Research Article

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The salience of students' body language during in-person and online lectures at a Canadian university

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Abstract: Professors teaching different disciplines at a university in Canada received an email invitation to fill-out an online questionnaire where they could reflect on and express their opinions about the pedagogical and communicative roles of the body during their lectures. The questionnaire was divided into two parts: one asking professors to comment on their own body language; the other inquiring about professors' perception of their students' body language usage. This article is specifically focused on the second part of the survey, where professors reacted to questions concerning awareness of students' body language during classes held in-person and online. In investigating the perceived salient functions attributed to students' body language, this study values multimodal competence, embodied communication, and it informs the concept of immediacy in the relationship between students and professors at the university level.

Keywords: students' body language; professors' perceptions; in-person and online university lectures; Canada

1 Introduction

This study aims to contribute insights into the salience of the body as a modality of communication during university lectures (e.g., Bernad-Mechó 2021, 2023; Crawford Camiciottoli 2016). As Nathan et al. (2019) point out, little is known about the awareness of body language and its effectiveness during class. To this avail, a survey of questions was distributed to university professors to gain insights into the body language that they think they employ to perform their pedagogical mission, as well as their understanding of their students' body language. This article is specifically focused on the latter series of questions. Considering that this study was conducted at a later stage of the Covid-19 pandemic period (i.e., winter 2022), by when professors must have accumulated some experience with teaching online, participants were also invited to express their views on the topic of this study in relation to classes held in-person and online. This aspect was meant to investigate whether class format is perceived to influence usage of the body (cf. Photopoulos et al. 2023; Querol-Julián 2021, 2023; Satar 2015). Moreover, although the type of questions included in the survey originate in the literature in linguistics with a focus on Gesture Studies (e.g., Abner et al. 2015; Ekman and Friesen 1969; Goldin-Meadow and Alibali 2013; Goodwin 2000; Kendon 2004, 2017; McNeill 1992, 2005), this study collected responses from professors teaching different subjects across the Faculties of the same university. This methodological choice was meant to explore: whether professors teaching a range of disciplines show sensitivity towards the way the body has been interpreted in linguistics; whether professors show multimodal competence; and whether patterns in their answers suggest that the body is salient to them and contributes to a more immediate relationship with their students (e.g., Boswijk and Coler 2020; Ellis 2016; Frymier et al. 2019; Gorham 1988; McCroskey et al. 1996; Violanti et al. 2018).

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2 Literature review

One of the aspects that can affect students' learning is technically known with the term "immediacy" (Mehrabian 1967). Immediacy refers to the verbal and nonverbal behaviour (e.g., smiling, facial expressions, posture) that people adopt to decrease physical and psychological distance between them during interactions. Within educational settings, investigations have inquired about professors' behaviours that contribute to immediacy and that may increase students' motivation and improve learning (e.g., Frymier et al. 2019). This article reverses the typical focus on professors' body language (e.g., Valenzeno et al. 2003) to explore the value that professors at a Canadian university attribute to their students' body language during class. In so doing, this article aims at providing insights into professors' perception and awareness of body language and its roles from a perspective that is less typically researched while, at the same time, potentially contributing to a more complete definition of the concept of immediacy within educational settings. This article embraces the theoretical standpoint that favourably combines mind and body in the interpretation of students' behaviour during class. The literature on multimodality and embodied communication (e.g., Canagarajah 2018; Goodwin 2000; Jewitt 2009; Kimura and Canagarajah 2020; Kress 2010; Lim 2021; Mondada 2019) argues that allowing people to use their body while interacting with the world can facilitate new learning. Among the benefits of this practice, research has found that body language accompanying speech can enhance perception, recall, and memory (e.g., Goldin-Meadow and Alibali 2013; Goodwin 2000). Consequently, more scholars today are interested in investigating the relationship between body movements and learning (e.g., Dahl and Ludvigsen 2014; McClelland et al. 2015; Valenzeno et al. 2003).

This article offers an example of investigation aimed at delineating the salient characteristics of students' body language as perceived by the professors teaching at a Canadian university to help scholars and educators expand their views on students' communicative behaviour during class. It is true that, traditionally, instructors' attention has been predominantly focused on students' verbal expression, before any other modality of communication (Macedonia 2019). However, this way of interpreting communication as exclusively verbal is now considered to be incomplete and unrealistic as it does not take into account the multiplicity of modes that naturally occur in interactions of different kinds, including those occurring during teaching and learning (e.g., Cope and Kalantzis 2015; Grapin 2019; Lim 2021). Pedagogical approaches that privilege speech over any other modality of communication can no longer be regarded as sufficient in explaining the way students actually express and interpret meaning. Contrastively, research advancements of the last decade encourage educators to evaluate students' competence, progression, learning, motivation, by considering speech along with the different modalities that students may use during class (e.g., Bernad-Mechó 2021, 2023; Crawford Camiciottoli 2016). This change solicited in pedagogical approaches is endorsed by modern technology and digital support, which have allowed scholars to access content that was not available or seen before, and that have confirmed the participation of different modalities in communication (see ten Have 2007).

