implicitly, their own team movements.

Excerpt 1.3. Pushing onto bombsite A.

31	King:	(en e a: site)=
		(one is a site)
32	Finn:	=^ ^(site aawee)
		(site aawee)
	~~tasku~~	^dies^
33		*(1.1) *
	agn	*pushes on to A*
34	~~Taskumatti~~:	^en e shortt:), (.) på B
		one is short, (.) at B
	jembe	>^
35		^(0.7) ^
	king	^engages en on A^
36	King:	site [aawee]
		site [aawee]
37	Agnar:	[site]#^*>>site site site site<<^
	agn	^*scopes, shoots and kills en on A—>
	jembe	^throws flash onto A ^
	fig	#fig.6
38	~~Taskumatti~~:	( ) aaweepee site*
	agn	—>*
39	Agnar:	>död<
		>dead<
40	~~Taskumatti~~:	^*snyggt >han e död<^*
		good job >he's dead<
	jembe	^pushes on to A ^
	finn	^pushes on to A ^
	agn	*climbs on to tetris *
41		#(0.9)
	fig	#fig.7

fig.6 Clearing site.

fig.7 Pushing onto site.

In the activity in excerpt 1.3, participants employ callouts extensively to provide information regarding enemy presence and to coordinate their activities accordingly. This is crucial for the push to be successful, since the more information they have on enemy movements, the better they can coordinate, implicitly, their own team movements in an activity that is very fast-paced and where every tenth of a second counts and train their crosshairs pre-emptively at the positions and locations that have been called out. King, who pushed first, calls out that there is one opponent on site (line 31). Finn builds directly on to King's callout, adding information about which weapon that opponent has (line

32, in this case it is the AWP). This information is crucial for the team as they are currently pushing onto site. At the same time, Taskumatti dies on *top mid* by an opponent at *B short* (line 32), but he does not call it out straight away (line 34). Agnar joins King in pushing onto *site A* (line 33), so that they can eliminate the last opponent holding the site and clear the site to plant the bomb. That is why JemBe, who is in possession of the bomb, is still holding his position (line 34). King engages the opponent on *site A* (line 35) and repeats the call (line 36). Agnar joins in and calls *site* repeatedly, in quick succession (line 37), which indicates the stress and urgency to eliminate the opponent and clear the site. At the same time, he uses the information from previous callouts and scopes in at the correct position with his sniper rifle and eliminates the opponent (lines 37–38, Fig. 6). Taskumatti's call on line 38 is provided just as Agnar shoots. Both Agnar and Taskumatti inform that the opponent is dead (lines 39–40). This is information that is often provided in frantic and fast-paced situations when players need to concentrate on the battle and might not necessarily look to the icons indicating kills and deaths in the top right corners of their screens; in other words, information (in this case, the death of a dangerous opponent) that is technically available to all teammates, but might be difficult for each individual member to access visually, is provided verbally. With the information that the AWP-opponent is dead, everyone pushes more aggressively (line 40, Fig. 7), including JemBe with the bomb, and Agnar climbs up on *tetris* to get a better overview of the site.

The activity of pushing onto *site A* is a fast-paced and delicate maneuver that requires callouts and a shared understanding of preferred and/or expected actions of each player. Action sequences involving callouts are the bread and butter of coordinating play in a fast-paced FPS game. However, the sequences build on each other to compose the activity of pushing onto *site A*. The sequences and, hence, also callouts are in the service of the overall structural organization of playing the round. In addition to building on each other, they can also be parallel, such as Taskumatti's call regarding the enemy at *B short*, which became a parallel sequence to the one at *site A*. Additionally, repetitions between players are a welcome trait in activities involving callouts. That is, they are verbal repetitions, but they are not repetitions in that they provide the exact same information. They are spatially and temporally distinct actions of the same type, which leads to the fact that they provide new information, although they may seem to repeat previous information. All calls regarding the opponent on site are provided in spatially and temporally different positions. They are distinct actions where they confirm/reinforce the initial noticing from different spatial and temporal perspectives. Participants seem to favor these types of repetitions, because the more information made available from multiple perspectives the clearer the situation becomes, and the better teammates can calculate their course of action and anticipate where opponents are before having seen them, themselves.

