Activity Contexts and Child-Directed Speech in Socioeconomically Diverse Argentinian Households

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Abstract

This study examines the quantity and quality of child-directed speech across household activities in a socioeconomically diverse sample of Argentinian Spanish-speaking children, an understudied population. Thirty children (mean: 14.3 months) and their families were audio-recorded for four hours. The middle two hours were transcribed and analysed using computerised language analysis (CLAN) to: (a) calculate lexical quantity (tokens) lexical diversity (VOCD) and syntactic complexity (MLU); (b) identify nouns and verbs. The procedures also involve the coding of regulative versus referential utterances and ongoing activities with defined spatial and temporal boundaries —feeding, play, booksharing, grooming and household chores— as well as calculating the proportion of 21 types of concrete nouns and action verbs. Regression analysis showed effects of SES and type of activity on: (a) the quantity, lexical diversity and syntactic complexity of child-directed speech; (b) the proportion of referential and regulative utterances addressed to the child; (c) certain degree of semantic regularity in word-activity associations; and (d) an effect of SES on a variety of nouns and verbs (e.g. toys; utensils). These results highlight qualitative differences in input across daily activities and the contribution of SES to variance in lexical diversity and word semantics. Results provide evidence needed to inform public policies responsible for the promotion of early childhood language development and education.

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Resumen

Este estudio examina la cantidad y calidad del habla dirigida al niño (HDN) durante las actividades del hogar en una muestra socioeconómicamente diversa de niños argentinos hablantes de español, una población escasamente estudiada. Treinta niños (media: 14,3 meses) y sus familias fueron audio-grabados durante cuatro horas. Las dos horas del medio fueron transcriptas y analizadas usando el Computerised Language Analysis (CLAN) para: (a) calcular la cantidad de palabras (tokens), la diversidad léxica (VOCD) y la complejidad sintáctica (MLU); (b) identificar sustantivos y verbos. Los procedimientos también implicaron la codificación de emisiones regulativas y referenciales y de actividades con límites espaciales y temporales definidos -comida, juego, lectura de cuentos, higiene y domésticas-, así como el cálculo de la proporción de 21 tipos de sustantivos concretos y verbos de acción. El análisis de regresión mostró el efecto del nivel socioeconómico (NSE) y del tipo de actividad en: a) la cantidad de palabras, la diversidad léxica y la complejidad sintáctica del HDN; b) la proporción de emisiones referenciales y regulativas dirigidas al niño; (c) cierto grado de regularidad semántica en las asociaciones palabra-actividad; (d) un efecto de NSE en una variedad de sustantivos y verbos (por ejemplo, juguetes; utensilios). Estos resultados destacan diferencias cualitativas entre las actividades en el HDN y la contribución del NSE a la varianza en la diversidad léxica y la especificidad semántica. Los resultados proporcionan evidencia necesaria para informar las políticas públicas responsables de la promoción del desarrollo lingüístico infantil temprano y la educación

Résumé

Cette étude examine la quantité et la qualité du langage adressé à l'enfant (LAE) à travers les activités ménagères dans un échantillon socio-économique (NSE) diversifié d'enfants hispanophones argentins, une population sousétudiée. Trente enfants (moyenne: 14,3 mois) et leurs familles ont été enregistrés pendant quatre heures. Les deux heures intermédiaires ont été transcrites et analysées avec le logiciel CLAN (Computerised Language Analysis) pour: (a) calculer la quantité lexicale (token), la diversité lexicale (VOCD) et complexité syntaxique (MLU); (b) identifier les noms et les verbes. Les procédures impliquent le codage des énoncés régulateurs ou énoncés référentiels et desctivités avec des limites spatiales et temporelles définies -alimentation, jeu, partage de livres, toilettage et tâches ménagères- en cours, ainsi que le calcul de la proportion de 21 types de noms concrets et de verbes d'action. L'analyse de régression a montré les effets du NSE et du type d'activité sur: a) la quantité, la diversité lexicale et la complexité syntaxique du langage adressé à l'enfant (LAE); b) la proportion d'énoncés référentiels et régulateurs adressés à l'enfant; (c) un certain degré de régularité sémantique dans lesassociations mot-activité; (d) un effet du NSE sur une variété de noms et de verbes (par exemple, jouets ; ustensiles). Ces résultats mettent en évidence des différences qualitatives dans les entrées entre les activités quotidiennes et la

contribution du NSE à la variance de la diversité lexicale et de la sémantique des mots. Les résultats fournissent les preuves nécessaires pour éclairer les politiques publiques responsables de la promotion du développement et de l'éducation du langage chez les petites enfances.

Introduction

Decades of research have provided ample evidence of the contribution of early language exposure to children's vocabulary trajectories (for reviews, see Pace et al., 2017; Rowe & Snow, 2020). The literature in this subject highlights significant variations across individual households and socioeconomic and cultural groups in the quantity and quality of the linguistic input to which children have access and leads to the question as to whether and how specific characteristics of the childrearing contexts in diverse groups shape children's early linguistic input (e.g. Stein et al., 2021; Casillas et al., 2017; Fernald et al., 2013; Hart & Risley, 1995; Hoff, 2003; Pace et al., 2017; Rowe, 2008).

Nelson's (2007) and Bruner´s (1985) account of language and cognitive development, explain how the social, spatial, temporal and linguistic dimensions of households' everyday activities structure the interactional rearing context in which children experience language. Contemporary quasi-experimental studies in the laboratory or in children's households have provided new evidence that the quantitative and qualitative properties of child-directed speech (CDS) vary considerably as a function of certain contextual characteristics, such as the type and structure of the activities, the objects used or the participants involved (e.g. Altınkamış et al., 2014; Hoff-Guinsberg, 1991; Weizman & Snow, 2001). However, in order to explain children's early vocabulary composition, it is necessary to examine life in the households as everyday activities offer clues that pave children's access to word meanings (Tamis-LeMonda et al., 2019).