A multimodal approach to classroom discourse argues that the process of encoding and decoding meaning does not only happen through speech; rather, different resources may be used to this avail. For example, while learning, students may use a diagram, a picture, an object present in the classroom, to convey the idea that they want to formulate or to make sense of what is being presented to them during lectures. Moreover, embodied behaviour creates meaning on its own (e.g. Canagarajah 2018; Goodwin 2000; Jewitt 2009; Mondada 2019). For example, a body movement often provides a more accurate representation of the meaning of words, especially in the specification of size, shape, characteristics of a movement (Kendon 2004, 2017). Embodied modes such as gesture, gaze, facial expression, posture, etc., all ground thought into action, and they can be communicative in intent (McNeill 1992, 2005). During class, students engage in activities such as listening, observing, analyzing, questioning, etc. They manifest their thoughts and involvement not only through speech, but also through their body (e.g., Canals 2021). For example, a math student may offer an explanation of a mathematical problem by means of hand and arm movements that help ground their understanding of the problem onto actions (i.e., body movements) and the physical world (e.g., objects around them). Numerous investigations have demonstrated the importance of hand gestures and other body movements, to help students learn different subjects, from math to music, to language learning (e.g., Macedonia and Klimesch 2014; Simones 2019; Smotrova 2017). Therefore,

encouraging students to use eye contact, facial expressions, head movements, hand gestures, along with words is a message that the scholarship is trying to promote in education. Encouraging also the use of the classroom space and its equipment is more and more valued (e.g., Barsalou 2010; Hughes and Morrison 2020). For example, inviting students to reach the whiteboard and write some content on it for everyone to view; or inviting students to work in groups and to use PPT presentations or digital technology at appropriate moments during their learning.

In this study, the participants' academic backgrounds form a varied pool of informants to explore perceptions and understanding of students' body language. Professors of different disciplines had the opportunity to reflect on the salience they attribute to their students' body language during the different stages of a class, from lecturing to assessment. While doing so, professors may have become more sensitive towards the variety of modalities that participate in the educational discourse. The scholarship calls this type of awareness multimodal literacy (Jewitt and Kress 2003), which, it is believed, should be included in teacher's training programs because it allows future instructors to explore the affordances and differences available through modalities of communication (e.g., Bernad-Mechó 2021; McClelland et al. 2015). In encouraging professors' awareness of the role of students' body, studies such as the current one can also inform a more comprehensive definition of the behaviours that contribute to an immediate relationship between students and professors (e.g., Frymier et al. 2019). Attention to students' body language may reveal how engaged students are in class, or if and to what extent they understand the material taught. Moreover, body language can inform about the way students relate to their professors, whether they experience a close and immediate relationship with their professors.

This study compares then professors' perceptions of students' body language usage during in-person versus online lectures. Class venue has become a salient aspect to investigate since the COVID-19 pandemic period, when universities were forced to continue their educational mission online. In examining whether class format reveals possible changes of behaviours, this article provides some insights into the relationship between class venue and the concept of immediacy. Immediacy has been studied extensively as a trait that is specific to the culture where teaching and learning takes place (e.g., López-Ozieblo 2015; Salvato 2022; Violanti et al. 2018). This study offers an additional perspective to it by relating immediacy to class format and its repercussions on students and instructors' behaviours (e.g., Photopoulos et al. 2023; Querol-Julián 2021, 2023; Satar 2015).

In the following sections of this article, the methodology of this study, the reasons for the questions included in the survey, and its main results are presented. This article aims at delineating the salience that a group of professors teaching different disciplines at a university in Canada attribute to their students' body language. Specifically, this article addresses the following research questions:

RQ1: Do professors at a university in Canada perceive their students' body language and its functions as salient?

RQ2: Does the teaching venue, specifically in-person versus online, change professors' perception of their students' body language?

RQ3: Do professors perceive students' body language as a salient modality of communication in the promotion of an immediate relationship between students and professors?

3 Methods

3.1 Procedure and material

This study took place during the winter semester 2022 at a university in Canada.[1] The principal investigator used the university mailing list to reach the 521 professors teaching in different Departments and Faculties and invited them via email to fill-out a Qualtrics questionnaire inquiring about body language usage during lectures held in-person and online. The survey was divided into two parts: one focused on professors' body language; the other

1 This study received clearance from the Ethics Board of the University of Windsor, Ontario, Canada.

focused on professors' interpretation of their students' body language. In the presentation of the study, professors were informed that body language was to be interpreted in its largest sense from facial expressions, to hand gestures, to postures, to any other body movement they could think of. Professors were allowed a period of a month to access the survey and decide on whether they wanted to participate in this study. In conformity with ethics guidelines, professors could contact the principal investigator via email and ask any questions they had before participating, or they could seek clarification on the questions of the survey. Completion of the questionnaire was predicted to take about 20 min.

This article examines the responses collected on the second part of the survey.[2] Ninety-two professors responded to the survey questions, but 3 withdrew before submitting their answers. Although 89 questionnaires were submitted, they were not necessarily filled out completely. This is because, in the guidelines provided, participants were informed that they could skip any questions they did not feel comfortable responding to. Moreover, for each question, professors were asked to choose all the answers that applied.

The reasons for the questions included in the second part of the survey are now presented. To begin with, professors were asked whether they are aware of and understand their students' body language, and whether they think it occurs more in lower or higher levels. Professors were also asked if they expect students to reproduce the body language of a lecture. These questions were meant to raise professors' awareness of the body as a nonverbal modality in their students' behaviour during class. Besides being inspired by the literature on multimodality and embodied communication (Canagarajah 2018; Canals 2021; Cope and Kalantzis 2015; Grapin 2019; Jewitt 2009; Kimura and Canagarajah 2020; Kress 2010; Mondada 2019), this choice of questions is in line with the literature in Gesture Studies, which in the first place supports the important role of the body during any interactions and for different communicative purposes (Kendon 2004, 2017).

