I am not a child, I am an adult: fantasy of the real, reiteration and numeracy practices

No soy una niña, soy una adulta: fantasía de lo real, reiteración y prácticas de numeramiento

Je ne suis pas un enfant, je suis un adulte : fantasmer le réel, la réitération et les pratiques de calcul

Eu não sou uma criança, eu sou uma adulta: fantasia do real, reiteração e práticas de numeramento

Raquel Monteiro Pires de Lima[1]
Universidade Federal de Minas Gerais
Doutoranda em Educação
Id orcid: https://orcid.org/0000-0002-9189-9263

Maria da Conceição Ferreira Reis Fonseca[2]
Universidade Federal de Minas Gerais
Doutora em Educação
Id orcid: https://orcid.org/0000-0002-5702-7189

Abstract

In this article, we analyze the ways in which a group of 3 and 4-year-old children, in an Early Childhood Municipal School, during a sociodramatic play, appropriate discursive (as such, sociocultural) practices associated with mathematical ideas, representations, and criteria, here called numeracy practices. Our analysis highlights two axes of grammar of childhood cultures: fantasy of the real and reiteration. These are articulated in the discursive game of age comparison, in which children engage to give coherence to their plot. We point out the relevance of the quantitative argument and gestures as interlocution mediators between children, and signs of the appropriation of adult world practices, pragmatically re-elaborated by children.

Keywords: Sociology of childhood, Childhood cultures, Appropriation of numeracy practices, Sociodramatic play.

Resumen

En este artículo analizamos las formas en que un grupo de niños de 3 y 4 años, en una Escuela Municipal de Educación Infantil, en el contexto del juego sociodramático, se apropia de

---

[1] raquemplima@gmail.com
[2] mcfrfon@gmail.com

prácticas discursivas, como tales, socioculturales, asociadas a ideas, representaciones y criterios matemáticos, aquí llamadas prácticas de *numeramiento*. Nuestro análisis destaca dos ejes de la gramática de las culturas infantiles – la fantasía de lo real y la reiteración – que se articulan en el juego discursivo de comparación de edades en el que los niños se involucran para dar coherencia a la trama escenificada. También destaca la relevancia del argumento y los gestos cuantitativos como mediadores del diálogo entre niños y como hitos de la apropiación de prácticas del mundo adulto, reelaboradas pragmáticamente por los niños.

Palabras clave: Sociología de la infancia, Culturas de la infancia, Apropiación de prácticas de *numeramiento,* Juega sociodramático.

Résumé

Dans cet article, nous analysons la manière dont un groupe d'enfants de 3 et 4 ans d'une école maternelle municipale s'approprie, dans le cadre d'un jeu sociodramatique, des pratiques discursives (et donc socioculturelles) associées aux idées, représentations et critères mathématiques, appelées ici pratiques de numératie. Cette analyse met en évidence deux axes de la grammaire des cultures enfantines - le fantasme du réel et la réitération - qui s'articulent dans le jeu discursif de comparaison des âges auquel se livrent les enfants pour donner de la cohérence à l'intrigue mise en scène. Elle met également en évidence l'importance de l'argument quantitatif et des gestes comme médiateurs des interlocutions entre les enfants et comme marqueurs de l'appropriation de pratiques du monde adulte, pragmatiquement réélaborées par les enfants.

Mots-clés : Sociologie de l'enfance, Cultures de l'enfance, Appropriation des pratiques de calcul, Jeu sociodramatique.

Resumo

Neste artigo, analisam-se os modos como um grupo de crianças de 3 e 4 anos, em uma Escola Municipal de Educação Infantil, no contexto de uma brincadeira sociodramática, apropria-se de práticas discursivas (e, portanto, socioculturais) associadas a ideias, representações e critérios matemáticos, aqui chamadas práticas de numeramento. Esta análise destaca dois eixos da gramática das culturas da infância – a fantasia do real e a reiteração – que se articulam no jogo discursivo de comparação de idades em que as crianças se engajam para conferir coerência ao enredo encenado. Evidencia, ainda, a relevância do argumento quantitativo e dos gestos como mediadores das interlocuções entre as crianças e como marcos da apropriação de práticas do mundo adulto, reelaboradas pragmaticamente pelas crianças.

Palavras-chave: Sociologia da infância, Culturas da infância, Apropriação de práticas de numeramento, Brincar sociodramático.

I am not a child, I am an adult: Fantasy of the real, reiteration, and numeracy practices

In the study that supports this article, we focused on children aged 3 to 4 appropriating numeracy practices in the school context experienced in a municipal early childhood education school (EMEI). We assume that children do not passively embody the culture of the adult world: by engaging in interpretative reproduction, they contribute innovative aspects to their participation in society, leading processes of creative appropriation of the adult world to meet their own interests (Corsaro, 2009, 2011). Thus, children not only internalize society and culture but actively contribute to their production and to cultural changes. Our analysis, therefore, seeks to contemplate how numeracy practices permeate children's experiences and how such practices are constituted in peers' interactions and shape children's cultures, even if pedagogical activities do not intend to contemplate them.

We call *numeracy practices* those in which the people or institutions involved mobilize ideas, procedures, representations, or criteria that relate to what we usually recognize as *mathematics* (quantification, ordering, measurement, classification, appreciation, representation, and use of forms and space) to fulfill their intentions in an interaction. Naming such practices as *numeracy practices* expresses our intention to analyze them as discursive practices that make up the culture in which they are constituted. In our case, this culture forges a *quanticratic*[3] society and is forged in it, guided by values founded on Cartesian rationality and modernity's ethical and aesthetic values.

In our approach, we also adopt an understanding of numeracy practices within the scope of literacy practices since, in a graphocentric society, even practices that do not use writing technology are marked by written culture. We assume that numeracy practices compose the ways of using language and are constituted by them; thus, we analyze them by considering their discursive nature.

Another important aspect of understanding numeracy practices as literacy practices refers to Soares' (2004) reflections on the individual and social dimensions of literacy practices. According to the author, the analysis of these practices cannot be restricted to evaluating a personal attribute, limiting it to its individual dimension. Taking literacy as a cultural phenomenon, a set of social activities involving written language and the demands of using written language, we assume that literacy is, above all, a social practice.