Recently, naturalistic studies have started to devote attention to the way words texture the household activities in which children are embedded (Bang et al., 2020; Glas et al., 2018; Roy et al., 2015; Söderström & Wittebolle, 2013; Tamis-LeMonda et al., 2019). Only a few of these studies have focussed on toddlers' daily activities in non-Central European cultures or non-English speaking communities (Bang et al., 2020; Glas et al., 2018). However, none of them have explored whether and how socioeconomic status (SES) disparities impact the language in household activities. Here, we address this gap in research with a naturalistic study of the at-home early language experiences in a sample of socio-economically diverse Argentinian toddlers. Currently, Argentina has a fragmented social structure, with considerable variation in housing, occupation and education (Rubio & Salvia, 2019), which determines markedly different living conditions for children growing up in urban populations. In this study, we aim to examine if (and in what way) these macrosocial disparities are reflected in the language to which children are exposed in their daily life inasmuch as this speech constitutes a source for their language development.

In what follows, we first review the studies that examine the properties of CDS across activities; then, we turn to the research that justifies looking into toddlers'

at-home everyday activities and to that focussed on SES differences. Finally, we present the specific objectives and questions to be addressed in this study.

Quality and Quantity of Child-Directed Speech

A wide-ranging pool of studies has examined the characteristics of CDS across activities. Mostly through quasi-experimental designs in the laboratory or semi-naturalistic elicited at-home situations, they showed differences in the language that texture the sequence of actions and objects embedded in these activities. These studies have focussed predominantly on the amount of CDS, the general characteristics of the quality (lexical or vocabulary diversity, syntactic complexity, proportion of different types of nouns or verbs) and the pragmatic or communicative function of the utterances of the primary caregiver, generally the mother. They scarcely considered the semantics of CDS, that is, the specific content of the words addressed to the child.

These studies focussing on booksharing, play with toys, and other activities involving objects specifically designed for children (very frequent in some cultural contexts and completely absent from others) revealed that mealtime and play contain less speech than getting dressed and booksharing (Hoff-Ginseberg, 1991) and that the speech in mealtimes was particularly lexically diverse (Weizman & Snow, 2001). They also showed that booksharing events were characterised by a greater lexical diversity, more referential language and syntactic complexity than play, mealtime and dressing. The higher frequency of nouns during booksharing than play events and the verb predominance in the latter has been systematically recorded (Altınkamış et al., 2014; Rosemberg et al., 2020).

Children's Linguistic Experiences in At-home, Everyday Activities

The child-centred socially structured activities such as booksharing and toy play, which have been the focus of the previous quasi-experimental and semi-naturalistic studies, are not equally frequent in children's life (Bradley & Corwin, 2002). They may not even be at all part of the activity systems in which children from some cultural and social groups participate (e.g. Heath, 1983). These contexts, clearly delimited in time and space, are likely to elicit high levels of shared attention, talk about objects, and specific language forms such as nouns. In turn, most activities in everyday life flow naturally and overlap frequently, without precisely defined limits. Language input in quasi-experimental play contexts tends to be consistently dense, whereas language in naturalistic routines, interspersed with silence, shows fluctuations (Bergelson et al., 2019). Thus, quasi-experimental conditions might have obscured children's natural linguistic experiences and hampered our understanding of how CDS is related to children's early vocabulary composition.

Indeed, further research in a naturalistic vein provided a more nuanced description of children's linguistic experience. It showed that variability in the quantity and quality of CDS during booksharing and play is lower than in less engaging activities

such as dressing and meals (Bang et al., 2020; Söderström & Witterbole, 2013). It has also provided evidence that some words are more frequently addressed to toddlers in specific contexts, producing a certain degree of semantic regularity in the words in CDS. Thus, children can leverage the contextual cues to infer word meanings (Roy et al., 2015; Tamis-LeMonda et al., 2019).

The single-child-study of Roy et al. (2015) revealed that the distribution of words across three dimensions of the context —the physical location where they are produced, the time of day when they are spoken, and the other words surrounding them in conversation— contributes to explain the age of acquisition of the words. Those, frequently common nouns and verbs, occurring in specific activities (e.g. meals, playtime) showed more distinct spatial, temporal, and linguistic distributions and are learnt earlier than other words, for example, adjectives or functional words, which have a more diffuse pattern of occurrence. This main finding, consistent with Bruner and Nelson's theories, indicates that routine activities may be helpful for vocabulary learning.

To what extent is CDS meaningfully structured around the activities of everyday life? The analysis of Tamis-LeMonda et al. (2019) of a corpus of 60,000 words, collected through naturalistic video-recordings of 40 toddlers and their mothers during at-home situations, documents the degree of context-specificity in the semantics of CDS across household activities; that is, the precise words that children hear during each type of activity. Their findings showed that activity-bound words comprised around 30%, which stands out over a background of 70% of variable words. As argued by the authors, the latter may highlight the common, consistently repeated, words in specific activities, facilitating their learning. It should be noted that these findings were based on an homogeneous middle-income sample of North American children interacting only with their highly educated mothers. Given the evidence of SES differences in the type and structure of the at-home activities in which children participate (Vernon-Feagans et al., 2012) it is worth asking whether these SES differences are also reflected in the specific content of the words children hear in CDS.