The survey continues with a focus on students' hand gestures in particular. This question was inspired by the amount of research work completed on the role of hand gestures in facilitating production of speech for the speaker and the understanding of a message for the interlocutor (e.g., Beattie and Shovelton 1999; Gullberg and Holmqvist 2006). Professors were invited to think whether students' hand gestures accomplish communicative functions such as indicating, illustrating, emphasizing meaning. To continue, the survey draws the professors' attention to the fact that, like words, body movements are a reflection of thought (Goldin-Meadow 2003; McNeill 1992, 2005). Professors were asked whether they see a relationship between students' body language and thought in the expression of meaning, in adding to the meaning of words, in helping experience meaning, in specifying the meaning of words, and in elaborating meaning.

To gather more insights into professors' perception of students' body language, this survey also inquired whether participants see this as a salient modality when students use it in the formulation of meaning, or when they use it to replace speech, and when professors evaluate students' overall competence (cf. Matsumoto and Dobs 2017; Ross et al. 2020). Considering then that the recent literature in Gesture Studies points to the value in reproducing body language during the process of learning new contents (cf. Repetto et al. 2021; Wakefield et al. 2018a, b), professors were also asked whether they only show body language to their students, or they also ask them to reproduce the body language of a lecture.

The second part of the survey ends with a question inquiring about the types of students' body language professors perceive to occur more frequently. This latter question was motivated by the literature on the concept of "salience" in linguistics, where some scholars believe that the more frequent a linguistic concept occurs, the more visible and relevant it becomes (Boswijk and Coler 2020; Ellis 2016).

3.2 Participants

The majority of the professors who responded to the survey were female and aged between 41 and 50; they declared English as their first language, and they were members of the Faculty of Arts, Humanities and Social Sciences of the same university. To note, Arts, Humanities and Social Sciences is the largest Faculty on campus,

2 The second part of the survey is reproduced in Appendix 1.

and it includes different Departments ranging from Drama to Philosophy, Psychology, etc. Professors in the Department of Languages in the same Faculty did not receive the email invitation because the principal investigator is a colleague at the same Department and, in compliance with ethic guidelines, she did not want to exercise any influence on her colleagues' decision to participate in this study. In terms of student population, participants stated that they teach predominantly undergraduate students who are speakers of different languages.

4 Data analysis and results[3]

Considering that not all questionnaires were filled out completely and that some lacked substantial information, it was decided that questionnaires that provided less than 15 % of the answers be eliminated because they were deemed inadequate for data analysis. The total sample size consequently examined counted 48 participants. Moreover, it was decided that when professors chose the option "both" as an answer, these responses be merged with the other two main options, in-person and online. Finally, the percentages obtained were rounded to the closest tenth.

To begin with, Figure 1 shows professors' perception of their students' body language in terms of usage, intelligibility, frequency, and in terms of whether it reproduces the body language of a lecture:

Figure 1 shows that 88 % of the professors believe that their students use body language compared to 8 % who said "no" and 4 % who said "don't know." The majority of the professors (i.e., 73 %) also confirmed to understand their students' body language, although 21 % chose the option "don't know" in this case. As for professors perceiving that students reproduce the body language of a lecture, 77 % responded "no" compared to 15 % who responded "yes," and 4 % who "don't know." In terms of whether body language is perceived to be more frequent in lower versus higher levels, the main answers were "don't know" (i.e., 48 % and 46 %) and "no" (i.e., 44 % and 42 %).

In the first place, these results suggest that professors notice and understand their students' body language during lectures. Only a minority selected "n/a," which suggests that the majority of the disciplines these professors teach predict some students' body language usage. Alternatively, professors may have thought about those cases when professors' teaching style influences a reduced students' body usage. For example, during traditional lectures, students sit at their desks, listen and take notes. The fact that the majority of professors in this study do

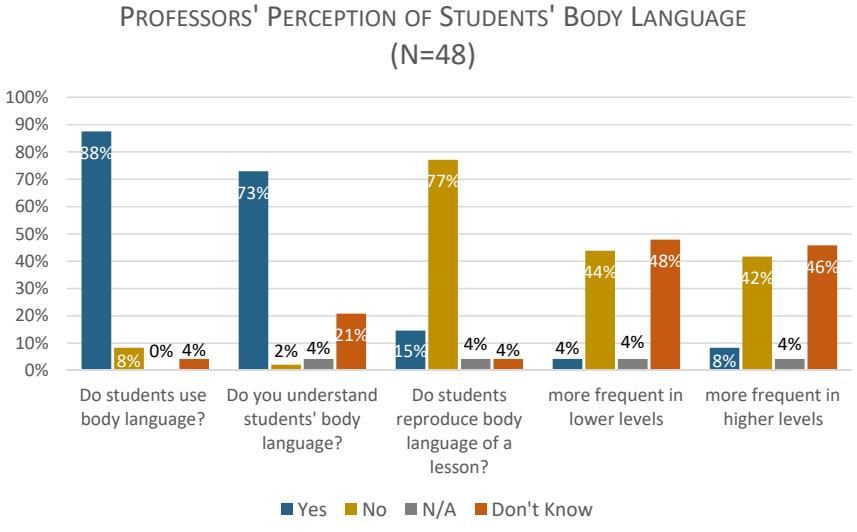

Figure 1: Professors' perception of students' body language.

