

# Preliminary Analyses of Spatial Positions of Poster Session Audience and Their Joining in/Leaving Behaviors

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## Abstract

The aim of our research is to construct criteria for evaluating participant behaviors that will help ensure fruitful communication experiences in poster sessions. We recorded on video the proceedings of a simulated poster session. Then, we analyzed the audience's spatial position at each poster presentation and their joining in/leaving behaviors. The results highlighted the key behaviors of an audience in the front row of a poster presentation that wanted to leave from the discussion, and those of an audience in the rear row that wanted to join in the discussion. These findings suggest that it would be effective to provide an encouragement that helps audiences to join in/leave from presentations suited to the situations.

**Keywords:** interactive communication, communication skill

## 1. Introduction

One format for presenting research at academic forums and conferences is the poster session. Presenters and attendees stand close to each other in which the latter can interact with the former during the presentation. Attendees can also observe tentatively the poster from a short distance, or walk away if they are uninterested. During a poster session, attendees choose those posters that arouse their interest or concern; as such, a poster session serves as a discussion forum.

However, when poster presentations attract many attendees, it can be difficult for attendees to join in a discussion once the presentation has started. Conversely, if a discussion drags on, those wishing to move to another poster presentation may find it difficult to leave from the scene.

Thus, poster sessions feature a mixture of attendees: those who want to listen attentively, those who want to observe tentatively, those who want to join in the discussion, and those who want to leave from the discussion. Therefore, to ensure fruitful discussions at poster sessions, presenters must be competent in both managing the floor and presenting. For their part, attendees must possess communications skills that will allow them to join in and leave from presentations suited to the occasion. Few studies have explored the specific behaviors of presenters and attendees in the dynamically changing environment of a poster session; these studies have derived criteria for evaluating the abovementioned skills from such data.

Therefore, we attempted to derive criteria for evaluating the above behavioral skills. This study aims to clarify the attendees' spatial positions and behaviors during poster presentations, with a focus on audience drop in/out process. We set up a laboratory to simulate poster presentations, and recorded on video the proceedings of the presentations. We used the video footage to analyze the attendees' behaviors during the presentation. We also examined specific examples that illustrated the behaviors of attendees exhibiting when they want to "join in" or "leave."

## 2. Previous Work

When people of a specific group converse with each other, the participants therein are aware of their own participation status and that of the others. Goffman (1981) proposed a "participation framework" for analyzing the interactional roles in conversations involving three or more people. This participation framework classifies participants into "speakers," "addressees," and "side participants," according to the centrality of their role in the conversation. Clark (1996) elaborated on this framework, adding the roles of "bystander" and "eavesdropper." Bono (2004) then applied Clark's Goffmanian model to the context of a dynamic poster presentation. In a poster presentation, the way the audience participates changes over time. Accordingly, when applying the model in this context, describing the model diachronically is important. Bono (2004) described participation diachronically as follows: "Nonparticipants" become "bystanders" when they approach intentionally the conversational space and are recognized by the existing participants. Once they are recognized by all existing participants, they become "side participants." Then, when a "speaker" addresses them, they become "addressees," and when they address an existing participant, they become "speakers."

In a conversational scene involving many people, it is not only the structure of participation framework that comes into play; another important element is spatial organization, which refers to the relative spatial positions and orientations of the participants. Kendon (1990) proposed the "F-formation" as a concept for describing spatial organization in conversational scenes involving three or more participants. The F-formation describes three kinds of functional spaces that extend outward from the participants. The first is the orientation space (o-space), which is the central space formed in front of the individuals who are engaging each other in a conversation. The second is the participants' space (p-space), which is a ring-shaped space surrounding the o-space. Then, there is the region space (r-space), which lies beyond the p-space.

McNeill (2006) used Kendon's F-formation system and broke the concept down into social and instrumental F-formation. The latter refers to conversational space in

which communications are mediated through an object. According to Bono (2009), poster presentations typically have an instrumental F-formation, in that participants gaze at a poster. Bono also argued that the spatial organization typically consists of a semicircular alignment, and that the o-space in this configuration becomes smaller as people draw closer to the poster.

Previous research on poster sessions have focused on the ways audiences change over time and the structure of the interactional relations embedded in the conversation. Our current goal is to use these insights to construct criteria for evaluating the behavioral skills of poster session participants. As a first step toward this goal, we analyzed participants' joining in/leaving behaviors in the video-recorded poster sessions. We believe that the findings derived from this analysis will help enhance poster presentation skills in research conferences, business meetings, and educational settings.

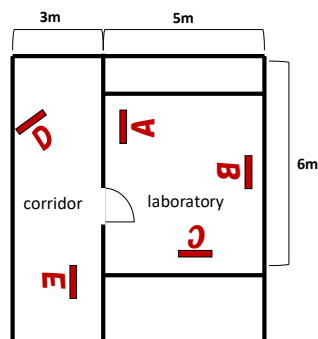


Figure 1: Arrangement of five posters in the experimental area.



