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Visual Tools as Mediation Means: A Methodological Investigation

Jaakko Hilppö, Lasse Lipponen, Kristiina Kumpulainen, & Antti Rajala

In this study, we investigated how Finnish children used photographs and drawings to discuss their preschool day experiences in focus groups. Building on sociocultural perspectives on mediated action (Vygotsky, 1978) we specifically focused on how these visual tools were used as mediational means in sharing experiences. The results of our embodied interaction analysis highlight the relevance of visual tools for the participants and the task at hand in the moment-to-moment, micro-level flow of interaction and its material environment. More specifically, our analysis illuminates different ways in which the visual tools were relevant for participating children and adults when sharing and talking about their experiences. In all, our study advances present day understanding regarding how sociocultural and embodied interaction frameworks can guide visual research with children.

Keywords: embodied interaction, mediation, research with children, visual methods

Introduction

Drawings and photographs are commonly used in research with children (e.g., Thomson, 2008; Christensen & James, 2008; Fargas-Malet et al., 2010; Angell et al. 2014). Depending on the research design, such visual tools are often argued to mediate children's participation in a number of ways. For example, they provide a more familiar way of working, are interesting in themselves, offer an alternative way of communication, and are a friendlier avenue to explore and discuss topics that are difficult to verbalize. In essence, visual tools are taken to reshape adults' and children's joint engagement in research activities. Although the idea of tool-mediated action arguably lies at the heart of visual research, the use of visual tools in research with children, however, is not unproblematic.

This article addresses two concerns raised in recent methodological discussions around visual research methods with children (e.g., O'Brien et al., 2012; Barker & Smith, 2012; Wohlwend, 2009; Knoblauch et al., 2008; Sewell, 2011; Pyry, 2013; Gallagher & Gallagher, 2008; Westcott & Littleton, 2005). The first concern stems from observations regarding the impact visual tools have on the research process and its outcomes, and the worry that this impact often goes unchecked by researchers and practitioners applying visual methods. Although the importance of visual tools is often well grounded, the way in which children or adults use them as mediational means is seldom discussed or presented in detail. The second concern focuses on the lack of conceptual clarity regarding the visual tools themselves. This has also recently been identified by others who argue that articulating the role of visual tools in the research process as well as taking a reflexive stance toward them requires suitable theoretical conceptualizations (Pyry, 2013;

O'Brien et al., 2012; Lipponen, et al., in press).

In this paper, we aim to respond to these recent limitations and concerns regarding visual methods. Our study rests on a socioculturally framed conceptualization of visual tools as mediational means in social interaction (e.g., Vygotsky, 1978). We shall also consider opportunities offered by embodied interactional analysis methods (Goodwin, 2000) to research and understand tool mediation within the context of visual research. Via this method, we illuminate the relevance of visual tools for the participants and the task at hand in the moment-to-moment micro-level flow of interaction and its material environment (see also Cromdal, 2009; Theobald, 2012; Speer & Hutchby, 2003). The empirical study we draw upon focuses on embodied interaction taking place when Finnish children share and discuss their preschool day experiences via self-authored photos and drawings. In our analysis we highlight the complex ways in which the visual tools are weaved in and out of the moments of sharing one's experiences.

A Sociocultural Conceptualization of Mediated Action

The concept of mediation, or mediated action, is one of the foundational building blocks of sociocultural approaches to human action (Roth, 2007; Miettinen, 2001; Cole, 1996). Within these approaches, mediation conceptualizes how various culturally afforded tools extend our competence to perform actions; tying a knot in a handkerchief or taking mobile phone snapshots are ways we use mediational means to remember something (for a similar argument in the visual methodology literature, see Thomson 2008). More fundamentally, the concept of mediation addresses the emergence of these actions and their encompassing activities. That is, the core argument of sociocultural approaches is that higher mental functions and complex activities are the result of the creation and use of tools and their transformative power (Vygotsky 1978; Vygotsky & Luria, 1994). The incorporation of a tool to aid the task at hand reorganizes the relation between the actor and the surrounding environment. As a result, this relation becomes culturally mediated.