3 I would like to acknowledge the help of Ashlyne O'Neil, Learning Specialist in the Office of Open Learning at the University of Windsor, in the organization and presentation of the data.

not ask students to reproduce the body language of a lecture suggests that this is not a typical teaching practice or that it is not viewed as necessary or that there is no time to allow this type of practice. The professors that, instead, responded positively to this last question were: two professors in Nursing; two professors in Arts, Humanities, and Social Sciences; one professor in Education; one in Science; and one in Human Kinetics. These professors may feel that it is important for students to reproduce the body language of a lecture as a way to reinforce and facilitate learning. The fact that the majority of the responses to the question comparing lower versus higher levels fall under "don't know" and "no" suggests that it may be difficult for professors to distinguish the two cases, or that professors do not teach different students' levels.

To continue, Figure 2 presents the functions that professors attribute to their students' hand gestures in particular:

In Figure 2, the results that stand out overall concern in-person teaching. Compared to online lectures, during in-person classes the majority of the professors interpreted students' hand gestures as accomplishing the following functions: to emphasize meaning (i.e., 77 % vs. 31 %); to point at person, object, place (i.e., 73 % vs. 31 %); to illustrate meaning and to show emotions (i.e., 71 % vs. 38 %, respectively); and to replace words (i.e., 54 % vs. 25 %). One professor in Arts, Humanities and Social Sciences offered this comment, which underscores the salience of body movements in in-person lectures: "We have lessons in gesture. They [the gestures] illustrate and emphasize meaning the most. They [the students] use their body far more in-person. Or at least I can see them better in-person." Another professor in Arts, Humanities and Social Sciences stated "greet" as an additional comment; and a professor in Nursing said "demonstrate." The highest number of "don't know" answers in this question corresponded to the function "to replace words" (i.e., 40 %), whereas a range between 27 % and 21 % of "don't know" answers were found for the other functions. These findings suggest that, for the most part, professors are aware of students' hand gestures and can attribute a function to them, especially during lectures held in-person. These responses are in line with the literature that endorses the salient role of hand gestures in allowing speakers to formulate and express meaning (e.g., Goldin-Meadow and Alibali 2013).

To follow, the survey asked, "Like words, body language manifests thought. It serves as a tool for your students to." Figure 3 shows the professors' responses to this question:

While teaching in-person, the majority of the professors perceive their students' body language as a tool for students to add to the meaning of words (i.e., 90 %); to elaborate meaning/thought (i.e., 81 %); to materialize meaning/thought (i.e., 79 %); to complete the meaning of words, to specify the meaning of words, and to experience meaning/thought (i.e., 75 %, respectively). While teaching online, the professors' responses range lower, between a maximum of 52 % to a minimum of 46 % across the option answers. No professor chose "never" as an answer; and between 25 % and 10 % of the professors selected "don't know." Two professors in Nursing offered these additional comments: "to demonstrate"; "When online, I only see their body language during office hours." One professor in Arts, Humanities, and Social Sciences commented: "It was very important to encourage gesture and movement for online participation as I study how the body can inform the experience of a lesson. i.e. psychophysical response." Overall, these results point to professors interpreting the salience of their students' body not only as a modality that combines with speech (i.e., by adding to, completing, specifying speech), but also

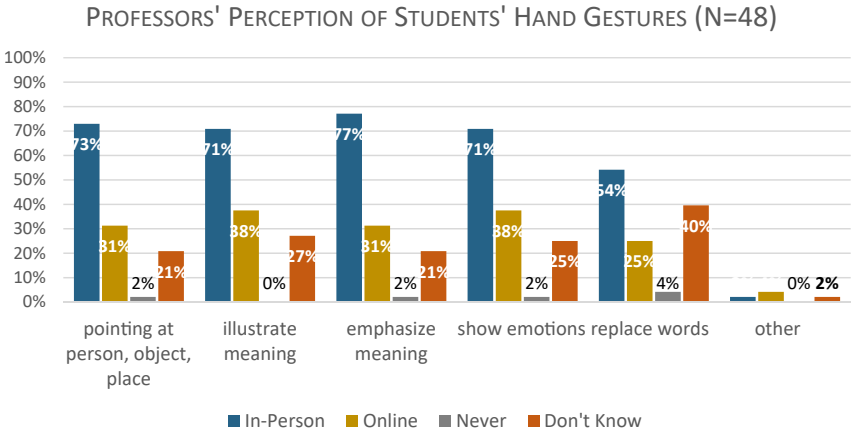

Figure 2: Professors' perception of students' hand gesture functions.

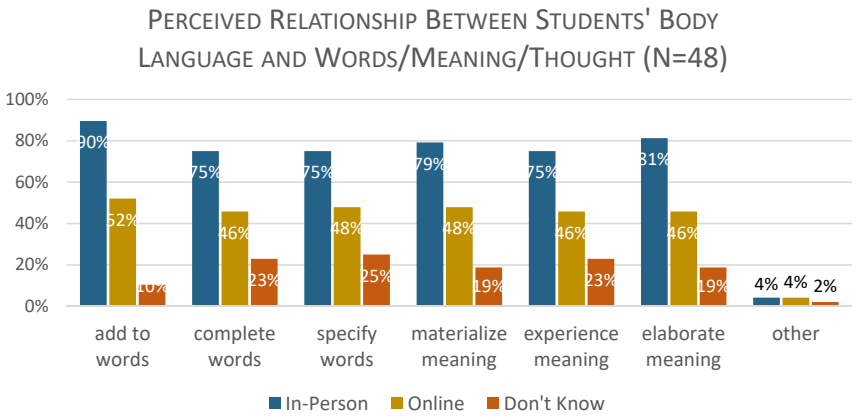

Figure 3: Professors' perception of students' body language in relation with words, meaning and thought.

as a modality that enables materializing and elaborating meaning. In other words, the body helps students experience thoughts more directly and more concretely (cf. Goldin-Meadow 1999; Goldin-Meadow and Alibali 2013; McNeill 1992).