---

[3] We have considered that we live in a solely *graphocentric* society, as Soares (2004) characterizes it, but also, in almost all its relations, a *quanticratic* society (Grossi & Fonseca, 2023), since mathematical knowledge supports and (de)legitimizes a large part of the social relations established in this society, most of which are based on quantitative arguments and controlled by written records.

This perspective is corroborated by Street's (2014) analysis, one of the most influential representatives of the *new literacy studies* (NLS)[4], which emphasizes the social nature of literacy, as opposed to an approach to literacy oriented toward individual skills. Thus, from the same perspective in which the NLS assumes the existence of multiple literacies (Street, 2014), we also consider that there are multiple numeracies practiced in real contexts, which seems crucial to us to challenge a single model, based on the individual mastery of skills associated with hegemonic mathematical practices. As literacy practices, numeracy practices are permanently embedded in cultural meanings, ideological claims, and power relations, and are supported "by socially constructed epistemological principles" (Marinho, 2010, p. 78). This relational configuration of the concept of numeracy practices allows us to analyze practices that are configured in the relationships between children and their peers, involving knowledge that is culturally associated with mathematics, and does not restrict us to assessing mastery of skills but contemplates the pragmatic use they make of this social knowledge as a way for children to relate to the world.

The children constantly participate in two cultures –children's and adults'– which are complexly interconnected. According to Corsaro (2011), "To understand the complexity of children's evolutionary integration in these two cultures, we should examine their collective activities with other children and with adults" (p. 40). Furthermore, children must be considered part of a social group that has a place in the larger social structure.

The purposes of this investigation thus lead us to base it on recent studies in the sociology of childhood, in the search to see children in their leading role, their capacity to systematically construct ways of signifying the world –and acting upon it–, distinct from adult ways of signifying and acting (Sarmento, 2003). Thus, we think of focusing on children as protagonists in numeracy practices because children's cultures are constituted in connection with the cultures of the adult world, which, inserted in quantified societies, are decisively shaped by mathematical references and parameters.

Theoretical-methodological aspects

Intending to analyze the appropriation of numeracy practices in a social and discursive dimension and prioritize the understanding of children as social actors who, therefore, "deserve and should be heard and be considered legitimate informants, especially in matters that concern

---

[4] Yasukawa et al. (2018) prefer to refer to these studies as *literacy studies as a social practice*.

them" (Buss-Simão, 2014, p. 41), led us to adopt ethnography in education as a research logic[5]. Thus, when analyzing children's appropriation of numeracy practices, we seek a closer understanding of their experiences and perspectives in situations where they interact with their peers in the daily life of an early childhood education school.

Therefore, to produce empirical material, we used participant observation, following the school routine, as the main field insertion technique[6]. The interactions were captured using video recordings with a mobile camera, which allowed us to identify and recover scenes that show "the different ways of being a child in their peculiarities and the dynamics of the cultural world that surrounds the children's (re)productions present in the context of the institution" (Martins & Barbosa, 2010, p. 23). Videos and field notes based on observation and reflections provided by experiences in everyday school life complemented the capture of what happened, allowing us to return to it for multiple analyses.

We followed a group of children aged 3 and 4 for five months in a public school that exclusively served the early childhood education segment (children aged 4 months to 5 years) full-time. This unit operated in a building constructed in a highly socially vulnerable region, specifically for that audience, with good facilities and specialized material and human resources.

To develop this research, we chose a municipal school in Belo Horizonte due to its curricular proposals for early childhood education, which structure the processes of educating by caring and caring by educating, giving centrality to three interrelated axes: interactions, playing, and the culture-society-nature relationship (Secretaria Municipal de Educação, 2013, 2015). Furthermore, this municipality's proposal considers mathematics one of the languages that will be mobilized in the context of the play in which children engage. Indeed, according to the curriculum proposals for early childhood education in the municipal school network of Belo Horizonte, languages develop around those three axes. The document includes mathematics among "the multiple languages children use in conjunction: body language, musical language, oral language, visual plastic language, digital language, mathematical language, and written language" (Secretaria Municipal de Educação, 2013, p. 109).

---

[5] Green et al. (2011) refer to ethnography as a *logic in use* that seeks to learn from subjects in the field, which, for these subjects, counts as cultural knowledge. For the authors, ethnographers build systems to understand what members of a particular group know or need to know, understand, produce, and predict as participants in everyday events of group life.

[6] The research was approved by the Ethics Committee of the University that hosted it and, among the requirements for carrying out the work, it was necessary to have permission from the children's parents or guardians through a Free and Informed Consent Form (FICF) previously approved by this Committee. We also clarified the research objectives to the teacher responsible for the observed group and she also signed a Free and Informed Consent Form (FICF).

In this pedagogical context of early childhood education, we seek to identify and describe children's engagement in numeracy practices in the interactions established there, especially in plays –understood as a social construction– in relationships with culture, society, and nature.

We reference our analysis in research from the sociology of childhood[7] and, in this way, we understand that social relations among children deserve a dedicated field of study that contemplates them as social actors in their rights, capable of symbolic production and constituting their representations in organized belief systems, that is, *cultures*.

The pluralization of the concept of culture is motivated by the impossibility of interpreting children's cultures in a social vacuum, and it is always necessary to analyze the social conditions in which children live, interact, and give meaning to what they do (Sarmento, 2003; Sarmento & Pinto, 1997). The variation in social conditions in which children live is the main factor in the heterogeneity of childhood cultures since "in addition to individual differences, children are distributed in the social structure according to their social class, ethnic group, gender, and culture" (Sarmento & Pinto, 1997, p. 15).

However, Sarmento (2003) warns that it is necessary to consider the universal nature of childhood cultures, which goes beyond the limits of each child's local cultural insertion because, for the author, when interacting, children establish institutional social orders that govern relationships of conflict and cooperation. Thus, to identify the distinctive features of childhood cultures, Sarmento (2003, 2004) proposes a grammar of childhood that is not reduced to linguistic elements but refers to rites, artifacts, ceremonial provisions, norms, and values.