The power of tools to extend human action stems from their cultural-historical origin and the way in which they incorporate culturally relevant knowledge and know-how (Cole, 1996). When using a camera, for instance, we apply the culturally accumulated knowledge of various scientific and technical discoveries put into practice through the design process of the tool. Yet, neither the design process nor the cultural-historical trajectory of the tool alone determines its use. That is, in contrast to O'Brien et al. (2012), who maintain that different visual tools determine the degree of personal and emotional engagement of the participants with the research process, we view this as an open question. As Gillespie and Zittoun (2010, p. 44) explain, tools "designed for one purpose, or conceptualized as being for one purpose, may, in the next moment, become appropriated and used for a second purpose." An ordinary

cardboard box, for example, can turn into a camera in children's play. In other words, the way in which cultural tools mediate our actions, their mode of use, is flexible and open to the dynamics of the situation.

Furthermore, tools are not used independently of each other. Rather, mediated action builds on a set of tools or an "instrumentality" used in different activities (Engeström, 1990). That is, in addition to the actual photographs one also needs a camera, a computer, memory cards, cords, and software in order to share the photographs with others. Using a different visual tools, such as drawings or printouts, would lead to the adoption of a different set of instruments. Moreover, an instrumentality also includes other mediational means than just the visual ones. Sharing one's experiences is also mediated by the verbal language, non-verbal gestures, intonation, and the furniture and its particular physical arrangement, for example. From this perspective, any situation or environment is imbued with different cultural tools that can arguably be said to mediate our actions. Similarly Pyyry (2013, p. 10) has highlighted how research encounters are not only crafted by the material environment, such as photographs, sounds, or social roles, but also "by everything that came together there and then". In other words, the power of different mediational means does not only stem solely from them but also from how they are incorporated into an ensemble of social, material and historical forces.

However, if the concept of mediation is expanded to cover everything present in a given situation, conceptually it ceases to make meaningful distinctions between different mediational means and no longer helps us understand how they are used (Roth, 2007). In fact, without these distinctions, we run the risk of undermining the potential relevance and power of visual tools within research endeavors altogether. The task for the researcher then is to both conceptually and empirically parse out which artifact (or artifacts) functions as a tool at a given moment.

Explicit Mediational Means and Embodied Interaction

To conceptually differentiate visual tools (here photographs and drawings) from the encompassing instrumentality, we will draw on Wertsch's distinction between implicit and explicit mediation (Wertsch, 2007). For Wertsch, *implicit mediation* refers to the unconscious, unreflective, or transparent use of tools. Examples of implicit mediation include using language in everyday situations or shifting gears when driving. In these situations, the people using the tools do not pay attention to or notice them although they play an important part in the activity. Wertsch contrasts this with the concept of *explicit mediation*, which refers to situations where a new tool is clearly introduced into the present activity. For instance, when a teacher introduces a new concept during a lesson to aid the joint discussion or a researcher provides new tools to help the child in completing a certain task. In these situations, the new mediating tool is oriented to by the participants. In this respect, we argue, the photographs and other visual tools children use when

sharing their experiences can be understood as explicit mediational means.

Although the contrast between implicit and explicit mediation provides insights regarding the use of visual tools, it nonetheless remains at the level of a general categorical distinction. That is, the specific ways in which children use visual tools to aid sharing their experiences, if at all, are not clarified. To address this issue, we will turn to work of Charles Goodwin on embodied interaction, which as Goodwin argues, is in line with Vygotskian perspectives “but adds to such perspectives an equally strong focus on the details of language use and conversational organization.” (Goodwin, 2000, p. 1491). For present purposes, Goodwin’s conceptualizations give us a further insight on how tools are weaved into performing actions.