Socioeconomic Differences in Child-Directed Speech

The quasi-experimental or semi-naturalistic studies that examined the language to which children are exposed in diverse social groups evince SES differences in the quality —syntactic complexity, lexical diversity, and pragmatic properties— of CDS in a variety of activities such as play, mealtimes and dressing. However, booksharings are a remarkable exception in which findings do not show SES differences in the quality of mothers' language (Hoff, 2003; Hoff-Ginsberg, 1991). It should be noted, though, that these laboratory quasi-experimental and/or semi-naturalistic at-home studies do not assure an ecological approach to children's life. Particularly, many of the low SES children studied might not participate daily in interactions such as the ones created by the quasi-experimental conditions.

Moreover, the focus in these studies has generally been restricted to the interaction between the child and their principal caregiver (mainly the mother).

Although the child caregiver dyad model reflects the predominant format of interaction in Caucasian middle and high SES families, extant evidence shows that the practice of talking to the child in dyadic interaction is socioculturally defined (e.g. Duranti et al., 2012) and may not mirror the daily interactions in which many of the low SES children participate. Indeed, naturalistic studies carried out in the households of children from low-SES groups in North America (Sperry et al., 2019) and Argentina et al., 2021b) revealed that multiple caregivers, overheard speech (OHS) and bystander talk contribute to the definition of verbal environments. Differently from middle-SES households, those from low-SES consist of large families in which everyday activities are not frequently centred on children (Rogoff, 2003), who usually have less access to toys and other child-specific objects (Bradley & Corwin, 2002). Children share activities with peers and adults and input may, to a greater degree, stem from multi-speaker interaction (Alam et al., 2021; Sperry et al., 2019).

As Rowe and Weisleder (2020) point out, small variations in the conversational interactions in the microcontext of the activities in which children are embedded could imply variations in the language addressed to them and their verbal engagement, and therefore in their opportunities for language development. For example, in a study of middle and low SES families in Argentina, the types of activities in which children were engaged helped explain SES differences in the proportion of entity- versus action-oriented utterances, as well as in the ratio of nouns and verbs in CDS (Rosemberg et al., 2020). Thus, the activities children participate in may be an important mediator between aspects of the macro-environment, such as SES and culture, and the specific content of the language they hear.

The Current Study

Previous research has shown that sociocultural differences in the activity contexts children experience can substantially impact the characteristics of their language learning environments, particularly the quantity, syntactic complexity, lexical diversity and pragmatic features of CDS (Bang et al., 2020; Hoff-Ginsberg, 1991). The extant evidence regarding the specific words that are addressed to children, that is the semantic content of CDS, across activities is still limited and restricted to well-educated and rich populations in North America (Roy et al., 2015; Tamis-LeMonda et al., 2019). Hence, in order to contribute with additional data that can be compared against previous findings, we examined the characteristics of CDS across household activities in a socioeconomically diverse sample of Argentinian Spanish-speaking children, which is an understudied population. Recent analyses have shown that language acquisition studies in Latin America and in particular in this Argentinian population are very scarce (Evans & García, 2020 Singh et al., in 2022).

Argentina is currently characterised by a fragmented social structure. Official data indicate that in the metropolitan area of Buenos Aires 1,577,240 families, approximately 6,397,509 people, reside in informal settlements, "villas de emergencia"[1] (INDEC, 2020). The urban segregation of these settlements from the middle- and high-income neighbourhoods represents macrosocial level differences that bring place-based SES inequalities in the distribution of educational and recreational resources available to children. Evidence regarding the qualitative and quantitative characteristics of the language addressed to children in daily activities in diverse environments could contribute to understanding the role early experiences and social disparities have in language development. In particular, we analysed the quantity, syntactic complexity, lexical diversity, the pragmatic or communicative function of the utterances (referential versus regulative) and the specific words addressed to this sample of Argentinian children across household activities.

Thus, the present study analyses this Argentinian population to answer the following questions:

(1) Are there differences across SES groups and activities in the quantity, lexical diversity, syntactic complexity and pragmatics (referential versus regulative utterances) of CDS?

(2) Do the specific words in CDS depend on the household activity? Does the semantic content of the words addressed to the children in certain activities differ according to SES groups?

(3) What is the impact of the type of activity and SES in the structural complexity, lexical diversity, pragmatics and semantic specificity of the words of CDS in this understudied population?

Based on previous research, mostly, in populations residing in North America (Bang et al., 2020; Hoff-Ginsberg, 1991; Hoff, 2003; Söderström & Witterbole, 2013; Tamis-LeMonda et al., 2019), we predicted SES and activity will explain differences in the quantity of words, lexical diversity, structural complexity and proportion of referential versus regulative utterances in CDS across activities. According to Tamis-LeMonda et al. (2019), we expect a certain amount of semantic similarity in the content of the specific words in the CDS that characterises the activities in this Argentinian population. Considering the above-mentioned previous findings regarding SES variations in children's linguistic environments, we predicted that the semantic content of the words addressed to the children in certain activities would differ according to SES.

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1 These "*villas de emergencia*" are urban slums that are characterised by precarious housing, which was mostly built from wood and salvaged materials, and insufficient or nonexistent infra− structure and services. Although most of these neighbourhoods are connected to the municipal network for drinking water, they all lack sewers and natural gas connections. In many cases they are illegally connected to the power grid, as the inhabitants do not have the resources to pay for the service. Such neighbourhoods are accessed by narrow dirt− or cement−floored corridors.

Methods

Ethics Statement

This research was carried out following the ethical regulations established by the National Research Council of the researchers' country and was approved and supervised by its committee. Parents provided written informed consent for their participation as well as their children's.