Professors were then invited to comment on whether they take students' body language into consideration in the three circumstances presented in Figure 4:

Figure 4 shows that, during in-person lectures, 90 % of the professors take students' body language into consideration when it conveys meaning compared to 63 % of the professors doing so during lectures online, and 8 % responding "don't know." As for taking students' body language into consideration when it is used instead of technical terms or concepts or correct grammar, 67 % of the professors do so during in-person lectures compared to 50 % during lectures online; 10 % responded "never"; and 19 % said "don't know." In the evaluation of students' overall competence, the predominant answer was "never" (i.e., 38 %), compared to 33 % for "in-person" and 19 % for "online" lectures; while 25 % of the professors "don't know." Overall, these results suggest that professors are more inclined to take students' body language into account when it conveys meaning in general, rather than when it replaces technical and specific language or concepts, making speech the preferred modality. In the area of evaluation, then, the professors' responses indicate that they do not seem to attribute a salient role to students' body language during assessment practices.

Finally, professors could express the value they attribute to the difference between only showing body language versus asking students to reproduce the body language of a lecture. Figure 5 presents the professors' responses:

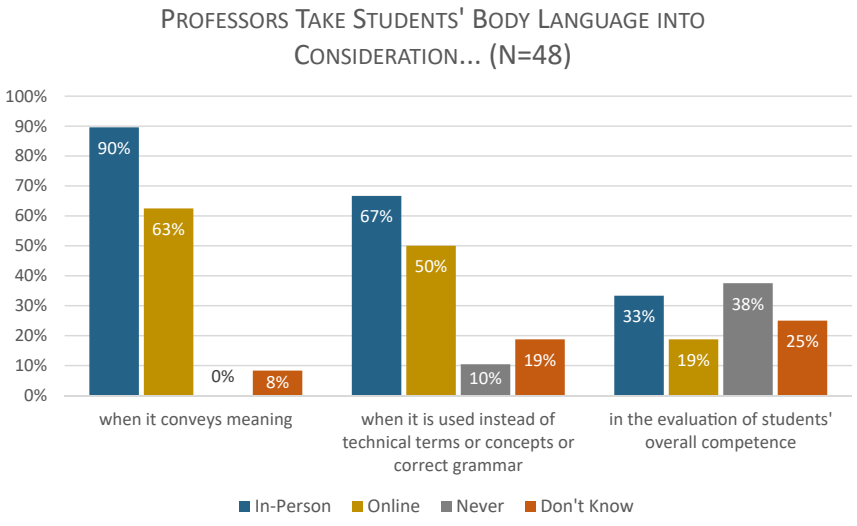

Figure 4: Professors take students' body language into consideration.

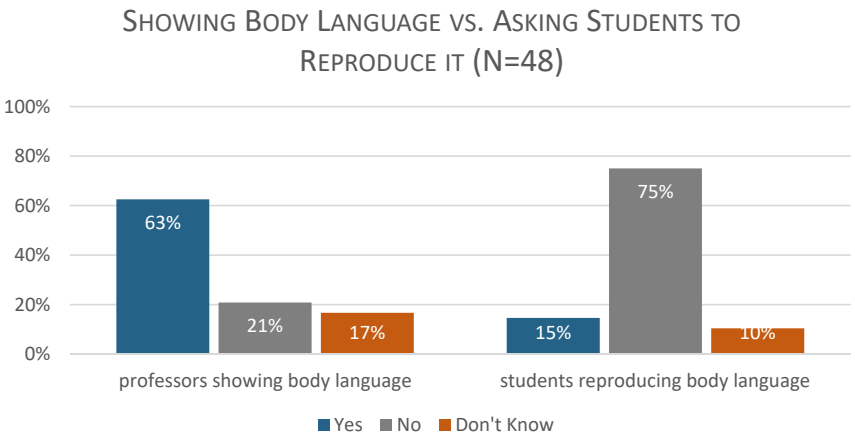

Figure 5: Professors showing body language versus asking students to reproduce it.

In Fig. 5, 63 % of the professors only show body language that accompanies new language or concepts, compared to 15 % of them also asking students to reproduce it. Contrastively, 21 % of the professors do not show body language and 75 % do not ask their students to reproduce it; and 17 % and 10 % of the professors "don't know." These results suggest that some professors may not be aware of using body language during lectures. However, professors showing body language to students is perceived as more typical or expected of a practice than having students reproduce the body language of a lecture. These results also suggest that the value of having students reproduce the body language of a lecture may not be sufficiently known at the university where this study took place.

