

# From Expressions to Impressions: A Thematic Analysis of User Perceptions of Non-Verbal Tracking in Video Calls

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## ABSTRACT

We present a thematic analysis of global user perspectives on what should be tracked in online meetings, revealing preferences and tensions that can guide ethical design. The question explores what participants believe should be tracked in an online meeting. Surfacing preferences for engagement-based cues, transparency, and privacy concerns. The findings reflect tensions between presence and privacy, and offer insight into how computer science can support inclusive, human-centred practices in video communication. The study aligns with the WomEncourage 2025 theme by emphasising the role of user agency, design ethics, and digital equity in shaping future online learning environments.

## CCS CONCEPTS

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## KEYWORDS

Privacy, Non-verbal Communication, Video-conference

### ACM Reference Format:

Carlota Vazquez Gonzalez, Rita Borgo, and Timothy Neate. 2025. From Expressions to Impressions: A Thematic Analysis of User Perceptions of Non-Verbal Tracking in Video Calls. In *Proceedings of Association for Computing Machinery, WomEncourage 2024 (WomEncourage)*. ACM, New York, NY, USA, 2 pages. <https://doi.org/10.1145/nnnnnnn.nnnnnnn>

## 1 INTRODUCTION

In this digital world, videoconferencing has become an essential tool for communication. From educating future generations in online classes to carrying out effective remote work in global companies. However, many video calls occur with cameras turned off, so non-verbal communication (NVC) decreases significantly. Some studies have developed non-verbal tracking tools to aid with this lack of communication and track cues that augment conversations. For example, Meeting Coach, which carries out real-time analysis of several non-verbal aspects during a call and creates a dashboard

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*WomEncourage, September 17-19, 2025, Brasov, Romania*

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ACM ISBN 978-x-xxxx-xxxx-x/YY/MM

<https://doi.org/10.1145/nnnnnnn.nnnnnnn>

with infographic data [2]. These tools capture vast amounts of data, and their main purpose is to improve the videoconferencing experience. In this poster, we present a focused thematic analysis of a single open-ended question drawn from a larger global study on non-verbal communication tracking in videoconferencing. While the broader study employed a primarily quantitative approach, this qualitative question was included to offer participants a reflective opportunity to share their views in their own words. The question asked was: "What do you think is useful to be tracked during an online meeting?" We carried out thematic analysis for this poster and present the results in the following sections. The aim was to understand what tracking is most acceptable and what influences appear in this context. By questioning these behaviours, we aim to improve the design of non-verbal communication tracking tools and educate future researchers and designers on what is most acceptable and where the users make their decisions. By creating a space where users reflect upon their views, we can further understand and improve tools that are used in online education [4].

## 2 BACKGROUND

Videoconferencing has become indispensable for work, education, and social interaction. Yet the medium presents communication challenges, particularly when cameras or microphones are turned off. Non-verbal cues such as gestures, facial expressions, tone of voice, and posture are vital for building rapport and regulating interaction, but are often lost or degraded online. Research highlights that the absence of these cues contributes to misunderstandings, reduced engagement, and phenomena like "Zoom fatigue" [1]. To address these gaps, tools like MeetingCoach and Emodash have emerged, aiming to track non-verbal communication in real-time or retrospectively to enhance meetings and online education [4, 2]. However, tracking non-verbal behaviour introduces privacy challenges. Non-verbal cues often reflect sensitive, involuntary states, and their capture risks misinterpretation and violation of user privacy. Our prior research and thematic analysis reveal that users are uncomfortable with detailed emotion tracking and strongly prefer anonymised, aggregated feedback formats[3]. Central to these concerns is the expectation of transparency, consent, and user control over what is tracked and shared. Thus, Computer Science has a critical role to play in shaping future videoconferencing systems. By embedding privacy-by-design principles, offering customizable control, and prioritising user agency, we can create technologies that foster trust, enhance communication, and catalyse positive change in education and beyond.