A central thesis in the analysis of embodied interaction (Goodwin, 2000) is that any action, such as telling others about one’s experiences, is constituted by a complex arrangement of multiple *semiotic fields* (e.g., gestures, the body, and spoken language) that are deployed simultaneously and which elaborate on each other. Importantly, the material surroundings also provide various semiotic fields which are used to perform different actions. A teacher’s explanation of a scientific concept or tomorrow’s home work would not be understandable without the blackboard as a semiotic field used to accomplish the action of explaining. The moment-to-moment arrangement of these various semiotic fields is called a *contextual configuration* (Goodwin, 2000). During the course of an action, new semiotic fields can be brought in and old ones treated as irrelevant, depending on present purposes. As a result, the contextual configuration changes. Therefore it is crucial for us to determine how the visual tools enter into contextual configurations and gain their significance in relation to other semiotic fields.

In sum, to understand how photographs and drawings functioned as explicit mediational means, our study was guided by the following research question:

- How are drawings and photographs used as parts of contextual configurations when children and adults discuss children’s preschool day experiences?

Study

This study is part of a larger ongoing research initiative studying children’s agency in formal and informal contexts (Kumpulainen, Lipponen, Hilppö, & Mikkola, 2013). The analyzed data are from a co-participatory investigation of positive moments situated within the daily life of preschool children and is described in detail below. The overall design of this study aligns with current efforts to move away from doing research *on* children to doing research *with* children (e.g., Dockett and Perry, 2007). Within this line

of work, the degree of children's participation ranges from studies in which children participate in all aspects of the research process (e.g., Kellett, 2004) to studies in which adults set the main focus of the study and children take part in the realization (e.g., Miller, 2014; Plowman & Stevenson, 2012; Cook & Hess, 2007). The design of our investigation was inspired by this later set of participatory research with children. The design also connects with the long tradition of sociological and anthropological research in which visual tools have been used in interviews (e.g., Collier, 1957; Harper, 2002).

Participants and research context

The study took place in a preschool in Tampere in spring 2011. Nineteen preschool children (6–7 years old), nine girls and ten boys, from one public preschool class participated in the research. The children represented the lower and upper-middle classes of Finnish society in terms of socioeconomic background. Ellen, the female teacher of this preschool community, was a qualified kindergarten and experienced preschool teacher.

Consent for the conduct of this research was obtained from the children, their parents and participating adults and the municipality officials. As visual research methods raise new ethical considerations in research, we paid careful attention to the ethics of our work. Prior methodological literature (e.g., Thomson, 2008; Lahman, 2008) on the topic guided our conduct.

Creation of datasources

The data sources scrutinized in this study consisted of nine videoed focus group discussions between 10 to 30 minutes each, totaling 192 minutes. In the discussions two or three preschool children shared and discussed, with two or three researchers present, digital photographs and drawings that they produced to represent their “moments of joy” during a preschool day. Prior to these discussions, this preschool community in question had participated in a two-week, two-phase progressive enculturation process leading to them documenting, sharing and reflecting on their lives and experiences by taking photographs and videos with digital cameras and making drawings. The design of the process was authored together with the preschool teacher and partly with the children in order to embed and build on the already existing ways of working with visual means present in that community.

During the first phase, two researchers took part in the everyday life of the preschool community and engaged with the children in discussions about their positive experiences during a preschool day. The children also started to familiarize themselves with the cameras (assisted by the researchers) and took photos based on their interests. The phase ended with a joint storytelling visualization, whereby the

children first listened to a narrative about a fictional character, Hillevi Mouse, who had experienced a moment of joy, and then they drew a picture about the narrative. According to the teacher, making visualizations of abstract phenomena was a common part of her preschool pedagogy.