Participants

Thirty Spanish-speaking toddlers (mean age 14.3 months) and their families took part in the study. All of them live in the metropolitan area of Buenos Aires, Argentina. They were selected from an ample longitudinal sample of socioeconomically diverse children. Families from middle SES were reached through social networks, and families from low SES through community centres, community kitchens and daycares where the research team is involved in linguistic and cognitive infant development initiatives (Corpus: Rosemberg et al., 2015). All families were interviewed and answered an oral questionnaire with the following information: the family's place of origin, languages spoken at home, medical antecedents of the target child, household size, relationship between the cohabitants and the target child, birth order of the participating child, adults' levels of education, and the schooling of other children in the family. In Argentina, it is not common nor is it considered appropriate to directly ask for information regarding income; we therefore, instead, gathered information about formal or informal occupations, together with more general information about the ways in which the families made their living, and any kind of welfare they received from the government.

Table 1 Description of participants. Means/N (SD/%) of selected variables in each SES group

	Low SES	Middle SES
Child variables		
Age (months)	15.37 (3.34)	13.81 (4.53)
Gender		
Female	9 (60%)	8 (53.33%)
Male	6 (40%)	7 (46.67%)
Sociodemographic Variables		
Maternal education (years)	9.87 (2.8)	17.06 (3.02)
Place of residence		
Residential neighbourhood	0	15 (100%)
Marginalised urban neighbourhood	15 (100%)	0
N Family members[a]	5.18 (2.50)	2.62 (0.88)

[a]The amount of family members living in the house does not include the focal child

Parents' education and residential place were used as the sample inclusion/exclusion criteria. A toddler and their family were considered as middle SES if: (i) one of the parents had a university degree or similar (e.g. a teaching degree) —that imply in Argentina's educational system at least four years of post-secondary education— and (ii) the family lived in a residential district. Conversely, a family was considered as low SES if: (i) adults had secondary education or less and (ii) lived either in an urban marginalised neighbourhood (a *villa de emergencia)* or in a disadvantaged neighbourhood on the outskirts of the city. (Participants' characteristics, in Table 1). Spanish was the first language of every family and the one used in everyday communication between adults and with the child.

Procedures

Data Collection

During four-hour sessions without the presence of an observer, children wore vests equipped with digital devices in order to audio-record every natural interaction. Families were asked to interact as they normally would. Immediately after, families provided information about the activities carried out and the participants involved in the four-hour session.

Transcription

The second and third of the four-hour sessions were transcribed conforming to the CHAT format (Codes for Human Analysis of Transcripts, MacWhinney, 2000). The sample of 60 h (30 children by 2 h) was segmented into utterances. In order to segment utterances in the same interactional turn, they have to meet two from three criteria: a pause in between longer than 2 s, syntactic completion, and a particular intonation delimiting a question, an exclamation or a declarative utterance (Bernstein Ratner & Brundage, 2015).

To ensure inter-transcriber reliability, research assistants and doctoral students were thoroughly trained on the transcription and utterance segmentation protocols by a senior researcher. The trainees transcribed trial samples for practice and, only after their sample transcriptions matched verified master files, did they start to transcribe the research samples. Thereafter, a senior researcher checked the accuracy of the orthographic transcription and the segmentation into utterances. If discrepancies occurred, with regard to unclear fragments, a third researcher was consulted.

The utterances from all the speakers (except the target child) were coded as CDS or OHS, that is, the speech overheard by the target child, and addressed to other participants, adults or other children. The identification of utterances' addressee was based on (i) their semantic content, (ii) contextual cues, such as the participant's proximity to the target child (inferred from the loudness of their voice in the audio) and (iii) information provided by the families about the participants present in the activities during the session. As with transcription, the coding of addressee was

checked by a senior researcher. For the present study, we analysed the CDS directed to the target child and that was produced by any participant in the activity.

Data Coding, Processing and Analysis

The Coding of Activities

Each child-directed utterance coming from any participant was coded according to the ongoing activities that implied defined spatial and temporal boundaries: meals, play, booksharing, grooming, household chores. Play situations included any organised playful activity that had an inferable objective (e.g. making a bridge with blocks) or pretend play (e.g. having a party), as well as exploratory play with objects, that is, situations in which the child manipulated an object or a toy without being prompted by another participant. Booksharing involved reading stories and observing and/or talking about pictures in books and magazines. Meals encompass any situation in which the child was fed (having breakfast, lunch, dinner or a snack). Taking a bath, getting dressed, changing diapers, washing hands and brushing teeth were categorised as grooming. Cleaning, tidying up the house and cooking were classified as household chores.

If it was not possible to determine what activity was taking place, the segment was excluded from the analysis.

Quantitative and Qualitative Characteristics of Child-Directed Speech

CDS measures of quantity of speech, lexical diversity and syntactic complexity across activities were calculated using CLAN (computerised language analysis) (MacWhinney, 2000). The quantity of CDS was gauged considering the number of words (word tokens) per minute. Vocabulary diversity was estimated through the VOCD measure which controls the total quantity of speech, providing a non-biased estimation of lexical diversity. The mean length of child-directed utterances (MLU) was used as a proxy of syntactic complexity.

Words were broadly defined. We included: (a) conventional expressions commonly used by children as well as adults in conversations with toddlers, instance: *papa* (meal), *noni* (sleep), *pipi* (bird), *miau* (cat), *mema* (bottle) and (b) onomatopoeias. Dialectal phonetic variations were coded according to the standard form across transcripts.

The Coding of the Pragmatic or Communicative Function of Utterances

Each child-directed utterance coming from any participant was coded as referential or regulatory. Referential utterances were commentaries or elicitations about events, objects and actions, *¡Qué linda torre armaste!* (What a nice tower you built!). Regulatory utterances were imperatives or other kinds of directives aimed to guide or organise children's behaviours or elicit their attention, *¡Ponelo acá!* (Put it

there!). Formulaic utterances, *Muy bien* (Very good), *Gracias, bombón* (Thank you, sweetie), songs, *Yo tengo una manito la hago bailar* (I take a little hand out, I make it dance), exclamations *¡Uy!* (Ouch!), greetings, *Hola* (Hello), yes/no responses, and utterances without a clear pragmatic orientation were excluded from the analyses.