Detailing the generating principles and rules of childhood cultures, according to Sarmento (2004), is a theoretical and epistemological task that has yet to be carried out, a scientific effort that must follow the four structuring axes of childhood cultures: interactivity, fantasy of the real, reiteration, and ludicity.

In this analysis proposal, we understand that the appropriation of numeracy practices is part of the grammar of childhood cultures (Sarmento, 2003, 2004). Therefore, we seek to understand how children appropriate such practices and identify marks of this grammar in the interlocutory games they establish. In this search, we are guided by those four structuring axes that compose the grammar of childhood cultures highlighted by Sarmento (2003, 2004), wanting to find marks of this grammar in action patterns, in ways of playing and manipulating the materials offered, in recurring or unusual ways of arguing, in the elaboration of plots, in

---

[7] Sarmento (2003, 2004, 2005, 2008, 2011), Sarmento and Pinto (1997), and Corsaro (2009, 2011).

children's rhetorical resources, and in the gestures that shape their participation in discursive games. These brands that we identify in *numeracy events* indicate more than mastery of mathematical skills: they suggest the appropriation of cultural practices –which we call *numeracy practices*– forged within a society marked by the valorization of quantifications, metrics, and classifications, which thus parameterize the relationships between people, social groups, institutions, and nature.

What we take here as *numeracy events* refers, once again, to work in the field of literacy referred to as *new literacy studies* or, as they have been called more recently, *literacy as social practices* (Yasukawa et al., 2018).

Marinho (2010) states that many studies carried out by the current then-called *new literacy studies* used the concepts of *literacy practices* and *literacy events*. While a *literacy event* described a situation of interaction mediated by written text, the concept of *literacy practices* was used to establish relationships between those events and something broader in a social and cultural dimension. Literacy practices, therefore, included "the social models of literacy used by participants and the meanings attributed to literacy events" (Marinho, 2010, p. 78). Therefore, these studies consider literacy as a social practice and not as a set of neutral technical skills. For the author, "this practice is supported by socially constructed epistemological principles" (p. 78).

From this perspective, we take as *numeracy events* interaction situations mediated by ideas, representations, arguments, or criteria that we associate with what we culturally identify as mathematical knowledge. We intend to identify children's actions in the constitution and tensioning of these mediations in *numeracy events* and analyze them as *appropriation of numeracy practices*.

To support this discussion, we selected a numeracy event woven into the plot of a sociodramatic play in which children act between reality and the fantasy of the real, between being a child and being an adult. This event helps us reflect in a unique way on two of the axes of the grammar of childhood cultures highlighted in Sarmento's propositions (2003, 2004): the fantasy of the real and reiteration.

The world of make-believe is a constituent of the construction of the child's worldview and their attribution of meaning to things. Sarmento (2004), however, confronts the expression *make-believe*, which he considers inadequate to indicate the specific way in which children transpose the immediate reality and reconstruct it creatively through the imagination. The reality-fantasy dichotomy is quite fragile to represent the relationship process between these two universes that, in children's cultures, are associated given that, in these cultures, the process

of imagining reality is the foundation of how children understand the world. This imaginary transformation of situations, people, objects, and events is the basis for the constitution of the specificity of children's worlds and is a central element of children's capacity for resistance when faced with painful or degrading situations. The fantasy of the real is procedural and allows the game of life to continue under conditions that are acceptable to the child.

Reiteration concerns the specificities of the child's time: non-linear, recursive, continually reinvested with new possibilities, a time without measure, capable of being restarted and repeated. In this sense, "time moves from chronological reality to the deferred temporality of the imaginary situation" (Sarmento 2003, p. 13) and vice versa. Thus, the recursive time of childhood is expressed on the synchronic plane, related to the continuous recreation of the same situations and routines, and on the diachronic plane, which refers to the transmission of games, play, and rituals from older children to younger children, continuously and incessantly, allowing the entire childhood to reinvent and recreate itself, starting all over again.

When contemplating the fantasy of the real and reiteration in the investigation of children's appropriation of numeracy practices, we highlight the quantitative argument as fundamental for the negotiation and progress of the plot that they weave in the event we focus on: in a certain way, this argument, conveyed in the statements in which they seek to establish the ages they would assume in the game, is configured as the parameter of their plot, establishing criteria for the characterization of the subjects of the sociodramatic scene and supporting the possibilities and prohibitions granted to their characters. Gestures take on centrality as a form of expression of quantitative references, decisive for operationalizing the discursive dispute and the positions that children assume in it, sometimes as colleagues, sometimes as daughter, son, mother, and father in the scene.

About the event

On the morning of October 18, 2018, the teacher proposed an activity in diverse work groups to her class. Under the teacher's guidance, about seven children[8] painted with colored glue, each on a cardboard plate, which would later become a tambourine. The other seven children played with a construction toy, sitting around two joined tables. The toys were placed on the tables, and as the children finished painting their plates, they switched seats with the

---

[8] The video does not capture all the children involved.

others playing with building items. When the first children[9] had just finished painting, the teacher placed a few more construction toys on the floor and indicated where they could play.

Amanda[10] (4 years and 4 months old) played alone on the floor for a long time, while Gabriela[11] (4 years and 5 months old) played at the table with other classmates. Paulo[12] (3 years and 8 months old) wandered around the tables and sometimes played with one classmate, sometimes with another. After 16 minutes of filming, the three gathered to play on the floor. Amanda had built a wind musical instrument with some parts and showed the other two children how to use the instrument.

Playing with construction toys becomes an intermediary for sociodramatic play in this situation. According to Corsaro (2002), sociodramatic play is defined as playing in which children collaboratively produce make-believe activities related to their real-life experiences, such as family and occupational routines, as opposed to fantasy games based on fictional narratives. The author gives special emphasis to sociodramatic play by proposing the analysis of this moment as an activity or routine that is most valued in the production, organization, and maintenance of peer culture, that is, the set of activities, routines, artifacts, values, and interests that children produce and share in interaction with their peers (Corsaro 2009, 2011). Children's production of peer culture is not a matter of simple imitation, as they creatively learn information from the adult world to produce their own unique cultures.

