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From action to performative gesture: the Slapping movement used by children at the age of four to six

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Abstract: This paper introduces a manual movement performed recurrently by German children in the age range of four to six. Based on the movement gestalt and its meaning, we termed it the Slapping movement. All forms identified in the data were performed with a communicative function, yet they showed different degrees of "gesturality." To be more precise, we observed versions that clearly count as actions or gestures, but we also observed transitional forms between them. Based on a thorough analyses of form, meaning, and context we determined variations of the Slapping gesture that showed different degrees of abstraction from action to gesture in a semiotic sense. These degrees are distinguished by modifications in the execution of the movement and different levels of form stability, environmental coupling, and representational complexity.

Keywords: acquisition of gesture; gesture change; gesture continua; recurrent gestures; stabilization of gesture

1 Introduction

This paper introduces a movement performed recurrently by German children in the age range of four to six. Based on the movement gestalt as well as its meaning, determined in our analysis, we termed it the Slapping movement. The analysis of the Slapping movement is part of a larger study that identified and investigated a repertoire of recurrent gestures in children aged four to six (Hotze 2019). The research questions addressed in this paper result from an observation made in the process of documenting forms showing the movement gestalt of slapping. During this process, no differentiation was made between Slapping movements that established contact with an object or subject and thus appeared to be more "action-like," and

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those that did not touch anything or anybody and should thus be considered as gestures. However, all forms identified showed a high degree of communicative relevance as they either prompted a bodily response or were integrated in the activity of demonstrating something. Moreover, all forms were highly coordinated with speech. These observations gave rise to the questions of a) how to classify the Slapping movements observed among children at the age of four to six and b) how the relation between these forms can be described? To address these questions, we conducted qualitative analyses of the Slapping movements documented in which criteria were applied that allow to differentiate manual movements along so-called gesture continua. The outcome of our analyses will be presented in the following pages.

We will set the stage for our investigation by introducing different gesture continua that have been proposed in the field of gesture studies based on examining both adults' and children's gesturing. Afterwards we introduce the Slapping movement as a practice, children use recurrently in contexts of negotiating and arguing. Based on the characterization of the different movement versions identified in our data we present a continuum of abstraction defining stages from the action of Slapping to the Slapping gesture which we consider as one precursor of the recurrent Throwing away gesture observed in German adults (Bressem and Müller 2014, 2017). The paper closes by discussing the theoretical implications of our study and the advantages as well as limitations of the approach advocated here.

1.1 Gesture continua

Conceiving gestures in terms of continua is a popular topic in the field of gesture studies. This idea goes back to Kendon's (1988) article "How do gestures become like words," where he addressed lexicalization processes of gestures and facial expressions and described stages in the emergence of conventional forms. His thoughts on the emergence of lexicalized gestures inspired McNeill (1992) to conceive different types of gestures in terms of a continuum, coined "Kendon's continuum," which has been very influential in the field of gesture studies. The single continuum presented in "Hand and Mind" (1992) was extended later to a scheme of four continua, each of which is based on a different demarcation criterion, namely "relationship to speech," "relationship to linguistic properties," "relationship to conventions," and "character of semiosis" (McNeill 2000: 1–7). These criteria differentiate gesticulation, emblematic gestures, pantomime and signs of sign language from each other. This list of gesture types reveals that McNeill excludes partly conventionalized forms such as recurrent gestures from his conception of gesture continua. As a matter of fact, pantomimic gestures are considered as the only intermediate state between

spontaneous gesticulation and emblems. This view of gestures is due to his psychological perspective which takes only spontaneous gestures into consideration as they reflect a speaker's imagistic thinking. What is more, disregarding recurrent gestures as a research subject proper is also induced by the idea that gesture and language are fundamentally different, captured by the notion of a "cataclysmic break" (Singleton et al. 1995). In fact, recurrent gestures highlight the commonalities between both modalities as they show characteristics that are considered as linguistic in spoken and signed language such as "emergent forms of compositionality" (Müller 2018: 16; see also Fricke 2010).[1]

A revised version of McNeill's gesture continuum[2] was proposed by Fricke (2012: Ch. 3.5) who transformed McNeill's four continua into a matrix of distinguishing features that aims to delineate different "classes of gestures" (Fricke 2012: 117). She took the basic parameters formulated by McNeill into account but defined them more precisely by introducing additional dimensions such as recursivity, lexicalization or double articulation (Fricke 2012: 117–118). With this more complex matrix of parameters, Fricke was able to characterize a wider range of classes of gesture including recurrent gestures. However, these classes still appear to have clear-cut boundaries. Moreover, the linguistically motivated matrix of parameters allows to flesh out the properties that are shared by recurrent gestures and signs and thus supports the idea of a continuum from gesture to sign (see below).

Kendon himself has not systematically outlined gesture continua but undoubtedly, he set the stage for conceiving dynamic processes of sedimentation in terms of different *degrees* based on parameters such as the relationship to speech, stabilization of form parameters, and stabilization of meaning (Kendon 2004; see also Ladewig 2010, 2014a; Müller 2018). As such the description of sedimented gesture forms, which have emerged from processes of abstraction, schematization and decontextualization, reveals dimensions of recurrent gestures rather than clear-cut boundaries of gesture classes (Ladewig 2010, 2014b). These dimensions can be observed in the form of gestural variants which have lost their spontaneity (Merleau-Ponty 2005 [1962]) but may show commonalities with other gesture types that show a higher degree of spontaneity. To be more precise, on a continuum from spontaneous gestures to emblems, where recurrent gestures form an intermediate stage, some variants of recurrent gestures appear to be closer to ad-hoc created gestures to the extent that their motivation of form is still transparent and that they are tightly bonded to particular verbal constructions. On the other hand, we find variants that are similar to emblems because they show a highly articulated

1 For a thorough discussion of impact of the disciplinary perspective on gestures see Andrén (2010: ch. 2.3.1), Harrison (2018: ch. 7), and Müller (2018).