Considering the exclusion criteria of the coding processes described both for the pragmatic or communicative function and activities, the analysed sample contained 5653 child-directed utterances from the initial sample of 11,940.

Lexical Measures of child-Directed Speech Across Activities

Nouns and verbs produced by participants (except those produced by the target child) were identified using the MOR tool for Spanish from CLAN. The noun category included only common nouns. The verb category encompassed main physical action verbs. Attention-seeking terms, *Mirá*, (Look) were excluded. Periphrastic verbs, *Tiene que leer* (She has to read), *Está leyendo* (She is reading)*, Fue leído* (It was read), involve two verb forms: a non-finite verb (i.e. infinitives, gerunds and participles) transmitting the main meaning and an auxiliary that contains grammatical information (Real Academia Española, 1983). Through a Python algorithm, the latter were excluded from analysis (Garber, 2019).

Following Tamis-LeMonda et al. (2019), in order to analyse the semantic specificity of the words, we grouped all concrete nouns and action verbs into one of the following categories: (1) food, (2) utensils, (3) eating and cooking verbs, (4) body parts, (5) clothing nouns, (6) bath nouns, (7) washing and dressing verbs, (8) literacy nouns, (9) shapes and numbers, (10) reading and writing verbs, (11) toys, (12) animals, (13) small household items, (14) furniture, (15) outside objects and places, (16) vehicles, (17) manual actions (other than washing and dressing, eating and cooking, reading and writing verbs; mostly expressed by transitive verbs), (18) gross motor verbs, (19) communicative verbs, (20) other concrete nouns and (21) action verbs, that could not be coded into the previous categories.

Given the differences between households in the quantity of CDS and the time spent in each activity, we based our analyses on the proportion of words within each activity that fell into each of the 21 word categories.

The four authors coded 20% of the sample to evaluate inter-rater reliability for the pragmatic functions of the utterances, the types of activities and the semantic specificity of the words. Fleiss kappa for multiple coders indicated strong inter-observer reliability (activities: $\kappa = 0.86$, pragmatic function: $\kappa = 0.92$, semantic specificity of the words: $\kappa = 0.89$).

Data Analysis

Data processing and statistical analyses were performed using R (R Core Team, 2017). Initially, we carried out a descriptive analysis of the data. Then, we fitted three sets of regression models to test the impact of the different activities and SES on, first, the number of words per minute (tokens), VOCD and MLU, second, the proportion of regulative versus referential utterances and third each type of word. In

each set, the first regression model included the five types of activities as predictors, meals, play, booksharing, grooming and household chores. The second model added SES as a predictor together with the activities, excluding booksharing, for which there was only one situation recorded in the low SES households. Play was considered as reference level as it is one of the activities most studied in previous research (e.g. Hoff-Ginsberg, 1991). Regarding SES we considered low SES as the reference level.

Results

Descriptive Analysis

During the activities in the 2 h period of natural interactions recorded in the households, middle SES target toddlers were addressed with 17,208 word tokens and low SES with 6041 in referential and regulative utterances. Marked intragroup differences were observed regarding the lexical diversity (VOCD), syntactic complexity (MLU) and pragmatic function (regulatory vs referential) of CDS (see Fig. 1).

There were also important differences between households in the types of activities that took place during the period of time recorded. Many toddlers participate in play activities (middle SES: 14, low SES: 11), in meals (middle SES:13, low SES:11) and grooming (middle SES: 12, low SES: 10); half of them participate in household chores (middle SES: 7, low SES: 7). Fewer toddlers participate in booksharings (middle SES: 6, low SES: 1). There were also differences regarding the quantity of tokens per minute in each activity (see Fig. 2). Given that all but one of the booksharing situations took place in middle SES households, this type of activity was not included in the regression models that assessed SES. Marked difference was also observed regarding the quantity of words per activity (see Fig. 2).
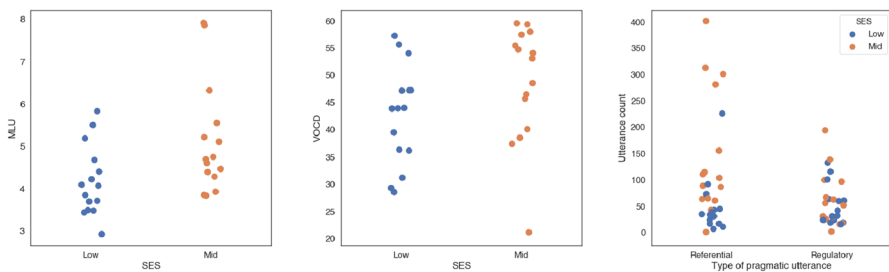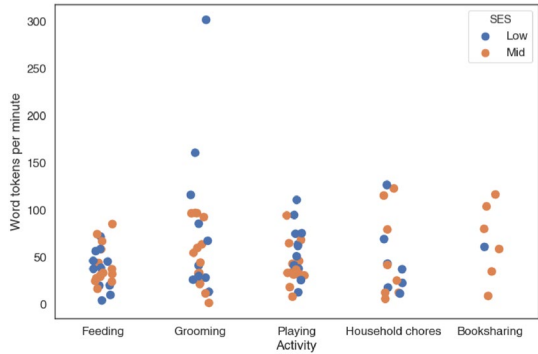

Fig. 1 MLU, VOCD and quantity of referential and regulative utterances by SES

Fig. 2 Word tokens by activity and SES

Quantity, Diversity and Syntactic Complexity of Child-Directed Speech Across Activities and Socioeconomic Status