4.4. Plant bomb (00:25–00:40)

In excerpt 1.4, the team orients towards the activity of securing *bombsite A* to be able to plant the bomb. It involves making sure that the bomb carrier (JemBe) can move from *ramp* to the *plant site* and plant the bomb without being killed (see Fig. 8). This requires a coordinated effort to secure all entry points to the site.

Excerpt 1.4. Securing A to plant bomb.

```
42      Finn:       djungel
                    jungle
43      Taskumatti: *en e  +djungel  +
                     one is jungle
        en                    +flashbang+
        agn         *scopes jungle──>
44      Taskumatti: öö,
                    uu,
45                  (0.4)
46      King:       under [^stairs      ^]
47      Taskumatti:       [^vid konnun  ^]
                          [ at connector ]
        finn               ^dies        ^
48                  (0.7)
49      Finn:       åhh,
                    ahh,
50                  ^(0.5)
        jembe       ^throws grenade and moves to plant site──>
51      Finn:       minus femti i jungle  han e i  stairs nu
                    minus fifty in jungle he is at stairs now
52                  (0.8)
53      Taskumatti: >stairs<=
54      JemBe:      =åhå (kan int skjuta)
                    =oh  (can't shoot)
55                   ^^(1.7)                ^
        jembe       >^^starts planting bomb^
56      JemBe:      #planta:
                     planting
        fig         #fig.8
57                   **^(3.3)                                  *^
        agn         >**jumps down from tetris and takes cover*
        jembe          ^planted bomb                           ^
        king           ^shoots and kills en       ^
58      Finn:       >han [dog< ]
                    >he  [died<]
59      King:             [dog  ] stairs
                          [died ] stairs
```

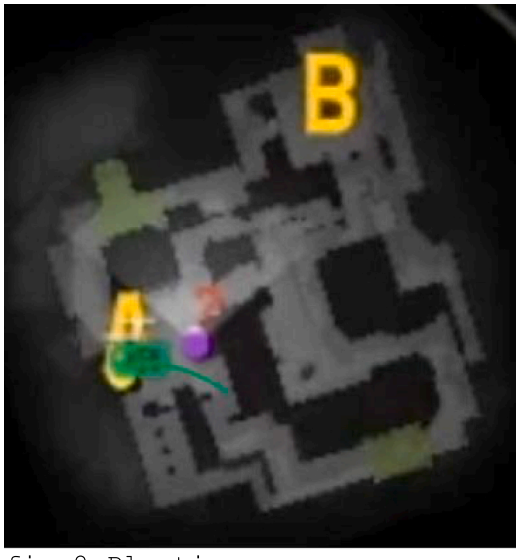

fig.8 Planting.

The excerpt starts with a new callout by Finn (line 42), which is repeated by Taskumatti (line 43). Agnar immediately orients to it and scopes towards *jungle* (line 43) from where he is standing on *tetris*. King and Taskumatti overlap each other when providing different callouts (*under stairs* and *at connector*) regarding the same location. Currently, two enemies have been called out at two entry points. Finn dies (line 47), verbalizes a response cry (line 49), and calls out that the opponent that killed him was *jungle*, now on *stairs*, and is hit for 50 health points (half of their overall health, players get a summary of the firefight that killed them on their screens, as they die, where they get info on damage given and damage taken). During this time, JemBe sees a chance to run for the *plant site* (line 50). Using the information he received, he throws a grenade towards the direction of *jungle* and *stairs* and runs towards the site with the bomb in his hands, which is why he cannot shoot at the opponent that Finn called out and that Taskumatti repeats (line 53). Therefore, he explicitly states that he cannot shoot (line 54). JemBe reaches cover at the *plant site* and plants the bomb (lines 55–56, Fig. 8). This activates the 40 s countdown timer, meaning that the opposing team has 40 s to either eliminate the terrorists and/or defuse the bomb (which requires fighting through the terrorists' defensive formation to reach it). Agnar takes cover and King kills the enemy that was called out at *stairs* (line 57). Both Finn and King verbalize the elimination, so that the team is updated on which enemies are still active (lines 58–59).

The activity of securing the *site* and planting the bomb requires a coordinated effort to achieve a mutual understanding of how the bomb carrier can safely get to the *site* and plant the bomb. It is a clearly defined activity that cannot (or should not) be attempted until the *site* is secure (5.3), if the bomb carrier dies the bomb may be dropped at a disadvantageous and contested location. Participants employ callouts to inform of enemy presence during the activity of securing and planting the bomb, so that the bomb carrier can use that information when deciding when and how to approach the *site*. In other words, there are no direct orders, instead, participants provide information through which teammates recognize and understand the implicit possible, and relevant next actions.