On that day, the play plot caught our attention because it involved a staging of a family routine (of arguments) in which the children, playing the roles of mother, father, and daughter, moved between reality and imagination, pragmatically negotiating, structuring, explaining, obeying, or transgressing rules in the flow of interactions. Borba (2009) states that,

> Like other forms of play, role-playing is a construction of meanings, reproduction, and creation of culture children share. In this sense, it actively contributes to the constitution of children's cultures since it allows them not only to reinterpret adult models and elements of the broader culture transmitted to them but also to create a shared set of rules, knowledge, ways of being, thinking, acting, interpreting the world, and relating to peers that identifies them as a specific social and cultural group and that allows them to live the experience of being a child, being present –not just an adult project, not just what is expected from them (p.113).

---

[9] The children's names are fictitious to protect their identity.
[10] She joined the EMEI in December 2014.
[11] She joined the EMEI in January 2015.
[12] He joined the EMEI in May 2016.

Because they involve the interpretation and reinterpretation of adult models and cultural elements, role-playings also provide opportunities for the appropriation of numeracy practices since the social groups that serve as their cultural reference are part of a quanticratic society, in such a way that the relations of quantification, ordering, metrics, and geometry structure ways of being, thinking, acting, relating, and interpreting the world of these groups. However, this appropriation is not configured as mere reproduction but as a specific mode of production and negotiation of meanings that structure play and how children participate.

Below, we will present the transcription of the interactions that make up this event to allow us to follow the scene that inspires our analysis. This transcription was based on Ochs (1979). We sought to contemplate verbal and non-verbal aspects of the participants' utterances in the same way and with the same emphasis. In this way, the formatting we give to the text aims to translate and express the children's speech more faithfully, placing verbal and non-verbal aspects on the same level. According to Ochs (1979), verbal meanings are used with non-verbal meanings during the conversation process, and together they express children's communicative intentions.

Neves (2010) and Dias and Gomes (2015) state that in the presentation of the transcription, we demarcate the "message units"[13] (Gumperz, 1982), not subjecting speech to the grammatical forms of writing. The use of signs in the transcriptions is based on Neves (2010) and Marcuschi (2000), as indicated in Table 1 below:

---

[13] "This means that the minimum unit encoded in the message system produced by and in social interactions was transcribed. The message unit, therefore, is the smallest unit of conversational meaning produced by speakers. Each message unit is defined by its origin, form, purpose, level of understanding, and connections with the others. The boundary of a message unit is linguistically marked by contextualization clues (Gumperz, 1982), which can define a message or an event that one wants to analyze" (Dias & Gomes, 2015, p. 192).

Table 1.

Transcription signals (Prepared by the authors, based on Neves (2010) and Marcuschi (2000))

Occurrences	Signals
Message units	/
Vowel or consonant lengthening	:::
Syllabication	-
Interrogation	?
Overlapping of voices	[
Emphatic intonation	uppercase
Pauses	... or marking the pause time in seconds (5s)
Doubts and assumptions	(inaudible)
Hypotheses of what was heard	(hypothesis)
Actions (analyst comments)	(( ))

"I'm not a child, I'm an adult"

October 18, 2018, in the morning. The teacher proposed an activity in diverse groups. In one of the groups, Amanda, Gabriela, and Paulo engage in a game in which they play roles (father, mother, and daughter), culminating in a conflict over how they express their ages, both as children and as the characters they assume.

Table 2.

Event transcript: "I'm not a child, I'm an adult" - Figures 1 to 9

Children's gestures during interaction

Time	Interaction between children		10/18
	Children	Speeches and actions	Notes
	Amanda	NA/ NA / NA / ((she moves her fingers as if playing a recorder))	
16:44	Gabriela	I want to play/ ((Gabriela takes Amanda's instrument))	
16:46	Amanda	I play / I PLAY /wait, Gabriela… ((They both hold the toy at the same time. When they pick it up together, some of the construction pieces come loose. Amanda puts the construction on the floor and starts putting it back together.))	
16:57	Gabriela	the flute... ((while looking at Amanda tidying up the construction))	.
16:59	Paulo	(inaudible)	
17:01	Amanda	((answering Paulo)) I made it... ((puts the musical instrument in Gabriela's mouth who pretends to blow)) dah dah dah / dah dah ((imitating the sound of the instrument))	

Time	Interaction between children		10/18
	Children	**Speeches and actions**	**Notes**
17:13	Gabriela	((picks up some blocks from the floor)) I'm going to make a flute for myself/ ((picks up the blocks and pretends to blow while Amanda completes the assembly of her musical instrument and places it in the corner))	
17:26	Gabriela	I'm going to cut here ((takes two blocks from the flute and turns one into a knife and the other into an object to be cut)) I'm cutting with this KNIFE ((speaks looking at Amanda))	
17:31	Amanda	ok... ((speaks softly))	
17:32	Gabriela	look/I'm cutting with his knife ((again, she looks at Amanda as if expecting a reaction))	
17:33	Amanda	((takes the knife and gives it to Paulo and takes another piece of the toy and gives it to Gabriela)) this HERE is your knife/	
17:40	Gabriela	I want mine/	
17:43	Amanda	your knife is a toy/ daughter/I'm not a child I'm an adult ((while moving the toy pieces, looking for some to assemble something new))	
17:48	Gabriela	this here is my knife/ ((throws the piece that Amanda passed to her into the pile of pieces, picks up another of her choice and starts the movement as if she were cutting a piece of the toy))	
17:49	Paulo	daddy is also an adult/ right?	
17:52	Amanda	((she nods))	
17:53	Gabriela	I'm an adult too/ ((raises her head to speak to Paulo while cutting a piece with the new knife))	
17:55	Paulo	((speaking to Amanda)) Is she an adult? ((refering to Gabriela))	
17:56	Amanda	((shakes her head in negative)) she is a CHIL:::D	
18:00	Gabriela	but I am/but I am/I am five years old	
18:04	Amanda	NO/ you (inaudible) without seeing adult stuff	
18:11	Gabriela	I'm five years old/ ((looking at Amanda))	
18:13	Amanda	no/ you can't see any adult thing/	
18:17	Gabriela	I'm five years old/	
18:19	Amanda	no/ you are THREE years old	
18:21	Gabriela	mommy /how old are you?	