In order to assess the impact of the type of activity and SES in the quantity of speech (tokens), lexical diversity (VOCD) and syntactic complexity (MLU) of child-directed utterances we implemented two regression models. In the first, in Table 2, the predictors were the different types of activities: play, household chores, grooming, meals and booksharing. In the second regression model, in Table 3, we included SES and the activities, excluding booksharing. As mentioned above, play and low SES were considered as reference levels. Given that these variables do not fulfil the

Table 2 Tokens, MLU and VOCD by activity

	Tokens	MLU	VOCD
	β (SE) / exp(β)		
Coefficients of mean model with logit link			
Intercept	− 1.61 (0.12)/0.20 ***	− 0.34 (0.21)/0.71	− 0.16 (0.21)/0.85
Activity: Meals	− 0.28 (0.17)/0.76	− 0.40 (0.24)/0.67	0.69 (0.32)/2.00 *
Activity: Household chores	− 0.01 (0.27)/0.99	− 0.49 (0.29)/0.61	0.37 (0.34)/1.45
Activity: Grooming	0.67 (0.27)/1.95 *	− 0.09 (0.29)/0.92	0.21 (0.36)/1.23
Activity: Booksharing	1.08 (0.45)/2.93 *	0.08 (0.38)/1.08	0.23 (0.39)/1.26
Coefficients of precision model with log link			
Intercept	3.03 (0.28)/20.71 ***	0.85 (0.24) / 2.34 ***	1.22 (0.27)/3.37 ***
Activity: Meals	0.03 (0.40)/1.03	2.02 (0.37) / 7.54 ***	− 0.18 (0.41)/0.83
Activity: Household chores	− 1.04 (0.46)/0.35 *	1.22 (0.44) / 3.37 **	0.67 (0.57)/1.96
Activity: Grooming	− 2.19 (0.39)/0.11 ***	0.56 (0.37) / 1.76	− 0.53 (0.42)/0.59
Activity: Booksharing	− 2.33 (0.54)/0.10 ***	0.73 (0.55) / 2.07	0.58 (0.65)/1.78
Pseudo-R2	0.05	0.02	0.06
Log Likelihood	83.34	33.98	7.42
Num. obs	95	93	64

The level of significance is cued as follows: * $p < .05$; ** $p < .01$; *** $p < .001$

Table 3 Tokens, MLU and VOCD by activity and SES

	Tokens	MLU	VOCD
		$β$ (SE)/exp($β$)	
Coefficients of mean model with logit link			
Intercept	− 1.49 (0.15)/0.22 ***	− 0.49 (0.23)/0.61 *	− 0.40 (0.20)/0.67 *
SES: Middle	− 0.26 (0.15)/0.77	0.24 (0.15)/1.27	0.50 (0.23)/1.65 *
Activity: Meals	− 0.19 (0.17)/0.82	− 0.36 (0.23)/0.70	0.53 (0.26)/1.70 *
Activity: Household chores	0.05 (0.27)/1.05	− 0.47 (0.29)/0.63	0.49 (0.34)/1.63
Activity: Grooming	0.54 (0.26)/1.72 *	− 0.06 (0.28)/0.94	0.02 (0.31)/1.02
Coefficients of precision model with log link			
Intercept	2.79 (0.32)/16.32 ***	0.81 (0.29)/2.25 **	2.10 (0.35)/8.15 ***
SES: Middle	0.65 (0.29)/1.91 *	0.23 (0.28)/1.26	− 1.29 (0.34)/0.27 ***
Activity: Meals	− 0.14 (0.40)/0.87	2.08 (0.37)/8.03 ***	0.20 (0.41)/1.22
Activity: Household chores	− 1.25 (0.46)/0.29 **	1.11 (0.44)/3.04 *	0.01 (0.56)/1.01
Activity: Grooming	− 2.06 (0.39)/0.13 ***	0.41 (0.37)/1.51	− 0.33 (0.42)/0.72
Pseudo-R2	0.04	0.02	0.1
Log Likelihood	85.01	34.43	12.55
Num. obs	88	86	59

The level of significance is cued as follows: * $p < .05$; ** $p < .01$; *** $p < .001$

assumptions of a linear model we implemented a beta regression analysis (Cribari-Neto & Zeileis, 2010). The beta distribution, bounded between 0 and 1, is very flexible, can accommodate skew and symmetry and allows to model regular location (mean) shift but also heteroscedasticity, through a "precision" parameter.

The results, in Table 2, showed a significant impact of booksharing and grooming activities on the number of tokens that were directed to the toddlers per minute: these activities increment the probability of a higher number of tokens in CDS over play activities. Besides, the precision model showed that variability was significantly more pronounced in booksharing, grooming and household chores than in play activities (pseudo-R2 0.05). The second beta regression, in Table 3, still showed a main effect of grooming. It did not show a main effect of SES on the mean. However, the precision model showed that dispersion was likely to be higher in the middle SES households as well as in grooming and household chore activities (pseudo-R2 0.04).

Results of the first regression analysis on the MLU measure of syntactic complexity did not show an effect of the type of activity on the mean (see Table 2). Similarly, the second model did not show impact of SES (see Table 3). However, these models did not show a good fit (pseudo-R2. 02).

Regarding lexical diversity of CDS, the regression analysis that included only the activities as predictors, in Table 2, showed the effect of meals, such that these activities increased the VOCD index (pseudo-R2 0.6). The model that included SES as predictor, in Table 3, revealed that in middle SES households the VOCD of CDS is incremented significantly. In this model, the meal activities maintained its

significant effect on the VOCD index. The precision model displayed a significantly higher variability in the middle SES group (pseudo-R2 0.10).