4.5. *Protect bomb (00:40–00:46)*

The final excerpt (1.5) captures the final activity of the round where the team is orienting towards holding *bombsite A* and protecting the bomb to win the round. The round continues with Agnar climbing back up on to *tetris* to get a better overview of the *plant site* and King and JemBe taking cover close to the bomb and checking the entry points to the *site* where opponents are most likely to attack (see Fig. 9).

Excerpt 1.5. Holding A and protecting bomb to win the round.

```
60                  #*(0.6)                  *
        agn          *climbs on to tetris*
        fig         #fig.9
61      ~~Finn~~:    cee[tee]
62      JemBe:          [cee]tee
63                  ^(0.9)
        jembe       ^shoots and kills en^
64      ~~Finn~~:    dog=
                    died=
65      JemBe:      =han e dö(d)
                    =he is dea(d)
66                  ^(1.2)                   ^
        ~~jembe~~    ^engages en and dies^
67      ~~Finn~~:    *sista e minus [fem-           ]
                     last is minus [fif-            ]
        agn         *scopes stairs from tetris-->
68      ~~Taskumatti~~:                  [(han e stairs)]
                                         [(he is stairs)]
69      ~~Finn~~:    [sista e  ] minus femti
                    [last is  ] minus fifty
70      ~~JemBe~~:   [aa sista.]
                    [uh last. ]
71      King:        **ja  håller  stairs
                       I'm holding stairs
        agn         >**scopes area between stairs and A site-->
72                  (0.7)
73      King:       håll där under ba
                    just hold there under
74                  ^(0.3)^
        ~~king~~     ^dies ^
75      ~~JemBe~~:   .hhh
76      ~~King~~:    åhå
                    oops
77                  #*+(2.3)                      +*
        en            +runs from stairs to A site+
        agn          *aims, shoots and kills en   *
        fig         #fig.10
78      ~~JemBe~~:   n[i:ce ]
79      ~~Finn~~:     [ni:ce]
```

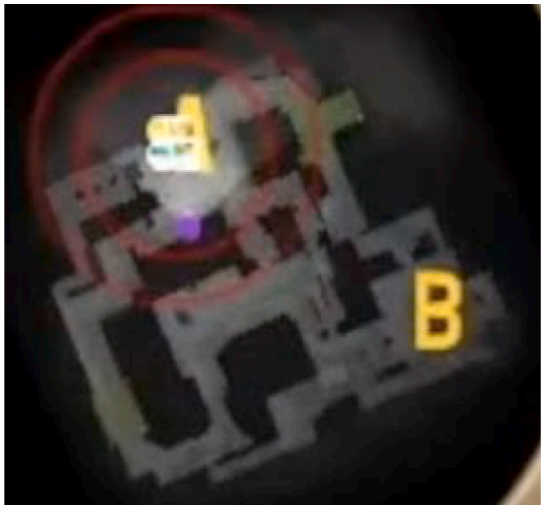

fig.9 Protecting bomb.

fig.10 Last kill.

Finn and JemBe, simultaneously, call out an opponent at *CT spawn* (lines 61–62), which JemBe engages and eliminates (line 63). Both Finn and JemBe verbalize that the called-out opponent is now dead (lines 64–65). JemBe engages another opponent near *stairs* but does not call it out (line 66). He dies (line 66). Finn starts to inform how much the opponent is hit (line 67), but he cuts his turn off when he is overlapped by Taskumatti who calls out that the opponent that killed JemBe is at *stairs* (line 68). Agnar seems to have seen where the shots came from because he is already scoping towards *stairs* (line 67), before Taskumatti has provided the call. Finn repeats his utterance from before (line 69). At the same time, JemBe informs that it is the last opponent (line 70), highlighting the fact that Agnar and King are now in an advantageous 2v1 situation. King and Agnar can now use the information regarding the location of the last opponent and set themselves up to defend the bomb, since they know where the last opponent is. King announces that he sees *stairs* (line 73) and that Agnar can stay where he is and hold the flank of *stairs* to *site A* (line 73). Agnar does this, and appears to orient to that plan, but does not respond and is not made accountable to respond verbally. King dies and both JemBe and he comment on it minimally (lines 75–76). The last opponent runs out of cover from *stairs* and Agnar has already positioned himself as well as possible to take the shot from the flank, which he does and receives positive assessments from his teammates (lines 77-79, Fig. 10).