During the second phase, we asked the children to document their important, meaningful, and positive moments situated within their daily life at preschool. This was done in two ways. First, each child was provided with a personal sketchbook where they could visualize their positive experiences whenever one occurred. The sketchbooks were readily available for the children in the classroom, and they were intermittently encouraged to draw in them every day. Second, each child was provided with a digital camera for a day. Prior to the distributions of the cameras, the children took part in a short conversation that served to remind them of what to capture in the photographs during the day. In this discussion the positive experiences were worded as “moments of joy” (*ilon hetki* in Finnish), but other expressions were also used. The verbalization was then visualized as a drawing by the researcher and attached to the camera as a reminder. Each day, all the children who had taken photographs took part in a joint focus group session where they could view, share, and discuss the photographs they had taken. The children could also share drawings from their sketchbooks in these focus groups. The composition of the groups was based on the children’s suggestion that they share the photographs and drawings with their friends, although due to absences and other reasons, this could not always be maintained.

The focus groups followed an open format and were designed to encourage the children to elaborate on their perspectives of their experiences. The sessions started with the researchers uploading each child’s photos to a computer to view them. After deciding on the order of turn taking, the interaction proceeded with one child sharing his or her photographs at a time while the others listened. The children sat in a semi-circle around the computer, and all could view the screen easily. The children selected the two to nine photographs they wanted to talk about, and 74 photos altogether were discussed. The role of the researchers was to guide the focus groups and center the discussions on the photographs. The researchers also paid careful attention to other emerging topics and to the children’s initiatives in order to foster their with the groups. In practice, although the researchers did ask most of the questions and handled the computer, the children also guided the interaction for example, by playing around with the cameras, asking questions from the researchers and engaging momentarily in other activities during the focus groups. In all, interactional dynamics of the interviews were reciprocal and open to initiatives from each party.

Dataset and analysis

The analytical framework of our study draws on iterative interaction analysis frameworks with a focus on

embodied interaction (Jordan & Hendersson, 1995; Erickson, 2006; Goodwin, 2000; Streeck, Goodwin, & LeBaron, 2011). In short, our analytical work focused in general on the complex arrangement of verbal, visual and material conduct through which the participants accomplished telling and listening in the focus group situations, and especially the role of the photos and drawings in this process (cf., Wohlwend, 2009; Theobald, 2012). The particular meaning and relevance of a visual tool was thus not viewed as given nor static, but rather emerging within the particular, unfolding relational context of its use and it is embedded in a complex interactional process co-constructed between material and human agents in situ (see also Theobald, 2012).

In practice, we started by reviewing each focus group session closely to understand its structure and interactional ordering from the participants' perspectives. Our viewing was aided by transcriptions of verbal actions made in an earlier study of the same material and also by copies of the digital photographs referred to by the participants. During the viewing process, we developed content logs of each focus group session that entailed an episode-based description of the joint interaction (Jordan & Hendersson, 1995). We then used these content logs to select all episodes where children told of their experiences in order to carry out a more detailed embodied interaction analysis. This selection of 82 episodes constituted the dataset analyzed in this study.

Results

Our results highlight the dynamic ways in which the photographs and drawings acted as mediational means when the children shared and discussed their preschool day experiences. Specifically, we identified two distinct ways in which these visual tools were used by the children. In the first way, the children—through combinations of deictic gestures and verbal indexing—used the photographs to illustrate the details of their experiences. This meant picking out from the photo persons or things involved or talking about where the photo was taken. In these instances, the use constituted the photographs as representations that aided the verbal narration. In contrast, the second way in which the photographs were used was marked by a shift away from the photographs, but one which at the same time retained their relevance as part of the telling. Instead of specifying narrative elements, the visual tools functioned as backgrounds or canvases for repraising the original events relevant to the children's experiences. This involved, for example, re-enacting a related play sequence through gesturing the relevant movement, i.e., iconic gesturing or talking and gesturing about what was not in the picture but was present in the original moment.

In relation to the dynamics of use, our analysis also revealed that what the photographs represented could, at times, change during the joint discussion. As in the following example, a picture of a handicraft swan

was first talked about as part of an elaborate play activity, and telling about the child's experience within the world of play. As the conversation ensued, the swan was however defined through the world of the formal preschool world and its activities, as a piece of handicraft. In a sense, what the photograph was about was redefined by the participants. As a result, the same photograph mediated two discussions topics, both connected to the child's preschool day experiences and her telling about them. Thus, our analysis highlighted how the meaning the photographs gained as the result of the interaction was both dynamic and situative.