Time	Interaction between children		10/18
	Children	Speeches and actions	Notes
18:23	Amanda	((looks as if impatient and show the right hand with the four fingers up))
Figure 1
18:26	Paulo	daddy has ((shows his right hand with three fingers raised)) this/ ((reinforces, bringing his hand in front of Gabriela's face))
Figure 2
18:29	Amanda	and I have/ this ((shows hand with four fingers raised))
Figure 3
18:31	Gabriela	and I have this/ ((shows hand with five extended fingers))
Figure 4 |

Time	Children	Speeches and actions	Notes
18:31	Amanda	no, you don't/ ((takes Gabriela's hand that was holding the toy, takes the toy away, moves her fingers, trying to extend her fingers to show a number. Since she can't, she shows it with her own hand with three fingers extended)) you have this/ ((shows her own hand with three fingers extended))	**Figure 5**
18:40	Paulo	but she has this/ right? ((shows Amanda his hand with only the index finger extended))	**Figure 6**
18:41	Amanda	wait/let me show you how many you have/ ((takes Gabriela's hand, which has five fingers extended, and bends her colleague's little finger, ring finger, and thumb))	**Figure 7**
18:49	Gabriela	but I want to have it like this/ ((shows hand with five fingers))	**Figure 8**
18:50	Amanda	NO/ only two / ((retakes the colleague's hand and places it with the index and middle fingers extended)) if you are not two years old, I am no longer your friend /	**Figure 9**

Time	Interaction between children		10/18
	Children	Speeches and actions	Notes
18:57	Paulo	((interrupts the girls' discussion)) this knife here /is for cutting chicken/ ((holds a piece and places it between the two girls, who are sitting in front of him. It is the same piece that was taken as the adult knife in the previous situation))	
19:03	Amanda	okay ((speaks softly and looks down))	
	Paulo	this knife is for cutting chicken/	
19:09	Gabriela	chicken is not for cutting/((she was looking down at her fingers and looked up at Paulo))	
19:11	Paulo	daddy has chicken to cut/	
19:16	Amanda	he dares to cut the chicken/	
19:20	Gabriela	I have a chicken to... I have a chicken to:::sing like this/sing like this CO CK A DOO DLE DOO / when the rooster sang CO CK A DOO DLE DOO CO CK A DOO DLE DOO I did like this ((covers her ears with her hands))	
19:33	Amanda	you don't have any chicken/ you (inaudible)	
19:39	Paulo	I'm going over there to cut the chicken / there ((takes the knife in his hand, gets up and leaves))	Paulo's gesture, especially the way he holds the "knife," reproduces the gesture of someone who really intends to use it.
19:40	Amanda Gabriela	((they play with the pieces without talking))	
19:46	Paulo	((comes back with the knife in one hand and the other as if he were holding the chicken and offers it to Amanda))	
19:47	Gabriela	chicken/to *eat?*/	
19:49	Paulo	it is make-believe/	
19:50	Gabriela	to eat?	
19:52	Paulo	just take the bone out/throw it away ((explains, making circular gestures with his hand))	
19:55	Amanda	how do you know/Paulo?	
19:58	Paulo	((makes movement as if cutting the chicken)) chi/chi/ ((makes a soft noise))	
20:00	Amanda	how do you know/Paulo? /your father taught you/ right?	
20:07	Paulo	((smiles)) no/I'm good at cutting/oranges... I know how to cut EVERYTHING/	
20:17	Amanda	cut e:::verything... you're still a child/Paulo/	
20:20	Gabriela	no/ he is the daddy/	
20:24	Amanda	((looks at Gabriela and seems impatient)) he's a real child/not daddy/	
20:29	Gabriela	no/he's a make-believe father	
20:33	Amanda	it's...	

Time	Interaction between children		10/18
	Children	Speeches and actions	Notes
20:35	Teacher	Elis looks fancy/ look at that/ it looks like mine ((appreciating the painting of the tambourine by one of the children in the painting group))	The teacher cannot be seen in the video. We just listen to her voice.
20:43	Amanda Pedro Gabriela	((they go out to see their colleague's painting))	

The event begins with Amanda building a musical instrument, which brings Gabriela closer, who wants to play the instrument. As the *owner* of the instrument, Amanda claims its use; Gabriela then tries to build her own. As she is unsuccessful, Gabriela continues with the construction action, however, she modifies the shape of the instrument by deciding to blow two loose pieces as if they were forming a harmonica –although the instrument mentioned by Gabriela is a flute. Then, she releases one of the pieces and starts using and naming the other as a knife (*"I'm going to cut here"*; *"I'm cutting with this KNIFE"*), as if challenging her colleague to take action in the face of the risky action she is taking: cutting with a KNIFE.

Initially, Amanda does not seem to feel teased. However, Gabriela's insistence and the revelation that she was cutting with her colleague's knife makes Amanda engage in the proposal and establish the roles each colleague will assume in the game, even if in response to the provocation. It is worth mentioning that Amanda often took the leading role in the games she participated.

Amanda's engagement is expressed by taking the knife from Gabriela's hand and handing it to Paulo, giving her colleague another piece to be her knife. Gabriela's reaction by claiming her knife is what triggers Amanda's explanation of each participant's roles: *"your knife is a toy/ daughter/I'm not a child, I'm an adult."*

Gabriela takes the cue and assumes the role of the rebellious daughter, rejecting the *make-believe* knife that her mum had given her and choosing another piece that would be her knife (and that cuts!). Paulo takes on the father's role, confirming with Amanda the adulthood of his character, who was even entrusted with the custody of the knife that was not *a toy*: *"daddy is an adult too/ right?"*

Gabriela (or her character) then began to claim adult status (*"I'm an adult, too"*), which was challenged by Paulo's question to Amanda (*"is she an adult?"*) and by Amanda's emphatic answer to Paulo (*"she is a CHI:::LD"*).