2 The continuum was renamed at Kendon's request (McNeill and Sowa 2011: 43).

form, embody a specific meaning and can be performed independently of speech (Ladewig in press). Based on these observations, researchers are able to offer a refined understanding of the different stages and degrees of sedimentation along different continua. Moreover, it was argued that sedimentation processes in gestures can be described by general principles of language change and that processes of "gesture change" (Müller 2018) show commonalities with processes of lexicalization, desemanticization and pragmaticalization of spoken and signed languages (Ladewig in press). This brings the relation of gesture and sign to the fore. In fact, gestures have been considered as a source for sedimentation processes in signed languages (see e.g., Pfau et al. 2014; Shaffer and Janzen 2000; Wilcox 2005). However, so far, the gestural side of these sedimentation processes has been often marginally addressed, although researchers have pointed out that gestures provide important insights into the stabilization processes of human expressive modes (Heine and Kuteva 2007; Janzen 2012). Studies on recurrent gestures fill this picture and allow to trace the path from recurrent gestural movements to sign language morphemes or discourse markers (Harrison 2018; Ladewig 2020).

As the gestural pole of the development of signs is often given little attention, so the transition from action to gesture is hardly examined either. In more detail, studies on recurrent gestures draw a connection to actions especially when discussing recurrent gestures' participation in pragmatic meaning-making which is based on and informed by the manual actions of which recurrent gestures are born (Bressem and Müller 2014; Harrison 2018; Kendon 1995, 2004; Müller 2004; Streeck 2009; Teßendorf 2014). However, refined differentiations of actions of the kind presented for recurrent gestures are rare (but see Andrén 2010, 2014b; Harrison 2018). What is more, practical actions are mainly excluded from the research agenda of gesture studies because of the traditional terminology suggesting a binary distinction between gesture and action (Andrén 2010, 2014b; Streeck 1996). Harrison's (2018) study of the Wiping away movement is an exception. It can be considered as one of the most encompassing accounts of a recurrent manual movement not only because it investigates the Wiping away movement in various social settings but also because it discusses stages in the development from the action of wiping to signs of sign language showing a similar movement gestalt and expressing negation. This path from practical action to signs where communicative action and recurrent gestures form intermediate stages was described on various continua (Harrison 2018: ch. 7.8). Accordingly, Harrison observed a stepwise decoupling of the manual movement from its environment and an increase of "communicative explicitness" (Andrén 2014b: Section 1.2) the more gestural a movement becomes. In more detail, whereas the practical effect is foregrounded in the action of wiping away, gesture actions, recurrent gestures and signs have a strong communicative effect. Harrison also observed that the degree of "representational complexity" (Andrén 2014b: Section 1.2)

increases the more gestural and the more linguistic a movement becomes. What is more, manual movements showing a higher degree of gesturality are also tightly bonded to speech as they are often integrated in spoken utterances. These differences go along with variations in the performance of the movements. Practical actions as well as gestures are oriented towards their material anchor. Wiping away gestures on the other hand are addressed to a co-participant but they are not necessarily oriented towards him/her.

Some of the parameters Harrison applied to describe the continuum of gesture to sign were coined by Andrén (2010, 2014b). With the presentation of his perspective on gesture continua we include studies on gestures and first language acquisition.

1.2 Gesture continua and first language acquisition

Researchers specializing in the field of first language acquisition view the ontogenetic development of conventionalized gestures as action-based, yet at the same time as practices learned from a cultural community and therefore as subject to cultural conventions (Andrén 2014a). The head shake used by French children, for instance, is considered as originating from turning away or pulling one's head back. These actions are already performed in the first year of life with the communicative function of refusal. As years pass, these communicative actions develop in and through interaction with caregivers into symbolic forms in language and gesture (Beaupoil-Hourdel et al. 2016: 111). To develop into a conventionalized communicative gesture a (manual) movement needs to undergo a process of abstraction from (instrumental) action to stabilized gesture. Different stages of this process have been described by means of various continua which may show the development from an action defining the "lower limit of gesture" to a conventionalized gesture which forms part of the "upper limit of gesture" (Andrén 2010, 2014b). These continua show different levels of "communicative explicitness," of "representational complexity," of "conventionalization" and of "combinability." In what follows, these levels will be introduced as they are relevant for our study.

The first continuum we would like to draw the reader's attention to is the continuum of increasing communicative explicitness (Andrén 2010: ch. 2.2.2) which describes different degrees of intentionality as they appear as publicly recognizable features of movements. In Andrén's (2014b: 162) words, it covers "the ways in which gestural actions may be recognized as being performed for another person." A child may, for instance, reach out for a desired object or s/he may perform a communicative gesture that calls forth a caregiver's response. Noticeably, both movements differ in their semiotic status, yet, both show a high degree of communicative explicitness as they prompt a bodily response. Studies showed that recurrent

gestures are used with a higher degree of communicative explicitness already at the age of two years. At the age of four years, children start using recurrent gestures in similar discursive contexts as adults where the performative function is dominant (Graziano 2014). All further functions, i.e., the metacommunicative and discursive function, are only seen in six-year-olds.[3]

The continuum of "representational complexity," comprises different dimensions of the form meaning relation (Andrén 2014b: 162). One aspect that plays an important role here is action modulation (Bateson 1968; Goffman 1974) which adds an as-if quality to manual movements and thus marks the turning point from actions to more gestural movements (see also Section 2.1). Accordingly, a child may perform the whole action of reaching out for an object or s/he may indicate the action by performing only the beginning of it. As gestures are semiotically motivated by as-if actions (see, e.g., Andrén 2010; Calbris 1990; Kendon 1980; Müller 1998), children's movements show a higher degree of representational complexity as soon as they can depict actions and objects with their hands and they can do so already at the age of two (Bates 1979; Volterra and Erting 1994). However, they prefer body-part-as object gestures to acting gestures where they would have to imitate the manipulation of an imaginary object. Boyatzis and Watson (1993: 735) who reported this observation, argue that the representational skill to imitate actions with an imaginary object and thus without visual input of the reference object starts to bloom during preschool years.