Although our analysis illuminates the central place that visual tools occupy when children share their experiences, we also identified moments where the visual tools were not drawn upon to aid the children's telling. Although in these instances the visual tools were present as a resource for the participants (visibly available on the computer screen), they were not used by the children to talk about their experiences. These moments, however, took place within longer episodes during which photographs were used. Hence, our results indicate the complex ways in which the visual tools were weaved in and out of moments of telling about the children's experiences. To illustrate our analysis of embodied interaction, and our results, we will next present a singular but illustrating example from the focus group discussion of Marjo and Saima. We will provide excerpts of key moments from the discussion and their detailed analysis as well as a narrative overview of the discussion as a whole¹.

From a Swan Prince to a Paper Handicraft

The example is from the beginning part of a detailed discussion of one of Marjo's photographs, namely a photograph of a paper swan made by her friend Venla (Figure 1), who's not present in the situation. The discussion was held in the staffs coffee room, and the girls were accompanied by researchers Tarja and Jaana.

As all the photographs Marjo had taken that day could not be displayed at the same time, Tarja scrolls slowly through the photographs while Marja and Saima are looking intensively at the screen. Jaana has advised Marjo to choose the photograph she wants to talk about first. We enter the first excerpt as Marja makes the choice by pointing to the photograph in question.

¹ All names are pseudonyms. Also, the use of transcription notations has been minimized to improve readability. An explanation of used transcription notation can be found in Appendix 1.

Figure 1. Marjo's photographs of a paper swan made by her friend Venla

Excerpt 1			
turn	speaker	Verbal action	non-verbal action
1	Marjo	Yeah this was no wait his was all	points to picture 61
2	Jaana	It	
3	Tarja	This swan?	
4	Marjo	Yeah that swan It was fun	
5	Jaana	Alright	
6	Tarja	Alright	
7	Saima	Did you take any video?	
8	Marjo	Yes this	
9	Tarja	[Mmm?]	
10	Marjo	[This] was really fun when it like (0.8) it like °what was it° (0.8) Venla like=	lifts hands under chin, looks at J & T, points to picture
11	Jaana /Tarja	[Mm]	
12	Marjo	[It] was it was that prince from which that swan king mm no wait =	pointing ends
13	Saima	These go [there (unclear)]	points to the right hand corner of the screen
14	Marjo	[a boy swan BOY SWAN] and like (1.2) then like it was fun when it like like did like this "boing-boing-boing-boing"	pics at sleeve, lifts right hand above her head and brings it down with a swirl. Then, the hand does a fast riding movement from right to left on top of the picture

After Marjo has chosen the photograph, Jaana and Tarja affirm her choice and Tarja enlarges the photograph to full screen view (lines 2–6). With the photograph in view, Marjo first dismisses Saima's question regarding videos and proceeds to tell them about the photo and the situation in which it was taken. What we learn from her is that the swan in the photograph has played some part in a play situation (lines 10–14). Although the specifics of the play narrative are not clear, Marjo names three different

characters from the play (the prince, the swan king and a boy swan) and identifies the boy swan as the one moving. More importantly for our argument here, the movement of the boy swan seems to have been an important part of what made the situation funny for Marjo. On the basis of how Marjo formulates her explanation, it seems that her primary motive for taking the photograph was to capture the play situation involving the swan as an example of a positive moment that she had experienced.

In terms of the dynamics of mediation, Marjo's use of the photograph as part of her narration in lines 10–14 is significant. As we can see from Figure 2, when Marjo begins her turn (line 10), she, in addition to her verbal expression, she points to the swan in the photograph. This deictic pointing marks the photograph as a relevant semiotic field that makes her verbal expression understandable. That is, the verbal reference “this” gains its meaning from the photograph as a result of the pointing. Then, when Marjo focuses on the movement of the swan (line 14), we see a shift away from deictic pointing to a more elaborate, iconic gesturing (Figure 3). Marjo begins the gesture by first lifting her hand high in the air and then swirls it while lowering it. Finally, at the end of the gesture, in order to mimic the important movement of the swan in the play situation, she does a fast up-and-down riding movement from right to left. With the incorporation of this new gesture, there is a change in the contextual configuration of how Marjo tells of her experience.