In this final excerpt the team is positioning to protect the bomb and hold *site A*. King and JemBe are both near the bomb in cover of some boxes on the *plant site*. Agnar is still standing on *tetris* and scoping with his sniper rifle from there. By coordinating their defensive position through callouts, they can collaboratively reach a mutual understanding of where the opponents are trying to attack the *site* and if they need to reposition themselves. King and Agnar coordinate their defense against the last opponent by adhering to the calls that were provided and employing their known-in-common implicit understanding of how to play the situation. King goes head-to-head and Agnar stays hidden. The information that had been gathered up until then, as well as King's two turns (lines 71 and 73) are enough for the participants to reach a mutual understanding of an intricate tactic to play for winning the round.

4.6. Summary

Callouts are used and oriented to as a collaborative social action and participants orient to callouts as a form of structuring device in the complex screen-mediated environment. Callouts appear to both form and be formed by the overall structural organization of playing the game that players orient towards when coordinating their teamplay. To be able to follow the emergent tactics and the meaning of callouts, players orient towards an overall structural organization, which means that activities are structured by multiple action sequences involving callouts in different positions with regards to the organization of the activity (Robinson, 2012). That is, activities are part of "supra-sequential" (Robinson, 2012, p. 258) contexts that inform how actions are produced and understood. For example, JemBe moves to plant the bomb (4.4) when the enemy on site has been killed and there are no more callouts regarding enemy presence at *site*. No one explicitly tells him to do this, he reads the emergent tactics, understands which phase they are in at the moment and adheres to the callouts that are provided. That is, the meaning of the callouts is understood against the backdrop of the overall structural organization. He orients towards the call regarding an enemy in *jungle* and *stairs* as he, before running out onto *site*, throws a grenade at that location to distract the enemy that was there. JemBe can anticipate, or even know, where enemies are, before seeing them himself. This is thanks to callouts and thanks to him, and the team, orienting towards an overall structural organization.

As is clear from this analysis, playing as terrorists impels a certain conventional (though by no means immutable) pattern to the structure of the round: rush the agreed-upon bomb site (4.1–2), secure it (4.2–3), plant the bomb (4.4), and defend the site (4.5). Playing as counter-terrorists is likewise associated with a different set of conventional strategies, as teammates usually first split up to try to determine which bombsite the terrorists are trying to secure. What begins as, largely, a reactive and exploratory stance then shifts towards a more aggressive approach once terrorists plant the bomb. Despite these differences in objective, available/optimal strategy, and pacing between playing as terrorists vs counter-terrorists, callouts remain an intrinsic part of collaborating and coordinating when informing teammates where there is enemy movement or presence. An analysis of a round from the counterterrorist perspective, paralleling the account offered above, is beyond the scope of this article; nonetheless, we are able to offer some points for discussion.

5. Discussion

In line with Robinson's (2012) arguments, we have offered an analysis that looks at social interaction over the course of a structure provided by the technological and institutional organization of the activity rather than a priori methodological convention. This allows for a glimpse not only into how callouts constitute part of the skill set of networked competitive play (see, e.g., Taylor, 2011, Rusk & Ståhl, 2022, Rusk, Ståhl, & Jusslin, 2023; Tang et al., 2012), but also how the temporal sequencing within a given round involves/impels different frequencies and intensities of callouts at different stages. What this shows us is that callouts become more important, and certainly urgent, to players at key points in a given round. During the team's initial push into the area around *bombsite A* (Excerpt 1.3), for instance, how callouts both increase in number and cluster around key location names (the repetition of "site") and key information about their capacity to take control of the area (the effective use of the AWP). These are oriented to as key sequences of action that together form the activity of playing a round; that is, they are project-organized activities for coordinating teamplay.