The third continuum regards conventionality encompassing different degrees of explicitness of convention and normativity. The former covers the stability of a gesture's form and meaning and, thus, its degree of autonomy. The latter refers to the "correctness" of form. Studies have shown, for instance, that in the process of acquiring the accurate form of a conventionalized gesture, children may switch between different versions (Andrén 2010) and may even decompose parts of a bodily performance (Beaupoil-Hourdel and Debras 2017). Moreover, when comparing caregivers' gestures and children's gestures the movements performed by children appear to be less schematic and more expressive. Graziano et al. (2011: 100) argue that this difference in the movement dynamics is based on "a socially shared style" the adult's performance is closer to and children will grow into.

The last continuum addresses the simultaneous and linear combination of gestures and of gestures and speech. Among the phenomena which have particularly interested researchers during the past years are so-called "multimodal constructions" (Andrén 2010; Bressem 2021; Zima 2014), i.e., the systematic co-occurrence of

3 Graziano (2014) explains this by referring to the development of certain cognitive abilities that also reflect the use of linguistic units. In other words, the use of discursive function is linked to the ability to construct narrative structures whereas the ability to comment on and evaluate one's own statements and actions.

verbal constructions and gestures. Examples of such holophrastic expressions are the "head shake" co-coordinated with a response particle (Andrén 2014a), the Palm-up, open-hand gesture combined with the word *gone* (Andrén 2010; Beaupoil-Hourdel et al. 2016) or Pointing gestures in conjunction with deictic expressions like *here* (Morgenstern 2014; Rohlfing et al. 2017; Tomasello et al. 2007).

The determination of levels or degrees on the different continua proposed by Andrén (2010, 2014b) attempts to overcome the issue of demarcating gestures from actions or gestures from signs. As has been pointed out in this chapter, defining clear-cut boundaries between these "semiotic classes" can cause problems as they may share properties. Hence, the division between action and gesture and gesture and sign alike "tend[s] to exaggerate differences and obscure areas of overlap" (Andrén 2014b: 155; see also Kendon 2008: 355).

To sum up, research on (recurrent) gestures and actions of both adults and children has refined our understanding of gesture continua and allows to revise the idea of clear-cut boundaries between movements that have different semiotic status. Due to their properties, manual movements and full body movements may be classified or arranged along different scales (Kendon 2004: 106) which can reveal different dimensions of gestures on the developmental path from practical actions to gestures to signs. What is more, the possibility of differentiating actions based on the different continua introduced offers a suitable basis for investigating children's gesturing which is often embedded in activities like playing and thus materially anchored. Moreover, describing and comprehending children's movements by means of different continua allows to investigate the relationship of gesture and action and the related idea that gestures are born of actions. This will be done in the following pages using the example of the Slapping movement. We will describe exemplary cases of the Slapping movement identified in our data and describe them by means of different continua. Based on our analysis of the Slapping movement in different contexts, describe processes of abstractions where the hand detaches from its original role in instrumental actions and becomes a practice to organize talk in interaction. Based on our analysis we will argue that the Slapping gesture shows kinesic and functional similarities with the recurrent Throwing away gesture observed in adults (Bressem and Müller 2014, 2017) and may thus be considered as one of its precursors.

2 The Slapping movement

The Slapping movement shows a particular movement gestalt which we aimed to fathom with a feature-based description (Figure 1). Accordingly, the movement is carried out with the whole arm or the lower arm and a downward-facing palm. The

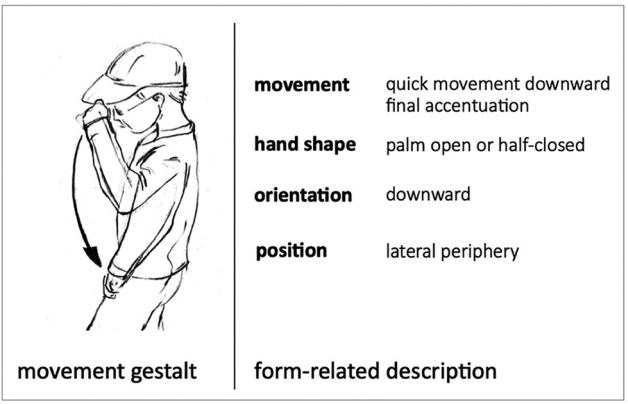


Figure 1: The Slapping movement.

movement is fast and, in many cases, accentuated. It is positioned in the lateral periphery of the speaker's gesture space (Hotze 2019). Variations were found in the direction of the movement as well as in the hand shape depending on whether the hand established contact with an object or subject or held an object. In more detail, out of the 20 Slapping movements documented, nine occurrences the touched an object or subject, nine cases did not touch anyone or anything and in two case a child held a toy in his hand. Common to all Slapping movements is a high degree of communicative explicitness.

The Slapping movement belongs to a repertoire of recurrent manual movements observed in children between four and six years of age. Our data consist of 7 h of natural and everyday interactions among children, recorded in two preschools in Berlin and Brandenburg. A total of 41 children (20 boys and 21 girls) were filmed while playing, doing arts and crafts and eating during which they were in constant exchange with their peer group or their preschool teachers (Hotze 2019).

It should be noted that the study cannot be considered as a larger corpus study. Due to the limited access to the institution kindergarten only a smaller body of data could be collected. However, filming children in their natural environment allows the documentation of the children's everyday life which is rare in the field of first language acquisitions. The conversational situations documented were not predetermined and the setting corresponds to the usual daily routine in the group.

All in all, 359 gestures were identified in the data out of which 269 were determined as recurrent forms. The identification was inspired by the repertoire of recurrent gestures that was determined for adult speakers of German (Bressem and Müller 2014). However, the process of identification remained open to be able to determine deviating or additional forms not yet documented, such as the Slapping movement.

Table 1: Repertoire of recurrent gestural forms observed in German children between the age of four and six (Hotze 2019).

Recurrent gestural form	Pointing	Presenting	*Slapping*	Fist	Holding	Placing	Holding away
Number of occurrences	170	51	*20*	12	7	5	4

Italics indicate the phenomenon under scrutiny.