Pragmatics of Child-Directed Speech Across Activities and Socioeconomic Status

In order to assess the effect of the activities and SES on the pragmatic function of utterances directed to the target child (regulatory, 1, versus referential, 0), we fitted two logistic regression models. In the first one, in Table 4, predictors were each activity (household chores, grooming, meals and booksharing). The second model, in Table 5, added SES as a predictor and excluded the booksharing activity.

The first model revealed that while booksharing reduced the probability that toddlers hear regulatory utterances, grooming and household chores increased it, compared with play activities (pseudo R 0.04) (see Table 4). The second model that added SES as a predictor showed that the probability of being exposed to regulatory utterances decreased in the middle SES group and, in both groups, in household chores and grooming activities compared to play (see Table 5).

Table 4 Proportion of referential and regulatory utterances by activity

	Referential vs regulatory utterances ß (SE)/exp(ß)
Intercept	-0.60 (0.05)/0.55 ***
Activity: Meals	-0.07(0.08)/0.93
Activity: Household chores	0.62 (0.11)/1.85 ***
Activity: Grooming	0.34 (0.09)/1.40 ***
Activity: Booksharing	-0.72 (0.13)/0.49 ***
Pseudo-R2	0.04
Num. obs	4544

The level of significance is cued as follows: * $p < .05$; ** $p < .01$; *** $p < .001$

Table 5 Proportion of referential and regulatory utterances by activity and SES

	Referential vs regulatory utterances ß (SE)/exp(ß)
Intercept	-0.04 (0.07)/0.97
SES: middle	-0.88 (0.07)/0.42 ***
Activity: meals	-0.06 (0.08)/0.94
Activity: household chores	0.42 (0.11)/1.53 ***
Activity: grooming	0.39 (0.09)/1.48 ***
Pseudo-R2	0.04
Num. obs	4112

The level of significance is cued as follows: * $p < .05$; ** $p < .01$; *** $p < .001$

The Semantic Specificity of Words Across Activities and Socioeconomic Status

In order to assess the specificity of words across activities and SES groups, we focussed on the concrete nouns and action verbs in CDS coming from all the participants during the activities. The data comprised all the instances of concrete nouns (middle SES: 2380; low SES: 1101) and action verbs (middle SES: 3631; low SES: 2259) for analyses, implying an important amount of repetition of many words in the activities in the 2 h period considered. SES differences were observed regarding the amount of nouns and verbs in the CDS addressed to the children. Figure 3 displayed the categories of concrete nouns and action verbs according to SES.

The degree of occurrence of each category of words in each type of activity and SES group is shown in Fig. 4. Note that the graphing values are centred around the average of "0". Positive z-scores indicate high occurrence of a word category in a
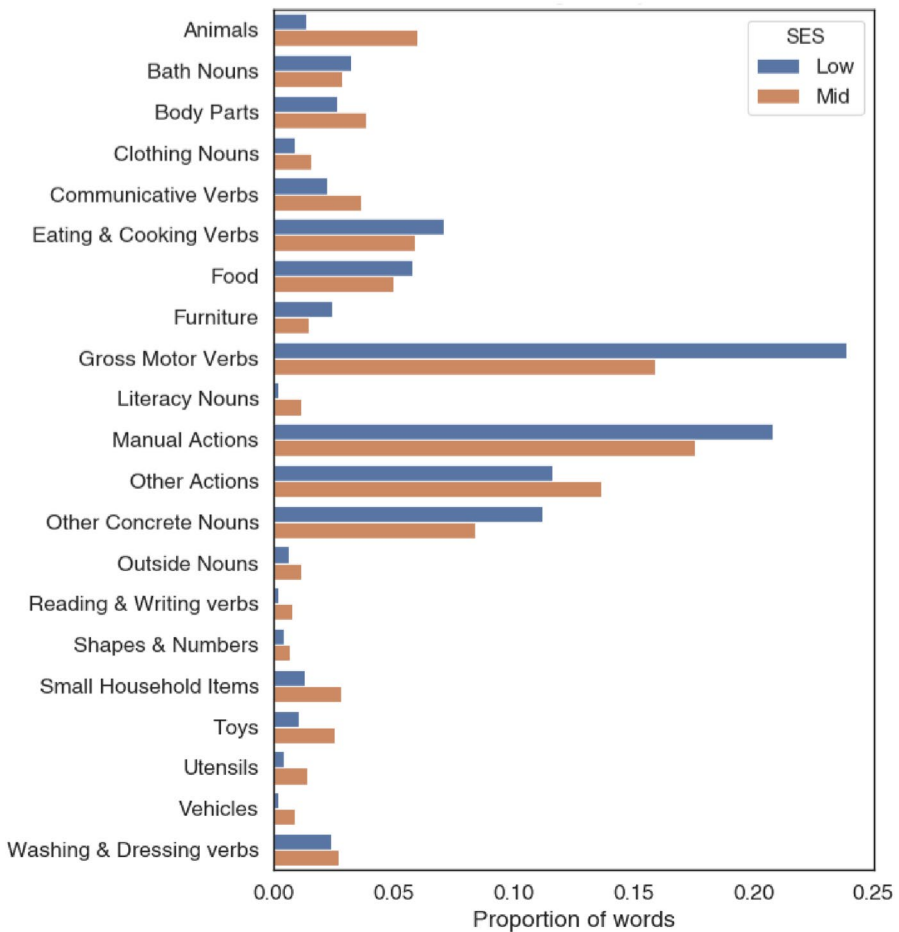