Figure 2: A scene of Poster B presentation. Movies for analysis are edited from four angle cameras (overhead, backward, left, and right).

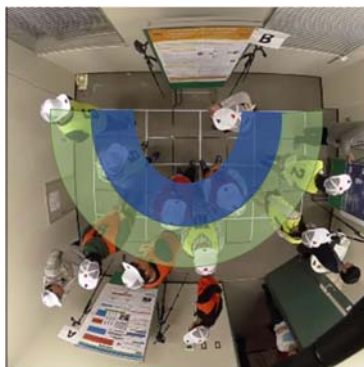


Figure 3: A position of each audience is labeled as p-space (blue) and r-space (green).

### 3. Experimental Setup of Poster Presentation

An experimental poster session was set up at our laboratory of Tokyo Denki University. The poster session comprised five presenters, 19 attendees.

Presenters were one assistant professor, three graduate students, and one undergraduate of 4th grade. Poster A, which was presented by a graduate student, and Poster B, by an assistant professor, were analyzed. These two presenters were selected because of their abundant presentation experiences and high presentation skills. Before the session, they were instructed that the presentations would be simulated academic conferences or symposiums, must be completed in about 10 minutes, including discussions, and communicate proactively to attendees who were interested.

All attendees were university students aged between 20 and 24 years. They obtained informed consent. The poster session lasted for 40 minutes. We instructed attendees to attend each of the five presentations within the 40-minute period.

We also had one facilitator who was responsible for prompting the attendees to join in and leave for temporary period of experimental session. We, however, excluded the facilitator from our analysis in this study.

Experimental layout is shown in Figure 1. There were five poster presentations. Three of these (Posters A, B, and C) were in the room area, and two (Posters D and E) were in the corridor area (see Figure 1).

Twelve video cameras were set up for recording. For Posters A, B, and C in the laboratory area, we set up cameras to the left and right sides of each of three poster panels and on the ceiling right above the panel and rear upper wall. We then edited the video footage to prepare it for analysis (see Figure 2). As for Posters D and E, no video was recorded.

### 4. Annotation Method for Video Data

The behaviors of attendees who visited posters were annotated from the edited video data. Two posters of A and B were discussed for a preliminary study. Other posters will be discussed in the future. We annotated the spatial positions of attendees, their movements, and postural configurations, among others, by using the free software ELAN.<sup>1</sup>

When an attendee was gazing at a poster in a stationary position, he/she was assigned as the audience of that poster. As shown in Figure 3, two labels were indicated for the spatial alignment of the attendees: the front row where the p-space is formed (shown in blue in the figure), and the rear row where the r-space is formed (shown in green).<sup>2</sup>

Subsequently, the movements and postural configurations of attendees for Posters A and B were annotated. We indicated several labels for head tilting, head turning to side, gaze, body inclination, body twisting, arm and hand posture, and leg motion. The annotated labels were provided by one of the authors.

<sup>1</sup> ELAN : <https://tla.mpi.nl/tools/tla-tools/elan/>

<sup>2</sup> F-formation is a concept of interpreting the spatial configuration of conversational scenes from the aspect of interaction. In this study, to simplify interpretations, we regarded the front row of participants as p-space and the rear row as r-space.