The second part of the survey ends with an opportunity for professors to consider frequency of students' body language during in-person versus online lectures (see Appendix 2). Overall, the professors' responses suggest that they do notice students' body language, or lack thereof, during class. Only three out of 45 professors did not have anything to contribute to students' body language during in-person lectures (i.e., professors 6, 32 and 40); and only three expressed some uncertainty about how to respond to this question altogether (i.e., professors 16, 30 and 41). All the remaining professors offered some description of body movements, especially concerning their students' face, hands, and posture. In some cases, professors described the meaning of the body movements that they interpret (e.g., fatigue, boredom), rather than the body parts involved (e.g., professors 15 and 17).

Professors also confirmed that they noticed a change in students' body language between in-person and online lectures. As they pointed out, this difference originates from the fact that, while online, many students keep their cameras off and, therefore, their body is not visible and cannot be salient. In comparison to in-person lectures, professors' comments about students' body language online were less informative and detailed. For those who described their students' body language online, face and hands stand out as the most recurrent types. Very few professors commented that the students' body language did not change between in-person and online (e.g., professor 5 teaching music). Few other professors said that, compared to in-person lectures, new body language was adopted during online lectures (e.g., professor 27 mentions the "thumbs up" gesture). Yet, a few other professors expressed a sense of difficulty or awkwardness in body language usage while online (e.g., professor 25).

5 Discussion

The professors who responded to the questions of this study showed, for the most part, to be aware of their students' body language, or lack thereof, as well as of its roles during lectures. Professors perceived body language to be a modality that students use in their learning of different disciplines at the university in Canada where this study took place (e.g., Nathan et al. 2019). Nevertheless, professors confirmed that they notice and understand their students' body language and they can attribute a function to it, especially in in-person lectures. Besides

suggesting that the physical classroom allows a more extensive usage of the body, this study also points to the fact that students' body language integrates speech. Speech alone is not the only modality that participates in university-level learning; rather, body language complements and completes it. This finding is in line with one of the most important contributions that the literature in Gesture Studies has revealed about communication, in different contexts and for different purposes (Beattie and Shovelton 1999; Goldin-Meadow 1999; Goldin-Meadow and Alibali 2013; Gullberg and Holmqvist 2006; Kendon 2004, 2017; McNeill 1992, 2005).

Although most professors perceive the salience of their students' body during lectures, for example, by saying that they take it into consideration when it conveys meaning in general, the majority of them do not normally ask students to reproduce the body language of a lecture (see Figures 1 and 5) (Repetto et al. 2021; Wakefield et al. 2018a, b). Moreover, professors feel they do not consider students' body language in the evaluation of their overall competence (Figure 4). These findings are salient in pointing to the fact that assessment and evaluation of learning at the university where this study was carried out is still predominantly focused on students' ability to express meaning verbally, rather than in other modalities (Macedonia 2019). Multimodal evaluation is not yet a practice systematically adopted (cf. Ross et al. 2020).

For the most part, then, professors were able to identify the important functions they attribute to their students' hand gestures (Goldin-Meadow 2003). Although professors' responses suggest that both class formats lend themselves to some students' usage of hand gestures, Figure 2 points to the fact that the physical classroom facilitates the expression of certain functions via hand gestures. One of them is to indicate a person, an object, or a place. This finding is not surprising as the physical classroom allows better visibility of the people, objects, and places present during a lecture. With attention to the relationship between students' body language and thought, the total absence of "never" responses in Figure 3 suggests that, whether consciously or not, the professors in this study perceive students' body language as an expression of thought (McNeill 1992, 2005).

In comparison to when they teach in-person, professors' comments regarding students' body language during classes held online were less informative because, as the professors commented, most students keep their camera off and this fact prevents any observations of body language. Consequently, this study reveals that the physical classroom creates the conditions for students to rely more likely and more extensively on the body, and to make use of its potential as a modality of communication. During online classes, embodied communication may become less viable of an option (e.g., eye contact between instructors and students is not possible; backchannel signals cannot be given nor observed if cameras are off); other times embodied communication is replaced with tools of a different nature (e.g., the platform chat often substitutes for the back-and-forth exchange of information); yet, other times, the body can show new patterns to account for the virtual setting (e.g., the speaker's body may approximate the computer screen to suggest that they are ready to talk or that they are making an important point) (Photopoulos et al. 2023; Querol-Julián 2021, 2023; Satar 2015).

The findings of this study have some repercussions on the definition of immediacy in educational settings: the way students and professors can establish a more immediate relationship with one another ideally requires the setting of a physical classroom. In this venue, students and professors can express what they want to communicate with the help of modalities other than speech; for example, via the body and the classroom space around them. Moreover, in a physical classroom, it is easier for students to establish a closer rapport with all the members of a class. As the literature on immediacy has found, maintaining physical proximity to the listener, establishing eye contacts with them, assuming a relaxed and pleasant facial expression, smiling, using hand gestures, are some typical nonverbal traits attributed to immediacy (e.g., Gorham 1988; McCroskey et al. 1996; Mehrabian 1967). Immediate verbal and nonverbal behaviour have been revealed to help people build relationships and promote positive emotions between them (cf. Frymier et al. 2019; Violanti et al. 2018). Consequently, it is reasonable to pose the question about how a virtual classroom can create the conditions for an immediate relationship between students and professors (Satar 2015). This is a relevant topic to continue to investigate considering the success that online classes have obtained internationally since the Covid-19 pandemic period.