At that moment, Gabriela introduces into the interlocution game a new criterion for evaluating who is an adult: *"but I am/but I am/I am five years old."*

Amanda insists on using the categorization criterion for what is forbidden to children: Gabriela is a child because she "*can't see adult stuff.*"

However, the strength of the argument reiterated by Gabriela (*"I am five years old/"*) impelled Amanda to start operating with the same criteria: *"no/ you are THREE years old."*

The possibility that Gabriela would be 3 years old (although she was already 4) does not allow us to risk interpreting Amanda's statement as a reference to the child's actual age. Moreover, Gabriela's following statement makes explicit the fantasy context of the real in which they still operate: *"mommy/ how old are you?"*

Based on this question, the children take turns in eight statements in which the numbers referring to their ages are used as arguments but are not verbalized, only indicated with gestures. However, this gestural explanation of numbers follows a cultural pattern that defines which fingers will be extended and which will be retracted.

Amanda returns to the verbal explanation of the *daughter*'s age (without, however, dispensing with the action of forcing Gabriela to show the age she attributes to her with her own hand) when she tries to present an argument that puts an end to the discussion, with no alternative to reply: "*NO/ only two /*((retakes the colleague's hand and places it in with the index and middle fingers extended)) *if you are not two years old, I am no longer your friend.*"

Paulo redirects the plot to the adult's duties (which, consequently, establishes what is forbidden to children): having a knife to cut chicken, having chicken to cut, cutting it, bringing chicken to eat, teaching how to eat chicken...

Paulo's expertise impresses Amanda and makes her bring the interaction to life: *"How do you know it/Paulo? /your father taught you/ right?* As Paulo answers by boasting about being good and knowing how to cut *"EVERYTHING,"* Amanda, once again, calls him to reality,

doubting the generality of his skill, unlikely for a child, which Paulo indeed is: *"cut every:thing... you're still a child/Paulo/."*

The following exchange between Gabriela and Amanda does not reveal a dispute over Paulo's condition but rather over the definition of the context that would establish the communication protocols to be adopted: those of reality or those of fantasy (*"no/ he is daddy/"; "he is a real child/not daddy/"; "ho/ he is a make-believe daddy"; "He is..."*).

Fantasy of the real, reiteration, and numeracy practices

In this event, we observed that children's sharing of times, actions, representations, and emotions is configured as an instrument and repertoire in the chain of the symbolic game of meaning and understanding of the world. The event helps us reflect on the fantasy of the real, composing the grammar of childhood cultures (Sarmento, 2003), which has the interactive nature of play as one of its foundational elements. The symbolic game that this nature provides would be the very expression of the playful culture of childhood (Brougère, 1998), which Sarmento (2004) associates with the fantasy of the real.

Even though the children's roles in the scene were defined at the beginning of the game, as Borba (2009) indicated, they are continually renegotiated in interactions according to the meanings being produced and shared. In this event, the quantitative argument is fundamental to the negotiation and progress of the plot, and, somehow, it becomes the game plot. Although other classification criteria are used to characterize Gabriela's condition as a child (in make-believe) and Amanda and Paulo's condition as adults (in make-believe) (only adults use *real knives* that *actually cut*; children have *toy knives*; adults see *adult things* that children cannot see), the discussion of ages draws the children into a heated debate, with a large number of turns, involving gestures of explicitly rhetorical intention and action on the other's body.

When the discussion about being an adult and being a child is measured and established as a discussion about the ages that each one has (in fantasy), numeracy practices conform to the election of the quantitative argument to define who assumes the condition –and the powers and restrictions– of an adult or a child.

In effect, the *daughter* who challenges the *parents* by insisting on using a *knife* that *really cuts* does not accept her condition as a child and begins to justify her condition as an adult, declaring that she is 5 years old. The real ages of those children were, at the time, 4 years and 6 months (Gabriela), 4 years and 5 months (Amanda), and 3 years and 9 months (Paulo).

Amanda also argues twice that her daughter is a child and that she would be prevented from *"seeing adult stuff;"* but faced with Gabriela's (or her daughter's) insistence, she begins to discuss in the same terms and assigns an age to her daughter: *"no/ you are THREE years old."* The direction the interaction takes at this moment is crucial for our analysis of how the plot is produced in the fantasy of the real and how this production involves the appropriation of numeracy practices.

Gabriela's inquiry (*"mommy/ how old are you?"*) shows that it is about the *daughter* questioning the *mother*. However, the *mother's* answer goes against adult logic when considering plausible ages (in the real world) to be attributed to two people who would be mother and daughter. Furthermore, it makes a modal transition of the language used to express the numbers that designate ages, moving from words to gestures and inaugurating a new phase in the discussion, in which gestures replace the verbalization of the numbers that express ages, for emphasis and clarification, as is commonly observed in children's communication –and, it is somehow only practical, convenient, and economical (Caraça, 1998) in the expression of children's ages.

The dramatization of impatience in Amanda's facial expression, accompanied by her displaying her age (four years-old) with her hand without uttering any words, suggests that she still responds as *the mother*. However, as Sarmento (2005) warns us, this lack of complete submission to the age chronology of reality, establishing a change in formal logic, "does not mean that children have illogical thinking" (p. 375). The author, referring to Harris's study (2002), observes that this change,

> being evident in the discursive organization of childhood cultures (especially concerning symbolic play), coexists with a logical-formal organization of discourse, which allows the child to simultaneously "navigate between two worlds" –the real and the imaginary– exploring their contradictions and possibilities (Sarmento, 2005, p. 375).

In effect, although the ages of five years (claimed by the daughter to say she is an adult), four years (answered impatiently by the mother), and three years (informed by the father) are not, in the real world, adult ages, the concern with order (adults being older than the child) indicates the appropriation of a logical-formal organization of social life, so Amanda and Paulo argue, reacting vehemently to the daughter's (or Gabriela's) insistence on being five years old. This vehemence is manifested in Paulo's minimization of his daughter's age when he establishes with the gesture that she is only one year old; in Amanda's physical action that interferes with her colleague's gesture, trying to force her to show three fingers and then two (to appear younger than her father) to identify her age; and, even more, in Amanda's blackmail, which, moving into reality, calls upon and threatens the relationship between friends (abandoning the fantasy of the mother-daughter relationship) if Gabriela does not agree to pretend to be the two-year-old daughter –an age that, in this statement, is once again expressed verbally.