Through studying players' in-game methods, it is clear that callouts are an intrinsic part of an overall structural organization in competitive networked game play. Callouts are oriented to as, for example, noticings (Haddington et al., 2022; Kamunen et al., 2022; Vatanen, 2018); that is, an action type that is meant to occur as soon as the "noticeable" is detectable. As we see in Excerpt 1.4, for example, Finn's utterance of "jungle" alerts his teammates to the presence of an enemy at that particular location, setting in motion a sequence of events culminating in the defeat of that enemy player at the hands of King, a crucial step in the team's choreographed efforts to plant the bomb. Additionally, this action type does not (necessarily) make a verbal response conditionally relevant (Stivers, 2012) and they are not (necessarily) oriented to as interrupting (see, e.g., Sacks, 1995 on what he calls "priority cases"). In other words, all players in the team are expected to provide game relevant information in-and-through callouts, without anyone having to ask for it, because within the time constraints of game play in CS:GO, there is no time to ask for information; implicit coordination appears to be the oriented to norm. Connected to this, the game play setting has the form of a continuing state of incipient talk where silence is not treated as a closing of the interactional occasion (Schegloff, 2007).

To the untrained eye (and ear), networked competitive video game play looks chaotic, if not unintelligible. Indeed, one of the central challenges facing the esports industry in its pursuit of mainstream legitimacy is how to organize the presentation (broadcast) of competitive gameplay in a way that helps relatively 'casual' viewers make sense of the action (see, e.g., Sjöblom & Linderoth, 2017; T.L. Taylor, 2015). Therefore, we realized that for us to be able to analyze the kind of highly-skilled game play and in-game interaction that we do in this paper, we needed a level of context-sensitive competence of the practice. This was achieved by going through the video data several times individually and in as a group, as well as through playing the game ourselves. It was especially important since our interest was to understand the distinct expertise and know-how that was taken for granted in their

practice (Arminen & Simonen, 2021). Previous research has demonstrated that verbal communication plays a constitutive role in the skillset of serious competitive gamers, alongside technical skills related to movement and aiming, and accrued knowledge of maps, weaponry, and strategies (e.g., Wright et al., 2002). But these studies largely stop short of explaining *how* callouts work. This article builds on previous studies on the systematics of the organization of social actions in FPS video game play (see, e.g., Rusk & Ståhl, 2020, Rusk & Ståhl, 2022, Rusk, Ståhl, & Jusslin, 2023) and shows clear potential for using EMCA for a detailed and systematic analysis of players' on-screen actions.

6. Limitations of the study

Many may question our choice to use a single round as the only representation of how callouts are used and, hence, as the basis for the analysis for this paper. This may seem arbitrary and leave readers wondering why we did not, for example, present more games and/or matches. However, when employing EMCA, we never arbitrarily select one series of moments among 1000's of others to analyze, but rather we foreground that series to illuminate the patterns we see across the entire data set (see Table 1). The round was chosen for closer analysis because it was especially rich and representative in terms of the use of callouts, and to understand this complexity we found it necessary to do a single-case analysis (Raymond & Heritage, 2006; Schegloff, 1987; Waring, 2009). Also, our focus here is to introduce EMCA as a suitable methodology to analyze callouts and to better understand why callouts may be effective. Future studies may, if they find EMCA useful, focus more on finding connections between games and/or evolutions/developments of players' and teams' uses of callouts as well as other coordinating resources and practices.

We recognize that game updates or patches, such as the release of the updated version of CS:GO, Counter-Strike 2 (Valve Corporation, 2023), might have altered the game play dynamics including modified/new callouts, as well as new maps (the data was collected approximately 5 years ago). While it is well beyond the scope of this paper to inquire into how, or if, the communicative practices of callouts have changed over five years, we expect that the routinized circulation and use of English-language callouts in CS:GO has become such a standardized feature of competitive FPS play that similar kinds of communicative practices can be found across recent updates to CS:GO, as well as otherwise different and distinct player communities and FPS games.

CRediT authorship contribution statement

Fredrik Rusk: Conceptualization, Methodology, Formal analysis, Writing – original draft, Visualization. **Matilda Ståhl:** Conceptualization, Methodology, Writing – review & editing. **Nicholas Taylor:** Conceptualization, Writing – review & editing.

Declaration of competing interest

None.

Acknowledgements and funding details

We wish to thank the participants that willingly shared highly personal data with us so that we, as researchers, better could understand what networked gaming was to them. We wish to thank the Swedish Cultural Foundation in Finland and Högskolestiftelsen i Österbotten for research funding grants during the process of writing this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssaho.2023.100753.

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