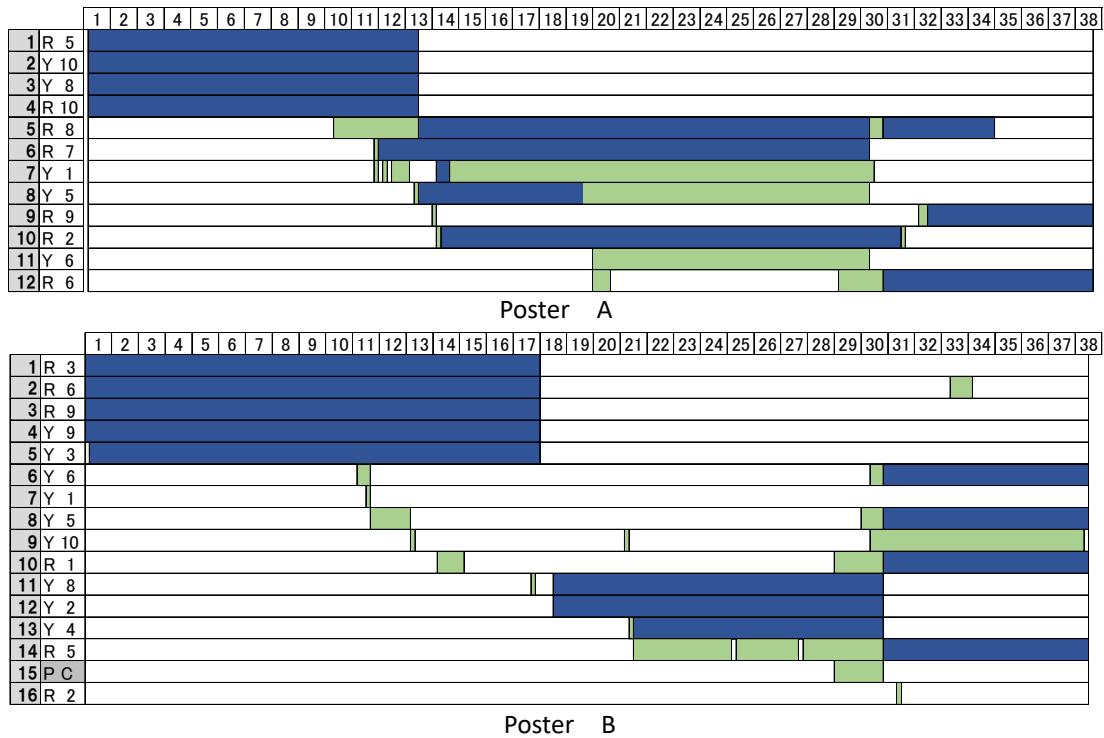


Figure 4: Timeline chart for about 40-minute session of the audience's standing position at Posters A and B.

## 5. Audience's Spatial Positions

Figure 4 shows a timeline of the audience's positions in Posters A and B, in which the horizontal and vertical axes indicated elapsed time (minutes) and attendee ID (bib color and number), respectively. In the table, a blue and a green bar indicated the time that the attendee stood in the front row (p-space) and the rear row (r-space), respectively.

The presenters of Posters A and B delivered their presentation for about three times. Each presentation had different audiences. In the first presentations of both Posters A and B, the attendees standing in the front row remained in this position for the duration of this presentation. In the second and last presentations, other attendees joined in or out during the presentations.

## 6. Behavior Analysis

In this chapter, we analyzed the attendees' behaviors in each row separately, to determine whether the front-row attendees engaged in the discussion throughout the presentation, and the circumstances in which the rear row attendees joined in/ out.

### 6.1 Typical Attendees in P-space

When we analyzed the behaviors of the attendees, we found that many in the front row were nodding, leaning forward, and looking at the spots on the poster to which the presenter was pointing (see Figure 5(a)). We assume that the action of standing in the front row is an indicative of an attendee's desire to hear the presentation or his/her signal of curiosity in the presentation. We also assume that actions of leaning forward or nodding at appropriate moments are expressions of concern and curiosity.

Such behaviors probably help audiences attract the gaze of the presenter and obtain opportunities to ask questions

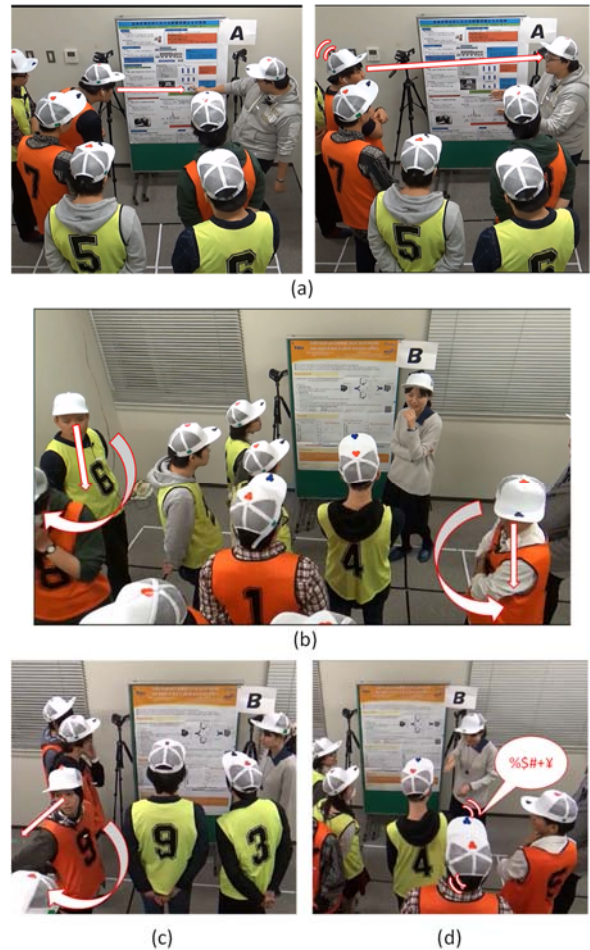


Figure 5: Example behaviors are shown at around 28(a), 28(b), 16(c), and 30(d) minutes of presentations.

or raise comments. Thus, the characteristics of an audience that is involved actively in the presentation are exhibited in the behaviors of the front-row audiences.