Table 1 shows the seven recurrent gestural forms identified in the data from which pointing gestures were the most observed with 170 occurrences. This was followed by Presenting with 51 occurrences, Slapping with 20 cases, the Fist with 12 forms, Holding with seven occurrences, Placing with five cases and Pushing away with four occurrences. From the set of recurrent gestural movements identified in data, the Slapping movement was examined in more detail. All the forms documented were investigated by applying a linguistic method to analyze recurrent gestures. It takes a thorough description of the gestural forms as a starting point. The meaning of gestures and its relation to speech are investigated on the different levels of linguistic description (Bressem et al. 2013). The description and analysis of the individual occurrences were carried out in the annotation tool ELAN.[4] In a second step, the movements were described with regard to their situatedness ("contextual configuration," Goodwin 2000), their ties to the physical surrounding ("environmentally coupled gestures," Goodwin 2007), and to their "representational complexity" (Andrén 2014b). Based on the descriptions, variations of the Slapping movement could be determined and arranged on a continuum of abstraction (Ladewig in press). The results of this analysis will be presented in the following section by introducing examples of the Slapping movement.

2.1 The Slapping movement exemplified

The following examples are exemplary cases of the Slapping movement. Common to all movements is the movement gestalt described in Figure 1 as well as their high degree of communicative explicitness. We will present cases which count as actions or gestures (in a semiotic sense) and those which can be considered as being at the threshold between both (see Section 1.2).

2.1.1 Example 1 – slapping and indicated slapping of an object

The first example shows a conflict situation in a playroom in which a group of children is busy putting toys away. While doing this, one of the two boys (child on the

4 https://archive.mpi.nl/tla/elan.


Speech	*Lass*	*das doch*	*mal, du kannst gar nicht pfeifen!*
Speech translated	Stop	doing that.	You're not good at whistling!
Action	Slapping	Slapping	
Movement	Downward, away from the body, concluding accentuation	Curved, downward, away from the body, lively, initial acceleration	
Hand shape	Flat, open hand	Flat, open hand	
Orientation	Initial position: body away, Final position: downward	Initial position: body away, Final position: downward	
Position	Initial position: head region, Final position: shoulder region	Initial position: shoulder region, Final position: hips	

Figure 2: Slapping and indicated slapping as communicative pracitce of stopping.

right in Figure 2) picks up a traffic cone that the children had been using as a musical instrument and produces tones in the body of the cone. This action is noticed by another boy (child on the left in Figure 2) who then turns to him and scolds him loudly: *Lass das doch mal, du kannst gar nicht pfeifen!* ('Stop doing that, you're not good at whistling!'). Simultaneous to the expression of the verb *lass* ('stop') as well as the article-particle combination *das doch* ('doing that'),[5] the boy slaps the cone (Figure 2).

Because the boy carries out the movement simultaneously with relevant parts of the direct speech act, namely *lass das doch* ('Stop doing that'), speech and movement are highly coordinated with one another while participating in pragmatic meaning making (Table 2). Both speech and movement express the child's desire to stop his playmates action of whistling. Yet, the point is not to remove the cone from the playmate's hands, but rather to end the action connected to it. This is recognizable in the quality of movement because if the child wanted to slap away a cone of this size away (Figure 2), he would need to use more strength observable in a more vigorous quality of movement.

5 A literal translation of the article-particle combination into English is not possible.

Table 2: Characterization of the Slapping movements in example 1.

	1st movement	2nd movement
Movement features	Hand shape: flat, open Orientation: downward Movement: curved, not accentuated Gesture space: lateral periphery	Hand shape: flat, open Orientation: downward Movement: curved, accentuated Gesture space: lateral periphery
Slapping movement within participation framework	Slapping movement connects to the action of putting away toys and to the activity of complaining	Slapping movement connects to the action of putting away toys and to the activity of complaining
Meaning	Communicative: performative, protest	Communicative: performative, protest
Environmentally coupled	Object (here cone)	Object (here cone)
Relation to speech	Coordinated, pragmatically integrated in direct speech act	
Communicative explicitness	Interactional move, prompts a bodily response	
Representational complexity	Indicated action of slapping, as if quality (stands for action)	Counts as action of slapping

Our analysis of the two Slapping movements revealed the following characteristics presented in Table 2. Accordingly, both movements show the gestalt as defined in Figure 1. The hands are open, facing downward, execute a quick movement downward and are positioned in the lateral periphery of the gesture space. In both cases the hand touches the cone. The movements are anchored at the shoulder and thus show a large movement radius. However, they differ in the quality of movement. Whereas the first one is not executed at full speed, is not accentuated, and thus touches the object only lightly, the second movement is executed quickly and more forcefully and thus slaps the cone. Hence the latter can be conceived as a fully executed version of the action of slapping, whereas the former is modified in the sense that an as-if quality is brought in. The latter thus "counts as" an action, the former stands for an action (Andrén 2014b: 162).

As pointed out before, both multimodal speech acts fulfil the performative function of stopping an action in which an object (here, the cone) is involved. Both manual movements are explicitly communicative as they prompt a bodily response by the addressee. What is more, through the affective character of the multimodal expression (Ladewig and Hotze 2021), which is shown in particular by the volume of the utterance, the repetition of the gesture, and the vigorous second movement the boy expresses his indignation at the action of his playmate and his protest against it. With the following utterance *Du kannst gar nicht pfeifen* ('You're not good at whistling') the child provides an explanation for disliking his playmate's actions.

2.1.2 Example 2 – slapping oneself as expression of protest

In the second example, the Slapping movement is directed to the speaker himself. In more detail, the speaker slaps himself while integrating the Slapping movement into his utterance.

This situation played out in a building and arts and crafts room where several children are busy with building blocks. While some of the children are taking building blocks out of a basket, the boy shown in Figure 3 complains that his playmates use all of the stones leaving none for him. He then starts building a rectangle out of stones on the floor but still argues with the other boys. The quarrel reaches its peak as one of the playmates he argued with takes some of his stones away. The boy stands up and yells at him. Then he turns around and states loudly and angrily *Ich brauch alle Steine* ('I need all the stones,' Figure 3). Simultaneously, he slaps his left thigh (Figure 3). Afterwards he goes to one of the teachers and tells her about the situation.