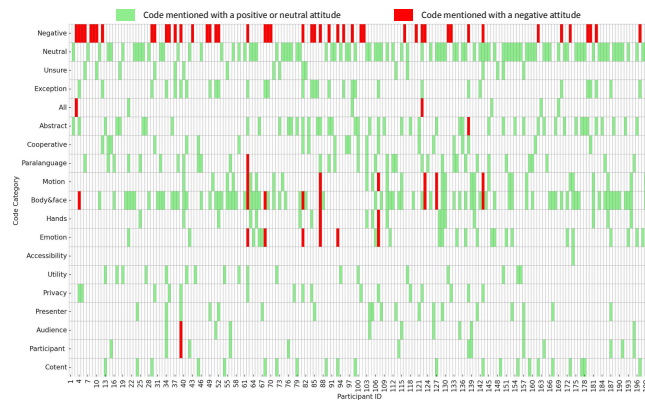


Figure 1: Heatmap of Coding Frequencies

### 3 METHOD

This poster draws on data from a larger research project on non-verbal communication tracking in videoconferencing [3]. Specifically, it analyses responses to a qualitative question embedded within a broader survey conducted via the Prolific platform. A total of 200 participants were recruited, equally distributed across America, Asia, Africa, and Europe, to ensure a diverse and globally representative sample. For the open-ended question on what non-verbal cues should be tracked in online meetings, a combination of top-down and bottom-up thematic analysis techniques was employed. Initially, categories drawn from existing literature were used to group participant responses into predefined themes (top-down, deductive approach). Responses that did not fit these categories were then coded inductively, allowing new themes to emerge based on participants' own perspectives. After the initial coding, a second researcher independently reviewed the analysis to reduce bias and enhance reliability. All coding, categorisation, and review processes were carried out collaboratively using Miro for thematic mapping and Microsoft Excel for data management.

### 4 RESULTS

From the results, we created a heat-map of the codes to visualise patterns of attitudes and combinations of preferred NVC tracking. The most acceptable and frequently suggested tracking cue was body language, referring to anything related to facial expressions during meetings. Out of 200 responses, 89 (44.5 %) mentioned body language, of which 8 (9.0 % of those) expressed a negative attitude toward its tracking. A frequently occurring category, labelled as 'Abstract', which we defined as any type of tracking that was not clearly described. For example, participation or engagement, which 24% of the participants found important to record. This code does not involve NVC tracking directly, but could involve some elements of it to satisfy the abstract need. Regarding the attitudes expressed in written responses, we used non-mutually exclusive codes: positive, negative, and neutral. In the end, neutral was the most predominant (49%), followed by positive (29%) and negative (24%). This showed that several negative responses included exceptions, where users found only specific types of NVC tracking "useful" or "important."

## 5 DISCUSSION

Based on the thematic analysis presented, several nuanced reflections arise concerning the ethical tensions embedded in videoconferencing environments. The study underscores how body language tracking is generally accepted, given its contribution to richer communication, yet also reveals significant discomfort with more invasive forms such as emotion tracking. Participants expressed nuanced trade-offs between privacy and presence, indicating that trust, transparency, and consent are central to broader acceptance. These findings align with growing literature advocating for privacy-by-design in educational technology. Tools such as MeetingCoach[2] and Emodash [4] represent attempts to bridge communicative gaps in virtual settings, yet their efficacy and ethical standing hinge on how they handle sensitive non-verbal data. Bailenson et al. [1] warn of "nonverbal overload" and its psychological cost, supporting the need for restrained, user-governed systems. Vazquez Gonzalez et al. [3] reinforce this, advocating for aggregated, anonymised formats and highlighting user discomfort with opaque tracking. Future systems must empower users, especially in education, with visibility and agency over what is tracked. In doing so, computer science can act as a catalyst for change, not just through innovation, but by embedding respect and equity into the digital infrastructures that shape learning. In educational settings, these findings call for learner-centred tools that respect privacy while enhancing engagement.

## 6 CONCLUSION

Through a thematic analysis of 200 global survey responses, we mapped user attitudes toward non-verbal communication tracking in videoconferencing. Body language tracking emerged as the most accepted, reflecting the perceived value of gestures and posture for online communication. The Abstract code, covering participation and engagement, also gained prominence, suggesting user interest in broader interaction monitoring beyond traditional NVC tracking. Importantly, many participants with initial privacy concerns showed a negative attitude, with slight exceptions, towards tracking. Overall, users show cautious openness to non-verbal tracking when tools are ethically designed and user agency is prioritised. Future systems should prioritise ethical tracking designs that allow users to control how they are perceived and represented online.

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