Non-manuals reveal signers' intentions in DGS imperative speech acts.

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Introduction: In this study we explore the functions of non-manual elements that appear in three imperative speech acts, namely commands, pleas and permissions and we argue that they mark pragmatic functions, such as different degrees of modality (necessity and possibility), but they also reveal additional degrees of the signers' intentions and possibly emotions. The role of non-manual markers (NMMs) is essential in sign languages, since they perform a variety of functions, such as marking functional categories like negation and aspect, or distinguishing sentence types, such as for instance declaratives from interrogatives. Facial expressions may also express the speakers' and signers' communicative intentions, namely to intentionally influence the reaction of the addressee during communication (Fridlund 1997), and inner emotional states (Ekman 2022) in both spoken and sign languages. The imperative speech acts concern speech acts that are typically expressed via the imperative mood in spoken languages and their primary function is to convey directives, namely to prompt the addressee to perform the action conveyed by the utterance (Mastop 2005). First studies on imperative speech acts show that they are marked by manual and non-manual elements, e.g., lowered and pulled together brows are associated with commands, while head nods with permissions (Donati et al. 2017; Brentari et al. 2018). The terms *speech acts* and *intentions* are often used interchangeably in studies on spoken languages (Hellbernd & Sammler 2016), while the role of facial expressions and whether they convey communicative intentions or emotions has been a matter of debate in the literature, although the two terms are strongly connected since emotions may drive particular intentions during communication (e.g., the emotion of *fear* may drive the intention of *warning* the addressee).

Method: For the data collection, we designed a controlled elicitation task where twenty recorded DGS verbs (e.g., DRINK), some of which in combination with pictures that represented their arguments (e.g., JUICE), were presented to five native deaf signers of DGS via Power Point. Additionally, signers were provided with information regarding situations where the three imperative speech acts are typically used, e.g., commands are typically used in the workplace and typically involve the boss and his/her employees. Signers were then asked to produce short commands, permissions and pleas directed to a deaf individual who was sitting opposed to them by using the verbs appearing on the screen or by combining the verb on the screen with the picture(s). Their productions were recorded and annotated with ELAN. Neutral sentences (simple assertions) were also collected using the same method in order to be later compared with the imperative speech acts. All constructions were checked with a native signer (one of the co-authors of this paper), who decided which sentences are typical examples of the three imperative speech acts and could be used for the analysis. The analysis of non-manuals is based on Facial Action Coding System (FACS) (Ekman et al. 2002; see Pendzich 2020 for the analysis of non-manuals in sign languages with FACS).

Results: In total, we elicited 460 sentences, corresponding to 115 affirmations, 115 commands, 115 permissions and 115 pleas. Imperative speech acts in DGS are marked by manual elements, manual prosodic cues and non-manual elements. Within our presentation, we focus on the analysis and function of non-manual markings. Our findings show that assertions are not marked by any non-manual cues conveying the speech act level, as expected, while the three imperative speech acts are marked by particular clusters of non-manuals, as illustrated in Table 1. As for the consistency of non-manual elements, we observed that there are systematic patterns appearing with each imperative speech act, but there also is variation among signers with respect to the use of specific non-manuals. For instance, one of our informants tends to use head nod with commands, although we didn't find head nod to be a typical marker of commands in general.

Condition	Non-manual markers	Examples
Neutral declarative sentences (Assertions)	No particular non-manual marking	
Commands	Brow lowerer (AU 4) Head forward (AU 57) followed by head back (AU 58) with certain verbs Head forward (AU 57) Body forward (AU 107, addition by Pendzich 2020) in some cases	
Permissions	Brow lowerer (AU 4) Head nod up and down (AU 85) Lip puckerer (AU 18) combined with chin raiser (AU 17)	
Pleas	Brow lowerer (AU 4) combined with inner brow raiser (AU 1) and lid tightener (AU 7) Lip puckerer (AU 18) combined with chin raiser (AU 17) Head down (AU 54)	

Table 1. Non-manual markers per condition.

Finally, despite the fact that we have not yet annotated the degree of intensity that non-manuals bear, we observed that in some cases there is a different degree of intensity in particular constructions. For instance, in some commands, the Action Units (AUs) in the upper face are more intensified in some examples, like in (1), compared to others, as exemplified in (2). The deaf native signer in our team does not consider these cases with the highly intensified non-manuals as the standard way to express a command in DGS, but he considers these constructions as typical commands when the signer might feel angry or furious and wants to get the addressee of the command to fulfil the command urgently.

(1) YOU   READ   FOCUS   PALM-UP
    'You, as for reading, focus!'

(2) MOVIMP   SCHOOL   GO
    'Go to school!'

Discussion: Our data suggest that different combinations of non-manual elements directly convey different imperative speech acts or different intentions, namely commands, permissions and pleas. We would like to suggest that the different degrees of intensity observed in the non-manuals convey additional meaning nuances that are related to further communicative intentions not related to the expression of the basic speech act (e.g., of giving a command, a permission or expressing a plea), but to other functions, such as the urgency of carrying out an imperative speech act. It seems to be obvious that these NMMs may also express emotions during the imperative speech act, but this cannot be sufficiently investigated on the basis of our data alone. Of course, natural language communication situations in which different emotions are really felt must also be considered. Emotions can drive intentions (e.g., the emotion of *anger* may drive the intention of *commanding*). So far, we can only assume that the different degrees of intensity observed in our data are related to emotional states. Due to our limited dataset, we need further evidence on this topic in order to draw safer conclusions.

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