Speech	*Ich*	***brauch***	*alle Steine.*
Speech translated	I	need	all stones.
Gesture		Slapping	
Gesture phases	Preparation	Stroke	Retraction
Movement		Downward, end acceleration	
Hand shape		Half-closed	
Orientation		Downward	
Position		Lateral periphery, Initial position: head region, Final position: hips	

Figure 3: Slapping oneself.

The point of departure of the multimodal utterance under scrutiny is a situation the boy is angry about. His playmates do not leave enough building blocks for him and one of them even takes blocks of his collection away. The boy starts yelling at him whereupon he performs the Slapping movement. Accordingly, the utterance is connected to the competitive collecting of building blocks and embedded in the speech activity of complaining. However, the boy's Slapping movement and his utterance are not directedly addressed to his playmates because the boy turns away from his playmates and slaps himself while looking down. Moreover, the boy expresses his verbal request to stop the playmates' actions only indirectly, as he verbally refers to his desire of having all of the stones (meta-commentary). He says *Ich brauch alle Steine* ('I need all the stones,' Figure 3). While stating the modal verb *brauch* ('need'), he carries out the Slapping movement which can be characterized as in Table 3.

The movement gestalt shows the parameters determined in the analysis (Figure 1), i.e., a quick movement downward which is performed in the lateral periphery of the gesture space. The movement begins at shoulder height where the hand is half-closed. It ends on the boy's left thigh where the hand is open. As in the previous example the Slapping movement touches a subject which is the speaker himself. The movement is fully executed and not modified. This becomes evident in the dynamic of the movement which is not changed while the movement is being performed. The movement is executed at full speed. Accordingly, the boy slaps his thigh and does not merely touch it.

As pointed out before the movement is connected to the activity of playing with building blocks and embedded in the speech activities of arguing and complaining. It

Table 3: Characterization of the Slapping movement in example 2.

Feature	Characterization
Movement features	Hand shape: half-closed Orientation: downward Movement: downward, end accentuated Gesture space: lateral periphery
Slapping movement within participation framework	Slapping movement connects to the action of collecting stones and to the activity of arguing about building blocks
Meaning	Communicative: protest, meta-commentary
Environmentally coupled	Subject (speaker himself)
Relation to speech	Coordinated, affectively and pragmatically integrated with speech
Communicative explicitness	Interactional move, prompts indirectly a verbal or bodily response
Representational complexity	Counts as slapping

is integrated into his utterance fulfilling a meta-commentary to stop the playmates' actions of taking away the stones. What is more, both speech and gesture show affective qualities that express indignation and protest, namely, a higher volume while making the verbal expression and a vigorous and expressive execution of the movement for further information see (Ladewig and Hotze 2021). These observations lead to the conclusion that the expressive function of protest is more dominant than the performative function (Table 3). The degree of communicative explicitness is high as the gesture is recognizable as an expression of protest while prompting indirectly a bodily or verbal response from the boy's playmates.

2.1.3 Example 3 – demonstration of slapping

The third example shows the demonstration of slapping with and without an object.[6] Here, the Slapping movements are embedded in the activity of negotiating the degree of painfulness of such actions.

The situation plays out again in the arts and crafts room where some of the children are sitting in a corner and build houses and streets with wooden blocks. During their play a conflict between two boys arises because one of the boys (boy on the left in Figure 4a, b) blames his playmate (boy on the right in Figure 4a, b) of destroying the roadway on which all toy cars were supposed to drive. The boy who started complaining about the situation then repeatedly threatens the other boy of pricking him with a wooden screwdriver. Unimpressed by the threat the other boy challenges the action with the provocative request *Mach doch* ('Go ahead') whereupon his playfellow pricks the toy in the boy's knee. Afterwards both children look at each other and the boy who provoked the action says *Hat nicht wehgetan* ('Didn't hurt') whereupon his playmate replies confidently *Oh doch* ('Oh yes') and slaps his hand with the toy (Figure 4a). After beating himself he looks at his playmate and says *So? Guck, hat doch wehgetan* ('Like this? Look, it hurt after all,' Figure 4b) while performing a Presenting gesture. To prove him wrong the other boy slaps with his left hand on his right leg (Figure 4c) while mumbling something. Afterwards, he slaps his left hand on his right hand twice, where the second slap becomes a clap. While doing this, he shouts *Au, au* ('Ouch, ouch,' Figure 4d, e). After the clapping, he performs a Presenting gesture and states *Tut nicht weh* ('Doesn't hurt,' Figure 4f).

The different Slapping movements are embedded in a conflict situation which started with an accusation and ended in the demonstration of Slapping movements to negotiate the degree of painfulness of such actions. As such, the meaning of these

6 See Harrison's (2018: ch. 7) study of the Wiping gesture that includes demonstration as one stage in the development of this movement from action to gesture.

	a)	b)	c)	d)	e)	f)
						
Speech		So?	(mumbling)	Au	au.	Tut nicht weh.
Speech translated		Like this?		Ouch	ouch.	Doesn't hurt.
Gesture	Slapping with a toy	Presenting gesture	Slapping	Slapping-Clapping	Clapping	Presenting gesture
Gesture phase	Stroke		Stroke	Stroke	Stroke	
Movement	Downward		Downward	Downward	Downward	
Hand shape	Open		Open	Open	Open	
Orientation	Downward		Downward	Downward	Downward	
Position	Center right to lower periphery		Left periphery to lower periphery	Left periphery to lower center	Lower periphery to center-center	

Figure 4: Demonstration of slapping with object and without object.

Table 4: Characterization of the Slapping movements in example 3.

	1st movement	2nd movement
Movement features	Hand shape: fist Orientation: downward Movement: downward, end accentuated Gesture space: center right to lower periphery	Hand shape: flat, open Orientation: downward Movement: downward, end accentuated Gesture space: left periphery to lower periphery
Slapping movement within participation framework	Slapping movement connects to the activity of negotiating	
Meaning	Communicative: demonstration	
Environmentally coupled	Subject (speaker himself)	
Relation to speech	Related to subsequent deictic expression	Related to subsequent interjection
Communicative explicitness	Interactional move, prompts attention by co-participant and a response	
Representational complexity	Indicated action of slapping (as-if quality)	

movements is to display whether their performance causes pain. All Slapping movements show the movement gestalt as presented in Figure 1 whereas the first movement (Table 4, Figure 4a) differs in the hand shape because the boy holds a toy screwdriver.