Figure 2. Marjo pointing to the picture

Figure 3. Marjo re-enacting the movement of the swan

Importantly, Marjo does her iconic gesturing in a fashion that maintains the relevance of the photograph to understanding the gesture. That is, although the way in which the photograph is treated as relevant changes, it nevertheless still remains the focus of her sharing. Rather than treating the semiotic field of the photograph as irrelevant, by pinching together her thumb and index finger in front of the swan just prior

to making the iconic movement with her hand, Marjo conveys the idea that it was the swan that did the movement. Her hand movement overlays a new semiotic field on top of the photograph, one in which affords the re-enactment of the movement of the swan. As a result, instead of providing the surface for specifying items, the photograph now functions as a canvas, the background for re-enactment of events. This shift, moving from pointing to gesturing, marks one of the ways in which the photograph functioning as a mediational tool change in the discussion.

This dynamic is further illustrated in the ensuing discussion. Despite Marjo's elaborate description of her positive moment, neither her experience nor the topic of the play are discussed in detail. Rather, what we see in the rest of the example is how the photograph comes to mean something new, a handicraft. Our second excerpt illuminates this change.

Excerpt 2			
turn	speaker	verbal action	non-verbal action
37	Jaana	Did you make any of those yourself?	
38	Marjo	Yes	turns and looks at Jaana
39	Saima	(unclear)	
40	Jaana	Would you have a picture of it?	
41	Marjo	I love swans	
42	Jaana	Ough	
43	Jaana	Did you take [it did you take] a picture of those ones you did yourself?	
44	Saima	[(unclear)]	
45	Marjo	No by accident	looks at Jaana
46	Jaana	[You did not?]	
47	Tarja	[Mmm]	confirming intonation
48	Marjo	Mmm	confirming intonation
49	Jaana	Well it's all right	
50	Marjo	Hehee	Marjo laughs and turns towards the screen
51	Jaana		Laughs
52	Marjo	Its fun to take pictures of other swans ((voice changes)) but I haven't ever made• like >a so good swan<	
53	Jaana	[Aaaaa]	
54	Tarja	[Mmm.]	
55	Marjo	cos °you learn then°	
56	Jaana	[Mmm]	
57	Marjo	[You learn if you do it like this thi:s thi:s °thi:s [this°	Cuts the outlines of the swan on top of the screen
58	Jaana	[You can practice that [then	
59	Tarja	[Mmm.	
60	Marjo	Yeah (hhh) but I didn't have enough paper at home	Talks with a regretful tone. Crosses arms in the beginning and spreads them out in the middle. By the of the turn hands are under her chin.
61	Jaana	[Ough	Talks with a sorrowful tone
62	Tarja	[Mmm (1.0)	

Our second excerpt begins with Jaana (line 38) inquiring about own Marjo's swan, as the one in the picture was made by Venla. She first asks whether Marjo made a swan herself. After Marjo's answer, Jaana further asks twice about a photograph of Marjo's swan (lines 40–43). Marjo does not answer the questions directly at first, but then explains that she accidentally did not take a photograph of it (line 45). After Marjo's confirmation (line 48), Jaana says that this does not matter. In the rest of the discussion, Marjo goes on to explain that she appreciated Saima's swan for its artisanship (line 52). Marjo also explains how she could learn to cut with scissors from Saima's example and how she could not practice cutting at home because she did not have any paper (lines 57 and 60).