Besides highlighting the positive opinions that the professors in this study hold about students' body language, it is also important to point out those areas where they expressed uncertainty or lack of salience. In Figure 1, "don't know" responses are prevalent probably in those areas where professors lack experience (i.e., teaching different students' levels). In Figure 2, the "don't know" answer is prevalent when professors

responded to whether students' hand gestures replace words (i.e., 40 %). This latter finding reminds us that being aware of when in combining with speech, the body replaces it altogether (Goldin-Meadow 1999), is not easy to determine. This type of awareness requires training and observational practice. In Figure 3, "don't know" is found across all the options, but it is less marked in association with whether the body adds meaning to words (i.e., 10 %). Probably professors are more comfortable in interpreting the body as an additional modality of communication to speech (Goldin-Meadow and Alibali 2013), than in any other ways. In Figure 4, then, "never" and "don't know" prevail as answers in the area of evaluation of students' competence (i.e., 38 % and 26 %). Although this finding suggests priority given to speech, a margin of uncertainty remains probably because to rule out that body language does not influence evaluation at all may seem too drastic of an answer. Finally, in Fig. 5, 17 % of the professors "don't know" whether they show body language during a lecture and 10 % "don't know" whether they ask students to reproduce the body language of a lecture. These responses suggest that the value of embodied communication and of its practice needs reinforcing, and probably explaining, in the pedagogy of different disciplines at the university where this study was conducted.

In examining the overall findings of this study, the body seems to be a more salient modality in some disciplines compared to others, particularly for professors teaching drama, nursing, human kinetics, and music. It might have been easier for professors teaching these subjects to reflect on the role of the body in communication. Contrastively, other professors may have never had the opportunity to reflect on and observe body language, and also comment on the difference of body usage across class formats. For these reasons, some professors may have ended up giving general answers to the questions of the survey. Alternatively, the teaching methodology or the subject they teach may not be conducive for professors to observe the body in an obvious way, whether in-person or online. In traditional lectures, especially, professors tend to stand behind a podium while students sit at their desks. This type of routine does not lend itself to the observation of body language in students.

Finally, although through this research experience professors at a university in Canada had an opportunity to think about their students' body language and its roles during lectures, it is important to point out the limitations of this study. Professors identified an issue with not allowing a "more/less" answer to the questions of the survey, or with not taking into consideration that one could be teaching large versus small classes, or different types of courses, where the experience of body language usage changes accordingly. Some expressed confusion about the option answer "both"; others felt that they could not really comment about online classes because the virtual classroom limits their awareness of body language in general. Furthermore, the fact that professors could choose to answer or not the questions of this survey may represent another limitation of this study. This possibility, however, was in line with ethics guidelines that meant to protect participants who did not want to respond when they felt uncomfortable or unable to. The fact that professors expressed their perception of body language usage rather than actual usage is also as a limitation of this study. The findings presented in this article only examine perception of body language and they would need to be combined with evidence of usage from in-person and online lectures, for example through recordings of the same professors' lectures. This further analysis would allow a more complete view on the difference between perception versus actual usage of body language at the university considered in this study.

6 Conclusions

This study offers an example of investigation where the typical focus on professors' own body language was reversed to explore, instead, professors' perception of their students' ways of communicating and learning by means of the body during class. This study was an opportunity for professors to reflect on their students' body language usage and to think whether it plays a role during lectures in-person and online. By examining professors' perceptions of their students' body, this study suggests that investigations of this type can reveal important insights into students' responses to lectures, the way they develop understanding and learning of different disciplines. Moreover, studies of this kind can inform about the type of rapport that students maintain with their professors and the other members of a class. Research in these areas may inspire a reformulation of the role of the body during university lectures towards a more multimodal experience for professors and students alike. The literature on

multimodality and embodiment supports the argument that there is a value in raising awareness of the visual channel of communication, as well as in physical embodiments, because they contribute to the creation and understanding of meaning, and they can help succeed more effectively in the pedagogical aims of teaching and learning (Cope and Kalantzis 2015; Kimura and Canagarajah 2020; Lim 2021; McClelland et al. 2015).

This study suggests that there is much work still to do if students and professors are to embrace multimodality and embodied communication within the classroom. Professors would need to become more keen on using and observing the body during lectures, including during evaluation practices. They would need to provide examples to students to raise their awareness of the meanings behind body movements. Professors would also need to encourage students to rely on their body as a way for them to expand their opportunities to make sense of the contents they learn. In sum, promoting the presence of the body in university would certainly represent an important change to the typical characteristics of university educational practices and discourse. It would reduce the traditional privileged position reserved to speech while opening the door to other modalities and their potential towards facilitating not only teaching, but also learning.

Appendix 1: Body language during in-person and online university lectures: the professor's view

Select ALL that apply and if you choose 'other,' please specify.

2. NOW, THINKING ABOUT YOUR STUDENTS.

(a) Your students' body language

Do your students use body language?	*yes*	*no*	*n/a*	*don't know*
Do you understand your students' body language?				
Do you ask students to reproduce the body language of the lesson?				
Is body language more frequent in lower levels?				
Is body language more frequent in higher levels?				

(b) Your students use hand gestures to:

Indicate a person, an object, a place	*in-person*	*online both*	*never*	*don't know*
Illustrate meaning				
Emphasize meaning				
Show emotions				
Replace words				
Other_____				

(c) Like words, body language manifests thought. It serves as a tool for your students to:

Add to the meaning of words	*in-person*	*online*	*both*	*never*	*don't know*
Complete the meaning of words					
Specify the meaning of words					
Materialize meaning/thought					
Experience meaning/thought					
Elaborate meaning/thought					
Other_____					

(d) You take into consideration your students' body language:

When it conveys meaning	*in-person*	*online both*	*never*	*don't know*
When it is used instead of technical terms or concepts or correct grammar				
In the evaluation of your students' overall competence				

(e) While teaching.

