SLN Signs and Emblems: Visibly Different?

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Abstract. This experiment studies whether there are visible differences between lexical signs and emblems, i.e. highly conventional gestures, for non-signers. Participants were shown movies with a single lexical sign, an emblem, or a fidgeting movement and were instructed to press the spacebar as soon as they judged the movement to be a sign. Participants were found to press equally often in response to lexical signs as to emblems that are not commonly known in the Netherlands, suggesting that non-signers are not able to distinguish lexical SLN signs from emblems based on their appearance only.

Keywords: Gestures, sign language signs, emblems, fidgeting, appearance, perception

1 Introduction

This paper presents a study on the perception of Sign Language of the Netherlands (SLN) signs, emblems, and fidgeting. It is interesting to know to what extent the appearances of sign language signs and other gestures are the same. Each similarity between them may speed up technological advance, when algorithms aimed at solving certain problems for sign language recognition can also be applied productively to gesture recognition and vice versa.

In the current experiment we focus on isolated lexical SLN signs. These lexical signs will be compared with highly conventionalized gestures, or emblems. It is interesting to use emblems because, of all types of gestures, they are arguably most similar to lexical signs because of their conventionality and their ability to function as words. Therefore, if visible differences between lexical signs and emblems can be demonstrated for non-signers, it is reasonable to assume that there are also visible differences between lexical signs and all other types of gestures. In other words, signs will then stand out as a class of gestures with a unique appearance.

In the experiment movies are shown of signs, emblems and fidgeting movements to non-signers, who are instructed to press the spacebar when they discern a SLN sign. If non-signers can distinguish the lexical signs from the emblems they will press the spacebar only with the signs. If they classify all movements that appear to have an intention to communicate as SLN signs they will press the spacebar with the emblems as well as the signs, but not with the fidgeting movements.

2 Method

Participants were nine Dutch speaking people without significant hearing limitations and no knowledge of any sign language. They volunteered to attend a single session of about 20 minutes. One participant was a woman. Participants' age ranged from 18 to 48 years with an average of 28 years.

Test material consisted of short movies of 20 emblems, 20 SLN signs, and 20 fidgeting movements. The emblems were taken from Morris et al. (1979) who studied the origin and distribution of their forms and meanings in Europe. In the Netherlands, where the present study was carried out, twelve of the gestures are commonly known and eight only rarely or not at all. The 20 lexical SLN signs were selected randomly from 32 signs used by Arendsen et al. (2007) in a previous experiment. The 20 fidgeting movements were an expansion of the set previously used by Arendsen et al. (2007). During the recording of the movies, the actors were instructed not to use mouthing, to look into the camera, and keep a straight face.

Participants were instructed as follows: "You are going to watch a series of movies in which an actor is producing some hand movements and you are requested to press the spacebar as soon as you think you see a SLN sign. A movie does not always contain a SLN sign. It may also contain other hand movements, in which case you should not press the spacebar." After some practice participants performed the experiment with the 60 movies presented for each participant in a unique random order.

3 Results and Discussion

Participants pressed on signs (92% pressed) more often than on emblems (81% pressed; Fisher's Exact Test $p < 0.01$). However, if we compare the responses to the emblems that are not commonly known with the responses to lexical SLN signs that do not have a meaning as a common gesture then there is no significant difference in how often participants classified them as SLN signs (Emblems: 85% vs. Signs: 92%; Fisher's Exact Test $p = 0.101$). The four emblems which were least often thought to be an SLN sign (the Forearm Jerk, the Fig, the Nose Thumb, and the Flat-Hand Flick) are not only four known Dutch gestures but also impolite, even vulgar gestures at which one can take offense. They are largely responsible for the difference in responses between commonly known (68% pressed) and unknown emblems (85% pressed) (Fisher's Exact Test $p = 0.01$). The fidgeting movements elicited very few presses (5%).

These results show non-signers are typically not able to discriminate signs from emblems based solely on appearances. They are typically able to discriminate between fidgeting and movements that are intended to communicate (emblems and SLN signs). It remains a topic for further investigation whether this intentionality is visible because of people's sensitivity to certain general movement characteristics or whether people rely on learned repertoires of movements that are or are not intended to communicate.