### 6.2 Typical Attendees in R-space

As for the behaviors among rear-row audiences, at times, they watched the presenter, and at other times, they exhibited a postural configuration called “body torque” (Schegloff, 1998), in which they twisted their upper body and gazed around (see Figure 5(b)). Attendees who stood in the rear row were farther away from the presenter; hence, they were less likely to attract the gaze of the presenter. Additionally, with front-row audiences obstructing their view, they might have found it hard to view the poster. Thus, it is difficult for rear-row audiences to engage actively in the discussion, making moving to another poster a preferable action for them.

Takanashi (2016) reported that the more peripheral a participant’s spatial position, the more likely he or she is to shift attention to a different activity. Likewise, in our examples, the behaviors of the rear-row audiences, in which they exhibited body torque and turned their faces toward other posters and presenters, are presumably the typical behaviors that audiences exhibit when they are wondering whether to continue listening to the presentation or move to another presentation.

### 6.3 Transitional Audiences Between P- and R-space

In certain cases, a front-row audience that was engaging actively in the discussion started to exhibit behaviors similar to those of a rear-row audience; conversely, there were cases in which a rear-row audience started exhibiting behaviors similar to those of a front-row audience. Figure 5(c) shows an example of the former: a front-row audience of Poster B, R9. At around the 16-minute mark, R9 exhibited body torque and cast his gaze at other posters.

Gazing at the presenter is an appropriate action for an audience; conversely, averting one’s gaze from the presenter signals “disengagement from the conversation” (Goodwin, 1981). Sakaida (2017) observed interactions while standing between organizers from an excerpt of the recorded video of the preparatory work for traditional fire festival in Japan. He described a stepwise process of leaving from a conversational scene, in which participants first avert their gaze and then start walking away from the scene. In the above example, R9 first averted his gaze from the presenter and then looked toward another poster. This behavior presumably denoted that R9 wanted to leave from the front row and move to another poster.

Figure 5(d) shows an example of the latter: a rear-row attendee of poster B, R1. At around the 29-minute mark, R1 was facing the presenter, nodding frequently and venturing a few comments. In exhibiting behaviors similar to those of front-row audiences, R1 was presumably trying to get the surrounding audiences to approve of his own participation in the discussion.

## 7. Conclusion

Poster sessions feature a mixture of audiences, each with their own purposes for listening to the presentations. To help ensure fruitful discussions, audiences must join in and leave from discussion circles in such a way that each audience can participate in discussions with multiple poster presenters. With this in mind, we discuss the

behaviors of the two cases we highlighted above: R9 and R1.

While standing in the front row, R9 twisted his upper body and gazed round to other areas, signaling that he was leaving from the discussion. However, until the discussion came to an end, R9 never actually moved away from the front row to another poster. Despite signaling his intention to do so, if R9 was unable to leave from the Poster B discussion circle and move to another poster, this situation would have been disadvantageous for him. Therefore, it might need someone to assist R9 to leave from the discussion and engage in another poster discussion. Additionally, it might be necessary to provide a few floor management tips to the presenter of Poster 9, such as how she could have given a nod or similar acknowledging gesture to R9, which would have conveyed her approval of his leaving.

While standing in the back row, R1 gazed at the presenter, nodded frequently, and commented. However, the presenter did not look at him, and the front-row audiences did not look around to acknowledge his presence. If we analyze this case based on Goffman’s participation framework, we could say that participation of R1 in the discussion circle was not approved by the other participants. To ensure that someone like R1 can join as a member of the discussion, it is necessary to have the presenter a skill to recognize R1 as an audience and to give all of addressee her presentation. It might also be effective to instruct the front-row audiences (such Y4 and R5) on behaviors, such as making space in the front row. Thus, audiences must be more skilled at joining in and leaving from presentations. At the same time, however, all participants must be skilled at assessing accurately when an audience wishes to join in or leave, and behaving to assist her/him to join or leave.

The behavioral skills referred to above apply to research presentations, but they can also be applied to a wide range of interactive communication scenes, including group discussions.

This study was unable to analyze the participants’ actual utterances. The audience’s behaviors may be affected by verbal presentation skills of the presenter. Thus, we must analyze relationship between a presenter’s speech skills and the audience’s joining in and leaving behaviors. We intend to accumulate more case studies, chronologically analyze the audience’s joining in/leaving behaviors and their inter-poster movements, and analyze quantitatively the behavior data.

Our next goal is to build skill evaluation criteria that are applicable to specific behaviors of presenter and audience. In the future, we will present insights that can help people improve the way they communicate in business or education settings.

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