Both children slap themselves. Thus, the movements are environmentally coupled, yet they differ in their quality. In more detail, the first Slapping movement performed by the boy on the left in Figure 4a is executed loosely and shows a smaller

movement radius because it is anchored at the elbow. However, the hand is located in the interactional space between the boys so that both can see the movement. The Slapping movement performed by the other boy (Figure 4c) is performed with great effort and at full speed so that the slap is acoustically perceptible. It is anchored at the shoulder and thus shows a larger movement radius (Table 4). Furthermore, the movement is modified to some extent. However, it is not the slap which is altered but the preparational phase before the slap, i.e., the upward movement. Here the boy's hand and arm are lifted slowly and concentratedly while he is looking at his right knee. Afterwards the slap is performed at full speed so that the boy slaps his right leg forcefully.

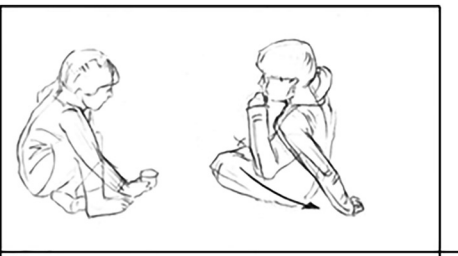
Both movements are related to the verbal utterances although they are following the Slapping movements (Table 4). However, the degree to which the movements are related to the following utterances differs. In more detail, whereas the first Slapping movement is integrated retrospectively into the following utterance by the deictic expression *So?* ('Like this?,' Figure 4b), the second Slapping movement performed by the other boy is the starting point of a sequence of displaying slapping and clapping that goes along with the injection *au-au* ('ouch-ouch,' Figure 4d, e). What is more, the deictic expression following the first movement not only qualifies the precedent movement as a demonstration of an action, but it also prompts a response by the co-participant. In case of the second Slapping movement, the utterance *Tut nicht weh* ('Doesn't hurt') evaluates the whole preceding sequence as a demonstration of a slapping action that does not cause any pain (Figure 4f).

The demonstrative Slapping movements presented are modified version of the action of slapping. They are modified to the extent that they can be visually perceived and attended to by the co-participant and they are highly coordinated with speech. This modification qualifies both Slapping movements as as-if actions.

2.1.4 Example 4 – gestural Slapping movement

In what follows we will introduce a Slapping movement that does not establish physical contact with an object or subject and thus appears to have undergone a process of abstraction from action to gesture. Nine cases of the Slapping gesture were identified in the data.

The example shows two girls sitting on a blanket and imitating the scene of a tea party. While one of the children pretends to pour tea into the cup, her playmate (girl on the left in Figure 5) already begins to lift a cup to her mouth and imitates drinking. The other girl (girl on the right in Figure 5) finds this unacceptable, as she says angrily *Mann, noch nicht!* ('Hey, not yet!') while looking at her playmate and performing a Slapping gesture with her left arm. The movement shows the formal core as it was depicted in Figure 1. The hand is half-closed, facing downward,



Speech		*Mann,*	*noch nicht!*
Speech translated		Hey	not yet!
Gesture		Slapping	
Gesture phases	Preparation	Stroke	Hold
Movement		Downward, away from the body, vigorous, with final accentuation	
Hand shape		Half-closed	
Orientation		Downward	
Position		Lateral periphery, Initial position: head or shoulder region, Final position: hips	

Figure 5: Slapping gesture.

executes a quick and expressive movement downward and is positioned in the lateral periphery of the gesture space. The stroke of the gesture begins at shoulder height and ends without any contact with the playmate or an object at the height of the girl's hips. In doing so, the speaker requests that her playmate maintains the sequence of the pretend act of drinking tea, given that the right time for this phase of the game has not yet arrived (*noch nicht!* – 'not yet!,' Figure 5, Table 5). More precisely, she performs the stroke of the gesture while producing the interjection *Mann* ('hey,' literal translation: 'man') and holds the gesture while uttering the speech act *noch nicht* – 'not yet' (Figure 5). Accordingly, speech and gesture prompt a bodily response from the co-participant namely to stop her action. Both are highly coordinated, and the gesture is pragmatically integrated into the utterance (Table 5).

The Slapping movement observed in this example does not count as an action, but it is a gesture because it not materially anchored. Unlike the previous examples, some of which showed features of gesturality, the hand does not touch an object or a subject. The hand acts as if it slapped someone or something. Accordingly, the Slapping movement presented in this example shows a higher degree of representational complexity than the previous examples (Table 5). However, although the Slapping movement is not oriented to a subject or object, it is addressed to a

Table 5: Characterization of the Slapping movement in example 4.

Feature	Characterization
Movement features	Hand shape: half-closed Orientation: downward Movement: downward, end accentuated Gesture space: lateral periphery
Slapping movement within participation framework	Slapping movement connects to the action of playing to drink tea and to the activity of complaining
Meaning	Communicative: performative
Environmentally coupled	/
Relation to speech	Coordinated, pragmatically integrated in a direct speech act
Communicative explicitness	Interactional move, prompts a bodily response
Representational complexity	Slapping gesture (as if quality)

co-participant because the speaker looks at her playmate while verbally and gesturally requesting to stop the action. In doing so, the gesture is temporally coordinated and pragmatically integrated with the verbal utterance. Both speech and gesture fulfil the performative function of stopping an action and thus prompt a bodily response. Additionally, the multimodal utterance expresses indignation and protest of the co-participant's action. The quick and vigorous movement shows high affective involvement. Moreover, the verbal utterance the gesture is integrated in shows features of high affective engagement. The utterance is not only produced at a high volume and with a strong accent, but it also shows the interjection *Mann* ("hey," literal translation: "man"), which itself is a German expression of affect.

To sum up, this section presented four different versions of the Slapping movement. In the majority of cases also in the entire corpus, the movement together with speech execute multimodal speech acts expressing the desire to stop the co-participant's action. In doing so, the action to be stopped is marked as unpleasant and protest is expressed. In one case, the Slapping movement fulfilled a meta-commentary in another case.