In this sense, it is interesting to note that, in the interlocution game, Amanda and Paulo, playing adults, and Gabriela, playing a child who wants to be an adult, use a way of expressing age that is typical of children's ways of communicating – showing their age with their fingers. However, when Amanda reassumes her childlike condition, she emerges from the fantasy and verbalizes how old her colleague must be in the scene. This apparent contradiction alerts us to how subtle and dynamic the transition between reality and fantasy is: the multiple transitions we pointed out in our analysis, and others that a careful reading of the transcript may still indicate, occur in four minutes of recording. The subtlety and dynamism of these transitions, which our analysis allows us to observe when we focus on the appropriation of numeracy practices shaped by the mobilization of a quantitative argument in the definition of who would be an adult or a child, are, however, characteristics of the grammar of childhood cultures.

In children's cultures, imagining reality underpins the mode of intelligibility. Non-literality –for example, the mother and father are necessarily older than the child, but they do not need to be of an age that would allow them to be biologically a child's parent– is at the basis of the composition of the specificity of the child's worlds and has its complement in temporal non-linearity, which Sarmento (2003, 2004) designates *iteration*, and then identifies it as

another structuring axis of the grammar of childhood cultures, calling it *reiteration*. This non-linearity allows the child's time to shift from chronological reality to the deferred temporality of the imaginary situation.

> A child's time is recursive, continually reinvested with new possibilities, a time without measure, capable of being always restarted and repeated. ... In flows, action routines are structured and restructured, communication protocols are established, ritualized rules of games and play are reinforced, and interaction skills are acquired: small secrets are exchanged, encrypted signals of group life are decoded, and pacts are established. And an inhabited time is reinvented according to these routines and these needs for interaction, a continuous time where it is possible to find the link between the repeated past of play and the future of discovery incorporated anew (Sarmento, 2005, p. 17).

Thus, it is by returning to fantasy, right after Amanda's (real) threat to Gabriela, that Paulo takes over the course of the plot and, returning to the element *knife*, takes the instrument in his hand as if he were actually holding a knife, stating that it was a knife to cut chicken. Cutting up the chicken to eat brings up the conversation about issues in the adult's and the children's worlds. In his gestures, Paulo demonstrates that he is reproducing the actions of someone close to him and an everyday scene he has already witnessed. In this case, Paulo's and the other children's speeches and actions demonstrate a recreation interpreted through their own means of expression and exemplify a manifestation of competent social actors.

The transition between reality and fantasy continues in several turns, without the need to explain the worlds to which the statements refer, but showing that children interact knowing in which world it is necessary to seek the rules that they must obey in order to respond coherently to the other's question: *"I'm going to cut the chicken over there"*; *"chicken/to eat?/"*; *"make-believe"*; *"to eat?"*; *"just take the bone out/ throw it away"*; *"how do you know it, Paulo?"*; *"chee/chee/"*; *"how do you know it, Paulo? /your father taught you/ right?* ; *"no/I'm good at cutting/ oranges... I know how to cut EVERYTHING/"*; *"cut every:::thing... you're still a child/Paulo/."*

Gabriela's intervention, however, transgresses the tacit transition agreement between these worlds when, according to Amanda's argument, forged in the real (*"cut every:::thing... you're still a child/Paulo/"*), she interposes an argument referenced in the roles they have in the game (*"no/ he's the daddy/"*). In this discursive dispute, it will be necessary for the girls to explain in which worlds they refer their statements: *"he's a real child/not a daddy/"*; *"no/ he's a make-believe father."*

Conclusion

In this article, we analyzed children's appropriation of numeracy practices in their relationships with their peers as pragmatic, playful, and interactive actions through which they produce meanings, incorporate ideas, experiment with vocabularies, and weave arguments in the composition of their peer culture and childhood cultures. We base our analysis on Sarmento (2003, 2004) and use two of the four axes of the grammar of childhood cultures –the fantasy of the real and reiteration–to understand how Amanda, Paulo, and Gabriela appropriate such practices.

In the event we presented, children engage in a discursive game of comparing the time lived, mediated by the expression of that time in numbers –represented by words and gestures. The hierarchy we want to establish seeks to reference itself in the time lived that would define who is an adult and who is a child; however, the comparison is between measurements (as such, expressed by numbers): ages. In the interaction in which the ages of the characters (father, mother, daughter) are confronted, not only words but mainly gestures play a role that goes beyond denoting the numbers that express the ages: it is a rhetorical resource and the parameter on which the arguments of the interlocutors are based, seeking to clarify (or impose) the value of the measure of the time each one lived, each one's age, as a coherent indicator –because it obeys an order– of the roles that each one assumes in the plot.

It is therefore important to highlight the relevance of numbers and gestured numbers as mediators in children's dialogue, which we identify as a milestone in the specificity of children's actions in the appropriation of social practices, and in particular, in the appropriation of these social practices that we call numeracy practices.

Gestures are a privileged way of expressing discursive positions children assume: in the movement by which the *daughter* shows that she is holding the *knife*, defying a protocol –that children should not use real knives – and the *mother's* authority, which should ensure compliance with this protocol; in the *mother's* gesture to remove the *knife* from the *child's* hand, replacing it with a *harmless* one; in the disobedient abandonment of the *knife* the *mother* gave her, and the insubordinate choice of another *knife*; in *father's* didactic explanation (or the colleague's?), holding *the chicken* and teaching them how to eat it. The gesture is also rhetorical in the expression of the numbers that designate the ages, accompanied by their verbalization, and in the firmness of the action of forcing the other child's gesture and in the careless passivity of allowing oneself to be taught by one's *mother* to express one's age correctly –and thus, admitting that one would be that age, responding to the blackmail not of one's *mother*, but of one's colleague. Gestures, like words, by shaping numeracy practices and being shaped by

them, are configured as eloquent expressions of the fantasy of the real and reiteration that structure the grammar of childhood cultures.

It is under the rule of that specific grammar that children appropriate numeracy practices, reflecting the cultures of their societies but different from adult cultures, producing specifically childish forms of intelligibility, representation, and symbolization of the world (Sarmento, 2004).

References

Borba, A. M. (2009). Quando as crianças brincam de ser adultos: vir-a-ser ou experiência da infância? In J. J. M. Lopes, & M. B. Mello (Orgs.), *"O jeito que nós crianças pensamos sobre certas coisas" dialogando com lógicas infantis*. (1ª Ed., pp. 97-118). Rovelle.