What we can see in our second excerpt is how the photograph of the swan comes to acquire a new meaning in the discussion. Whereas, in the beginning of the discussion (Excerpt 1) the swan came to be defined through the world of play, in the ensuing discussion (Excerpt 2), the swan is defined through the world of the more formal preschool world and its activities. This begins with Jaana framing the swan as artifact which Marjo herself also might have made (line 38) and is continued in Marjo's answers after this. In a sense, the semiotic field of the photograph is redefined through the actions of the participants. As a result, the same photograph mediates two topically different discussions; both topics, however, are connected to Marjo's preschool day experiences and her telling about them.

In all, telling and listening done in this example demonstrates the dynamic way in which the photograph is used as a mediational tool. In addition to illustrating items in the verbal narration, the photograph served as a canvas for reprising the original event. Furthermore, the photograph came to represent two distinctly different things, namely a funny play situation and a handicraft made during the preschool day.

Discussion

Currently, the use of visual tools within visual methods literature is presented and conceptualized in ways which underplay their relevance in the actual practice of doing the research. Scrutinizing and describing the use of visual tools, hence, constitutes a substantial methodological opportunity for the field of striving for reflexivity and authenticity in its practices (e.g., Tisdall & Punch, 2012; Radley, 2010; Angell, et al., 2014). To address these limitations, in this study we have highlighted how Finnish children use self-authored photos and drawings to share and discuss their preschool day experiences. The results of our embodied interaction analysis show that visual tools assumed a central place in our focus groups. Moreover, our analysis revealed the dynamic ways in which the visual tools were weaved in and out of moments of the childrens' telling of their experiences. Specifically, we identified two distinct ways that the visual tools were used by the children as mediational means. In addition to specifying narrative elements, the children used the photographs as backgrounds or canvases for reprising the original events

relevant to the children's experiences. In all, our analysis demonstrates the significance of the socio-cultural and embodied interaction frameworks for the practice of research with children.

Our embodied interaction analysis emphasized the significance of visual tools as part of the interactional organization in our focus group situations. Not only did the photographs as explicit mediational means act as focal points around which the children and adults gathered, but, more importantly, they also acted as referential anchors (Crook, 1994) through which the children made their experiences understandable to the other participants. That is, our results illustrate how the visual tools acted as central resources for meaning making for the participants. Yet, without the verbal descriptions, gestures and other semiotic resources the meaning of the photographs could not be understood (Goodwin, 2000; Hutchins & Palen, 1997).

Our observation of the dynamics of the tool use highlights how the materiality of the photos take effect through resistance and stability in the focus groups situations. Indeed, although photographs are often portrayed as being flexible tools and open to multiple readings and uses (Thomson, 2008; O'Brien et al., 2012; Van House, 2011), our observations points alternatively to the fact that their stability and resistance to certain usages also matters for the participants in the focus groups. In line with Pyry (2013), our sociocultural perspective conceptualizes the visual tools as objects whose material aspects play an important role in how different situations unfold. In our case, despite the photos being digital and being displayed on the computer screen, it was interestingly what the photographs did not clearly show that seemed to give rise to the children's flexible use of them. That is, the switch between uses took place when a picture in question did not clearly portray some significant element of the experience, notably movement in the case of Marjo and Saima. In other words, what was not in the picture gave a spark to act, to tell by different means. In contrast, when the children had taken videos that displayed movement, telling about their experiences was superfluous as everybody was watching what took place. Thus, the constraints of the photographs, their limitations in the act of telling, was a significant part of their material agency and how they played their parts in the situations as material agents. In respect to previous conceptualizations regarding children and materiality (Rautio, 2013; Rautio & Winston, 2013), our observation begins to outline how the use of visual tools is constituted by the entanglement and situated movement between the constraints and flexibility of visual tools and working with them (e.g., Pickering, 1993).

Importantly, our identification of the two different ways of using the photographs, and the underlying material resistance, underscores also the children's agency in relation to the visual tools used in the focus group situations. That is, in using the photographs as both representations and backgrounds, the children went beyond simply using them as finished tools. This switching between uses alerts us to the children's

skills in adapting tools to better fit the needs of the situation. Thus, our results emphasized the children's active role as tool creators rather than as simply tool users (Vygotsky, 1978). Moreover, our observations help also to further accentuate the interplay between material and human agency taking place in our focus group situations when the children encountering the material resistance of the tools altered their use of the photos as means for telling of their experiences.