The conclusions drawn from these findings are twofold. First, the Slapping movement has become a sedimented practice to express one's desire to stop a co-participant's actions and to express protest among four to six-year-old children. Depending on the situation the movement is embedded in, one of these meanings may be foregrounded. Secondly, the analysis of the different examples reveals different versions of the Slapping movement showing different degrees of abstraction from the action of slapping. These degrees will be discussed in the following section in which a continuum of abstraction is introduced.

2.2 A continuum of abstraction in the Slapping movement

The above presented study investigated the occurrence of a manual movement among four to six-year-olds. This movement shows a particular movement gestalt which we termed the Slapping movement. Qualitative analyses of the 20 Slapping movements identified in the data were conducted to determine versions of this movement, describe their interactive situatedness, material anchoring, their meanings, their representational complexity, and their coordination with speech. Based on that we determined movement variants that can be placed on a continuum ranging from action, and thus the lower limit of gesture, to gesture (Figure 6).

The scheme in Figure 6 is based on the studied data material and is by no means exhaustive. However, it allows to describe the movement variants as dimensions that define stages on a continuum from action to gesture in a semiotic sense. Noticeably, the variants determined show many commonalities. Besides the movement gestalt responsible for grouping the forms under the notion of the Slapping movement, all variants are highly coordinated with speech and the majority of them forms multimodal utterances. What is more, they show a high degree of communicative explicitness as they either prompt a response by the co-participants, i.e., stopping an

	(communicative) action of slapping	indicated action of slapping		Slapping gesture
	lower limit			*gesture* *upper limit*
form	movement: toward object or subject, quick movement downward	movement: toward object or subject, movement downward, movement dynamics varied (e.g., reduced velocity)		movement: quick movement downward
	hand shape: flat, open hand	hand shape: flat, open hand		hand shape: flat, open or half-closed
	orientation: down	orientation: down		orientation: down
	position: lateral periphery, direction of arm adapted to location of object or subject	position: lateral periphery, direction of arm adapted to location of object or subject		position: lateral periphery
environmentally coupled	contact with object or subject	light contact with object or subject		no contact with object or subject
speech	integrated	demonstration: integration possible	other: integrated	integrated
meaning	performative, protest	demonstration: showing slapping	other: performative, protest	performative; metacommunicative; protest
communicative explicitness	prompts response	prompts response		prompts response
representational complexity	counts as action	as-if quality		as-if quality

Figure 6: From action to performative gesture.

action, or they demonstrate the action of slapping and thus demand a high level of attention. What is more, all performative Slapping movements identified express indignation at the playmates' actions and thus mark them as unpleasant. The meaning of protest becomes evident in qualities of high affective involvement associated with higher movement effort such as bigger movement radius and more force. Affective qualities are also observable in the concomitant speech including louder voice or the expression of interjections.

The differences between the variants that reveal degrees of abstraction on the continuum and thus stages on the scale from lower limit of gesture to gesture can be found in the environmental coupling and in the variation of the movement dynamics. Accordingly, the Slapping movement counts as an action (in a semiotic sense) when a) the slap is fully performed and b) when the hand touches an object or subject. In this case, the movement gestalt shows a particular dynamic where the strength gathered in the preparational phase is fully released. Hence the hand slaps an object or subject and does not merely touch it lightly. The latter case marks the transition from action to indicated action. The movement gestalt is similar to the actual action of slapping, yet the movement is carried out in a considerably reduced form. We found cases in which the slap itself or its preparational phase was altered (e.g., visible in reduced velocity) so that the movement dynamics of the whole gestalt appeared different from a fully performed slap. In these cases, a modulation of the movement is observable, similar to what Goffman (1974), drawing on Bateson (1968), described for distinguishing between actions of play and fighting among monkeys.

> Real fighting here serves as a model, a detailed pattern to follow, a foundation for form. Just as obviously, the pattern for fighting is not followed fully, but rather is systematically altered in certain respects. Bitinglike behavior occurs, but no one is seriously bitten. In brief, there is a transcription or transposition—a *transformation* in the geometrical, not the Chomskyan, sense-of a strip of fighting behavior into a strip of play. (Goffman 1974: 41)

Thus, like "as-if-bites" performed in the play of chimpanzees where "the biting actions are not fully executed, [but] are reduced in performance" (Müller 2017: 292), the indicated actions observed here are cases of "as-if-actions" (Andrén 2010; Calbris 1990; Kendon 1980; Müller 1998) where the slap is not fully executed but transformed.

A further transformation of the action scheme of slapping going along with a higher degree of abstraction is observable in the Slapping gesture. In this case, neither an object nor a subject is affected by the movement. Therefore, the movement is not "environmentally coupled" (Goodwin 2007). The movement gestalt shows the same movement dynamic as the action of slapping, yet the gesture appears to be more stabilized. In more detail, although the orientation of the hand as well as the direction of movement is always downward in the first two stages described, the arm is stretched into different directions depending on the position of the object or the

body part slapped. In the case of the Slapping gesture the direction of the arm is not "inflected by" (Harrison 2018: 169) an object or subject but always moves downward alongside the body. What is more, speaking in terms of semiosis, the Slapping gesture does not count as an action as the full action scheme is not executed. It is a modulated version of the action because the hand acts as if it slapped something or someone. Hence, it shows a higher degree of abstraction from the action of slapping.

Based on the similarities and differences in the execution of the movement, its meaning and its contexts, we assume that the different variants documented here a) are linked to one another and b) represent different phases in the development from the action of slapping to the Slapping gesture. Accordingly, the practical action of slapping can be considered as the starting point of this developmental path while the performative Slapping gesture is the ending point in the group of four to six-year-olds. However, the development is not concluded with this as we can assume that older children also carry out this gesture with a performative function but also with a metacommunicative function. Indeed, studies have demonstrated that the metacommunicative function of gestures is realized verbally and gesturally starting at the age of six at the earliest (see Section 1).