Brougère, G. (1998). A criança e a cultura lúdica. *Revista da Faculdade de Educação*, *24*(2), 103-116. https://doi.org/10.1590/S0102-25551998000200007

Buss-Simão, M. (2014). Pesquisa etnográfica com crianças pequenas: reflexões sobre o papel do pesquisador. *Revista Diálogo Educacional*, *14*(41), 37-59. https://doi.org/10.7213/dialogo.educ.14.041.DS02.

Caraça, B. J. (1998). *Conceitos fundamentais da Matemática* (2ª Ed.), Gradiva.

Corsaro, W. (2002). A reprodução interpretativa no brincar de "faz-de-conta" das crianças. *Educação, Sociedade e Culturas*, *17*, 113-134. 2002. https://www.fpce.up.pt/ciie/revistaesc/ESC17/17-5.pdf

Corsaro, W. (2009). Métodos etnográficos no estudo da cultura de pares e das transições iniciais na vida das crianças. In F. Muller, & A. M. A. Carvalho, (Orgs.), *Teoria e prática na pesquisa com crianças*: *diálogos com William Corsaro* (1ª Ed., pp. 83-103). Cortez.

Corsaro, W. (2011) *Sociologia da Infância*. (2ª Ed.). Artmed.

Dias, M. T. M., & Gomes, M. F. C. (2015). Práticas sociais de leitura em uma sala de aula de jovens e adultos: contrastes em foco. *Educação em Revista*, *31* (2),183-210. https://doi.org/10.1590/0102-4698126598

Green, J; Skukauskaite, A.; Baker, W. D. (2011). Ethnography as epistemology Research Methods and Methodologies in Education, p. 309-321, 2011. https://www.researchgate.net/publication/257927928_Ethnography_as_epistemology_An_introduction_to_educational_ethnography

Grossi, F. C. D. P.; Fonseca, M. C. F. R. (2023). "Da cerveja, cês não quer tirar a validade não?": mulheres idosas alfabetizandas na EJA apropriando-se de práticas matemáticas hegemônicas. *Educação Matemática Pesquisa Revista do Programa de Estudos Pós-Graduados em Educação Matemática*, São Paulo, v. 25, n. 4, p. 390–412, 2023. DOI: 10.23925/1983-3156.2023v25i4p390-412.

Gumperz, J. (1982). *Language and social identity* (5ª Ed.) Cambridge University Press.

Harris, P. (2002). Penser à ce qui aurait pu arriver si. *Enfance, 54*, 223-239. DOI:10.3917/enf.543.0223

Marcuschi, L. A. (2000). *Análise de conversação*. Ática.

Marinho, M. (2010). Letramento: a criação de um neologismo e a construção de um conceito. In M. Marinho, & G. T. Carvalho (Orgs.), *Cultura escrita e letramento* (1ª Ed., pp 68-100.) Editora UFMG.

Martins, A. J., & Barbosa, M. C. S. (2010). Metodologia de pesquisas com crianças. *Reflexão e Ação*, *18*(2), 8-28. https://doi.org/10.17058/rea.v18i2.1496

Neves, V. F. A. (2010). *Tensões contemporâneas no processo de passagem da educação infantil para o Ensino Fundamental.* [Tese de doutoramento publicada]. Faculdade de Educação, Universidade Federal de Minas Gerais. http://hdl.handle.net/1843/BUOS-8FNP4D

Ochs, E. (1979). Transcriptions as theory. In E. Ochs, & B. Schieffelin, *Developmental pragmatics* (1a Ed., pp. 167-182). Academic Press.

Sarmento, M. J. (2003). Imaginário e culturas da infância. *Caderno de Educação*, *12* (21), 51-69. https://doi.org/10.15210/caduc.v0i21.1467

Sarmento, M. J. (2004). As culturas da infância nas encruzilhadas da 2ª modernidade. In M. J. Sarmento, & A. B. Cerisara (Orgs.), *Crianças e miúdos: perspectivas sócio-pedagógicas da infância e educação* (1ª Ed., pp. 09-34). Asa. https://hdl.handle.net/1822/79714

Sarmento, M. J. (2005). Gerações e alteridade: interrogações a partir da sociologia da infância. *Educação e Sociologia, 26*(91), 361-378. https://doi.org/10.1590/S0101-73302005000200003

Sarmento, M. J. (2008). Sociologia da Infância: correntes e confluências. In M. J. Sarmento, & M. C. S. Gouvea (Orgs.), *Estudos da infância: educação e práticas sociais*. (1ª Ed., pp. 17-39). Vozes. https://hdl.handle.net/1822/66608

Sarmento, M. J. (2011). Conhecer a infância: os desenhos das crianças como produções simbólicas. In A. J. Martins, & P. D. Prado (Orgs.), *Das pesquisas com crianças à complexidade da infância* (1ª ed., pp. 27-60). Autores Associados. https://hdl.handle.net/1822/79684

Sarmento, M. J., & Pinto, M. (1997). As crianças e a infância: definindo conceitos, delimitando o campo. In M. Pinto, & M. J. Sarmento (Orgs.), *As crianças: contextos e identidades* (1ª Ed., pp. 07-30). Universidade do Minho. https://hdl.handle.net/1822/79715

Secretaria Municipal de Educação de Belo Horizonte (2013). *Desafios da formação: proposições curriculares para a Educação Infantil* (vol. 1). SMED.

Secretaria Municipal de Educação de Belo Horizonte (2015). *Desafios da formação: proposições curriculares para a Educação Infantil* (vol. 2). SMED.

Soares, M. (2004). *Letramento: um tema em três gêneros* (1ª Ed.). Autêntica.

Street, B. V. (2014). *Letramentos sociais: abordagens críticas do letramento no desenvolvimento, na etnografia e na educação* (1ª Ed.). Parábola Editorial.

Yasukawa, K., Jackson, K., Kane, P., & Coben, D. (2018). Mapping the terrain of social practice perspectives of numeracy. In K. Yusukawa, A. Rogers, K. Jackson, & B. Street (Orgs.), *Numeracy as social practice: global and local perspectives*. (1a Ed., pp. 03-18). Routledge. https://doi.org/10.4324/9781315269474