Do you see the relevance of showing students the body language that accompanies new language or new concepts?	*yes*	*no*	*don't know*
Do you ask students to reproduce the body language that accompanies new language or new concepts?	*yes*	*no*	*don't know*

(f) Please complete the following statement.

During in-person lectures, your students frequently use this type of body language _____

(g) Please complete the following statement.

During lectures online, your students frequently use this type of body language _____

Appendix 2: Professors' perception of students' body language frequency in-person versus online

Faculty Affiliation	Students' body language during in-person lectures	Students' body language during lectures online
1. Nursing	Sometimes move body parts	None
2. Human Kinetics	Facial expressions and hand/arm gestures.	None - they almost always remain hidden off camera. Some facial expressions if they come on camera.
3. Arts, Humanities, Social Sciences	Body language to show level of engagement	
4. Arts, Humanities, Social Sciences	Yawning	Yawning
5. Arts, Humanities, Social Sciences	Performing a musical instrument	Performing a musical instrument
6. Education	N/A	N/A
7. Arts, Humanities, Social Sciences	Hand gestures	Don't know
8. Arts, Humanities, Social Sciences	Hand gestures	Eye contact and facial expressions (when they turn their cameras on)
9. Nursing	Head nods for comprehension, attentiveness, following along; puzzled expression when confused; restless near end of class	I Only see their body language during office hours. The full class is 140 students so they have their cameras off. I hate not seeing their body language.
10. Human Kinetics	Body	Don't know - cameras are off.
11. Education	I feel like this study assumes lecture and teaching towards linguistic competence, and assumes cameras on during online learning, so my teaching context doesn't align entirely. But students show me how engaged they are in person through how they sit as well as how they speak, and online I have less of a window into that certainly.	
12. Arts, Humanities, Social Sciences	Facial expressions and posture	Hard to say/see as they turn off the camera
13. Arts, Humanities, Social Sciences	Unconscious	Limited
14. Law	None	None
15. Arts, Humanities, Social Sciences	Indicate comprehension or noncomprehesion	
16. Engineering	Unsure	None
17. Arts, Humanities, Social Sciences	Sometimes body language that signifies fatigue or boredom; nodding or assent; smiling; packing up behaviours when class goes long	Smiling, nodding, head shaking.

(continued)

Faculty Affiliation	Students' body language during in-person lectures	Students' body language during lectures online
18. Education	Gestures	Facial expressions
19. Arts, Humanities, Social Sciences	Faces, hands	Faces, hands
20. Education	Hand gestures	None. Not applicable. They are reluctant to turn on their cameras.
21. Arts, Humanities, Social Sciences	Expressive	I Rarely see students online. Student interactions are mostly oral only (or typed in Chat).
22. Arts, Humanities, Social Sciences	Hand gestures to accompany/emphasize what they are saying	None that I can determine.
23. Education	Hand movement	Facial expression
24. Nursing	Repositioning	Silence
25. Arts, Humanities, Social Sciences	Posture, push their chair back, eye contact. Raise their hands, wave to emphasize things, point to things	Hard to see when most of them are not on camera and can't force them to; but they like me are also attempting to make eye contact except it doesn't come out right, they also use hand gestures sometimes
26. Arts, Humanities, Social Sciences	Facial expressions, hand gestures, body position (e.g. slouching, sitting up straight, etc.)	Facial expressions, hand gestures
27. Arts, Humanities, Social Sciences	For emphasis. to help them illustrate.	They give physical check-ins through gesture. i.e. thumbs up and down. They perform far less body language on line. Some even seem to be watching themselves online.
28. Arts, Humanities, Social Sciences	Leaning forward, leaning back, facial expressions for emotion and understanding	Facial expressions for emotion and understanding
29. Engineering	Hand	N/A
30. Law	Not sure- students do not use as much body language as they are often sitting behind a desk	Students typically keep their cameras off and only turn them on briefly when asking questions
31. Arts, Humanities, Social Sciences	Hand gestures and facial expressions	Same
32. Business		Online my students rarely turn on their cameras
33. Arts, Humanities, Social Sciences	Indicate people in the room	Indicate emotions
34. Nursing	Facial expressions, hand movements, shoulders	Facial expressions, hand movements
35. Education	Conducting, snapping, stamping, clapping, other gestures to indicate duration or rhythm	
36. Science	Facial expressions and some pointing	None - their cameras are always off - I teach always with my camera on.
37. Arts, Humanities, Social Sciences	Explanatory	n/a Most students do not turn on cameras.
38. Science	Hand gestures, facial expression	Smile and facial expression
39. Arts, Humanities, Social Sciences	Facial expressions to express emotions.	Facial expressions to express emotions.
40. Arts, Humanities, Social Sciences	I Really do not think about this	Or this
41. Education	Not sure	No use of body language
42. Arts, Humanities, Social Sciences	Facial expressions, nodding, for comprehension.	Large classes are in Collaborate and there are no cameras.
43. Human Kinetics	Facial expressions, hand gestures, body movements	Facial expressions, hand gestures
44. Science	Facial expressions, changing postures	Facial expressions, changing posture
45. Arts, Humanities, Social Sciences	Roving eyes, checking screens.	Don't know. I can't see them

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