Although our analysis revealed that visual tools are frequently used as part of sharing one's experiences, we also uncovered situations where this was not the case. Rather than regarding this finding as undermining the relevance of visual tools, it can be seen as pointing to their significance in the context of the overall research design. In other words, the process of creating the visual tools in itself might be seen as paving the way for a trustful and familiar ethos in focus group situations. This suggests then that visual tools are not just *aides-memoires* or cognitive tools (Clarke, 2010) but that they might also mediate the social organization of moments of telling and listening and their affective attunement, as Pyyry (2013) also argues. Exploring this aspect of relationship building (i.e., joint creation of artifacts) and its significance in research with children is one potential avenue for further methodological investigation (cf., Holland, Renold, Ross & Hillman, 2010). In a similar vein, visual tools of are often employed as retrospective devices to tell about either events in the past (as in our case) or about a current state of affairs. An undervalued aspect of the creation of visual tools is their potential to depict or inspire the imagining of alternative futures and the potential of these imaginative tools for pedagogical work, for example (e.g., Lipponen, et al., in press; Radley, 2010).

Our embodied interaction analysis also speaks to the importance of not just listening to children but also paying attention to the ways in which they employ other communicative means in addition to the verbal. Although this fact is often acknowledged, it is seldom given analytical import in research (see also Evang & Øverlien, 2014; Griffin, Lahman, Opitz, 2014). For example, Baker and Smith (2012) argued that the verbal debriefing of visual tools easily emphasizes articulate conversation and that this can be problematic for example for children with limited verbal skills. Notwithstanding that children's verbal ability plays an important role when conducting visual research, our paper offers an alternative viewpoint as to the problem that Baker and Smith (2012) highlight. Rather than attributing the difficulty to a gap between the method and children's verbal competence, our analysis points to difficulties in how communicative competence is constructed. Our analysis, like Goodwin's work, demonstrates how both adults and children make use of many forms of mutually elaborating communication in face-to-face interaction, not just verbal ones (see also Cromdal, 2009). More importantly, embodied interaction analysis captures and conceptualizes the complex interactional processes between material and human agents. That is, for researchers embodied interaction analysis provides an analytical lens and accompanying vocabulary which pays homage to both the separate and emergent qualities of human and material agency as well as

the interaction between them.

In this regard our study also has relevance for educational practice and the professional development of teachers and researchers alike. That is, even though the interactional details that embodied interaction analysis focuses seem minor, they nonetheless have considerable import in everyday interaction. Paying attention to pauses, intonations and gestures can easily make the difference between being understood or not. Skillful researchers and practioners are quite probably attuned to these nuances when interacting with children, but without explicit focus or analytical tools, this expertise is easily missed or taken for granted and left unarticulated. Furthermore, allowing verbal communication to dominate adult-child interaction, or the analysis of it, unchecked could lead to the misunderstanding, misrepresentation or even the silencing of the voices of children. As our study exemplifies, embodied interaction analysis could serve as a fitting framework for explicating and articulating this expertise as well as an avenue for professional development regarding children's meaning making. Albeit focusing on interactional minutia in this fashion is time consuming and laborious, previous research has demonstrated how adults learning to be more attentive to children's gesturing is beneficial for children's learning (e.g., Kelly et al. 2002).

In conclusion, our paper demonstrates the significance of the sociocultural and embodied interaction frameworks for the practice of research with children. Given the recent increased interest in both materiality (Rautio, 2013; Edwards, 2002; Van House, 2011) and multimodal interaction (Heydon, 2011; Hackett, 2014) in research concerning children and childhoods, these frameworks offer powerful conceptualizations and analytical tools. Indeed, these conceptualizations present an opportunity for researchers and practioners alike to be more explicit and reflexive about the practice of visual research with children.

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