Whether the Slapping gesture can be considered as a recurrent gesture in the age group investigated here needs to be investigated further based on a larger data set. However, taking Andrén (2010, 2014b) continuum from lower limit to upper limit of gesture into account, we would place the performative Slapping gesture in the borderland between gesture and its upper limit (Figure 6) due to the stabilization of form and meaning and its distribution among a group of children.

Interestingly enough, the Slapping gesture shows similarities with the recurrent Throwing away gesture documented for adult speakers of German (Bressem and Müller 2014, 2017). This gesture is characterized by a "a lax flat hand oriented vertically with the palm facing away from the speaker's body flapping downward from the wrist" (Bressem and Müller 2017: 3). It was observed recurrently with the meaning of "getting rid of, removing and dismissing annoying topics of talk by throwing them away from the speaker's body" (Bressem and Müller 2017: 3). Based on the movement gestalt and the meaning observed, the authors argue that this gesture enacts the action of throwing away annoying, middle-sized objects to clear one's space. The gesture metaphorically throws away arguments and topics of talk and qualifies them as uninteresting and not worth considering.

The topic of a relationship between the Slapping gesture and the Throwing away gesture deserves an extended treatment of its own. However, based on the commonalities in form and meaning, we assume that both movements are related. In fact, the kinesic and functional similarities give reason to assume that the Slapping movement is one of the precursors of the Throwing away gesture (Figure 7). Accordingly, on the way to becoming a recurrent gesture performed by adults, the

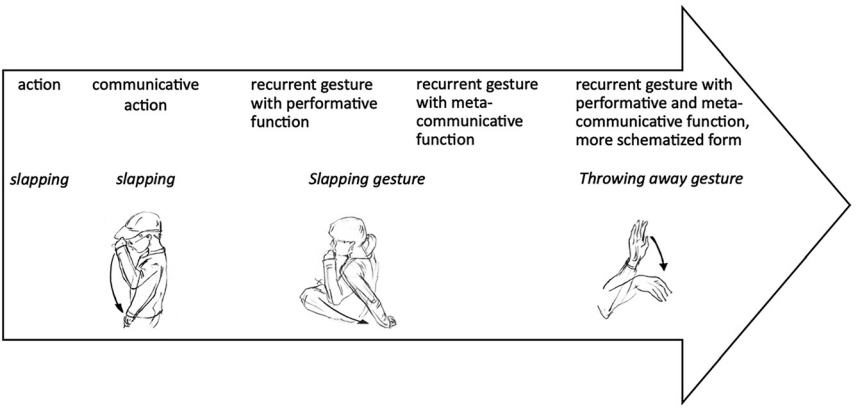


Figure 7: Assumed stages in the development of the Throwing away gesture.

Slapping movement would pass through further processes of abstraction and schematization while being culturally formed. This results in a movement gestalt both the Slapping gesture and the Throwing away gesture share. However, the dynamics of both movements differs. In more detail, the quality and the size of the movement are different depending on the age group. Whereas the Slapping gesture among children is carried out with a forceful accentuated movement downward in which the entire arm is involved, the movement displayed by adult speakers is significantly slighter. Here, the movement is frequently anchored on the wrist or the elbow, while the hand/arm is moved in a short and quick movement downward. These observations support findings according to which children's gestures appear much more expressive and less schematic than their caregivers' gestures. Graziano et al. (2011: 100) have associated this with "a socially shared style" the adult´s performance is closer to and children will grow into. Hence, we can assume that the way a movement is performed (here described with the term of movement dynamics) is altered during the development of gestures and that older children gradually take on cultural conventions that they perceive in the interactions with their caregivers.

3 Conclusion

This paper investigated the recurrent Slapping movement among four- to six-year-old children. Based on the questions of how to classify the Slapping movements observed in our data and how to describe the relationship between these forms we conclude that a) all forms are linked to one another by a particular movement gestalt

and most of them by their communicative function and b) they show different degrees of abstraction from action to gesture in a semiotic sense. These degrees are distinguished by modifications in the execution of the movement as well as by different levels of form stability, environmental coupling, and representational complexity. Moreover, the continuum of abstraction goes along with a continuum of gesturalness which means that the higher the degree of abstraction is the more gestural a movement becomes (see also Andrén 2010; Harrison 2018).

At this point in the conclusion, it is worth reflecting on the theoretical approach to the phenomenon under discussion. As stated above, one of the outcomes of our analysis is the definition of degrees of abstraction and gesturality which, from a longitudinal perspective, may give insights into the emergence of gestures as well as the adaptation of cultural conventions in the ontogenetic development of individuals. Certainly, the movements under scrutiny can be described and discussed in many different ways and any research perspective will establish a different order in the phenomena perceived (Wittgenstein 1953: $122). Accordingly, besides the "emergent structures" (Auer and Pfänder 2011: 2) we may reconstruct from the lower to the upper limit in children's and in adults' gesturing with the approach advocated here, all movements documented can be conceived in terms of actions (Di Paolo et al. 2018; Harrison 2021), resources or practices (Streeck 2009, 2013) speakers have at hand to engage in interactive situations. With these notions, gestures and other signifying movements are conceived as embodied forms of doing which are both personal and cultural. As is argued in several publications, the meaning of social practices and their practical understanding cannot be found only in the form itself but in its relationship to a communicative context (Bateson 1972). Conceived in terms of a practice, the Slapping movement reflects the children's dealing with an interactive situation and thus their "ability to orient themselves verbally, perceptually, and physically to each other and to their social world" (Hanks 2018 [1996]: 229; see also Streeck 2009: 5). It belongs to "an immense stock of sedimented social knowledge in the form of unreflective habits and commonsense perceptions" (Hanks 2018 [1996]: 238) – a knowing how. Involved in a "complex process of sedimentation and spontaneity" (Di Paolo et al. 2018: 10; see also Merleau-Ponty 2005 [1962]) all forms of the Slapping movement create a shared cultural dimension affirming their meanings when being enacted but also creating novel significance that emerges from the particular situations and further social acts in which they are embedded (Di Paolo et al. 2018). The genesis of such mutually sedimented social acts can be described to some extent by the approach advocated here which makes visible dimensions of practical knowledge of dealing with recurrent communicative, interactional and cognitive tasks.

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