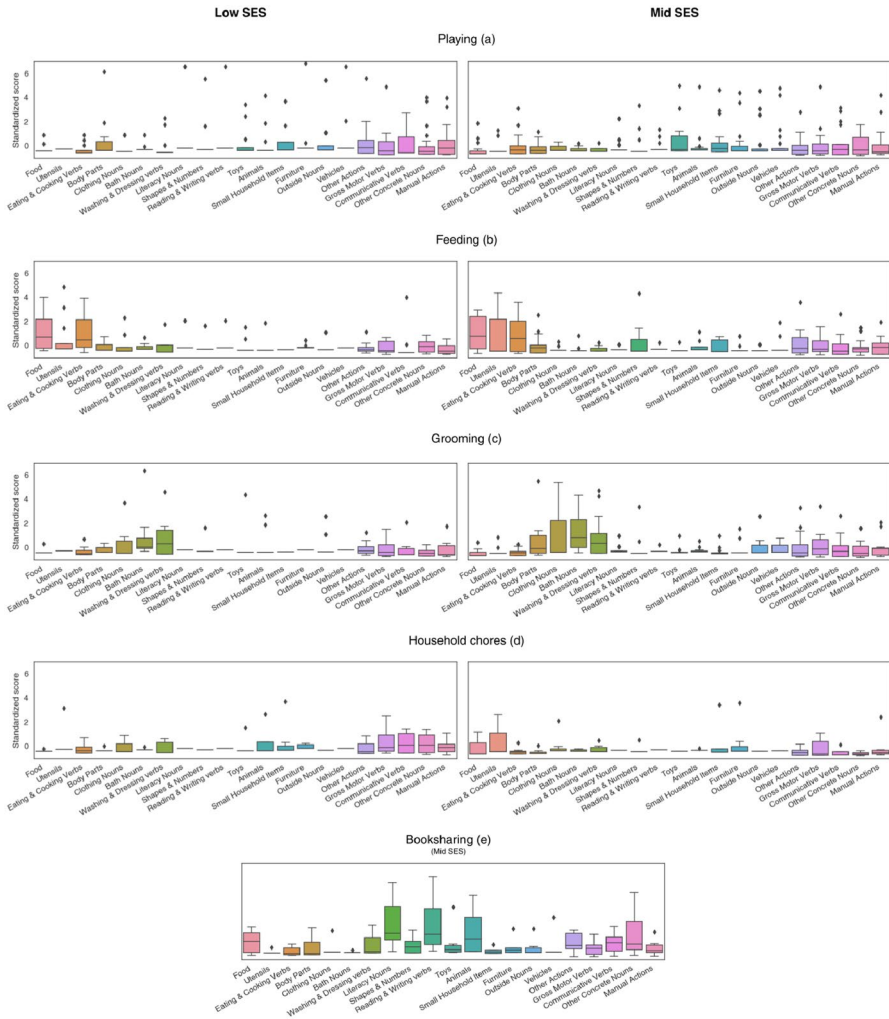**Fig. 3** Word categories by SES

Fig. 4 Proportion of words types by activity and SES

specific activity relative to the average score for that word category across all activities, and vice versa negative z-scores indicate low occurrence of the language variable in a specific activity.

Two logistic regression models were conducted for each of the 21 categories of words, with the proportion of words from the category as the dependent variable. In the first model, in Table 6, the different activities were the predictors (meal, household chores, grooming, booksharing). In the second model, in Table 7, the predictors were SES and the activities excluding booksharing. The regression models on the proportion of reading and writing verbs, literacy nouns and vehicle words, did not include household chores because there were no tokens of these three types of

Table 6 Categories of words by activity

	Bath nouns	Washing & dressing verbs	Food nouns	Eating& cooking Verbs	Clothing nouns	Animals β(SE)/exp(β)	Toys	Small household Items	Utensils	Literacy nouns	Reading and writing verbs	Furniture
Intercept	−4.88(0.24) /0.01***	−4.78 (0.22) /0.01**	−3.98 (0.15) /0.02***	−3.02 (0.10) /0.05**	−5.13 (0.27) /0.01***	−3.13 (0.10) /0.04***	−3.24 (0.11) /0.04***	−3.24 (0.11) /0.04***	−5.47(0.32) /0.00***	−5.07 (0.26)/ 0.01***	−5.29 (0.29) /0.01***	−3.56(0.12) /0.03***
Activity: Meals	0.39 (0.35) /1.47	0.51 (0.32) /1.66	2.21 (0.17) /9.16***	1.28 (0.12) /3.61***	−0.06 (0.44) /0.94	−0.54 (0.20) /0.58***	−2.24 (0.42) /0.11***	−1.08(0.25) /0.34***	1.89 (0.36) /6.60***	−1.52 (0.75)/ 0.22*	−1.29 (0.76) /0.27	−1.07 (0.30) /0.34***
Activity: Household chores	−0.32 (0.63) /0.73	0.98 (0.37) /2.66**	0.76 (0.27) /2.13**	−0.15 (0.24) /0.86	1.15 (0.42) /3.16**	−1.08 (0.37) /0.34**	−2.37 (0.72) /0.09***	0.20 (0.23) /1.22	1.97(0.41) /7.18***			0.12 (0.28) /1.13
Activity: Grooming	2.86 (0.25) /17.45***	2.26 (0.25) /9.58***	−0.33 (0.29) /0.72	−0.55 (0.20) /0.58**	1.89 (0.31) /6.60***	−0.71 (0.22) /0.49**	−1.34 (0.30) /0.26***	−1.71(0.35) /0.18***	−0.30 (0.59) /0.74	−0.48 (0.52)/0.62	−1.87 (1.04) /0.15	−1.51 (0.38) /0.22**
Activity: Book-sharing	−1.60 (1.03) /0.20	1.21 (0.33) /3.35***	1.16 (0.23) /3.19***	−0.88 (0.30) /0.42**	0.27 (0.52) /1.31	1.63 (0.14) /5.09***	−0.17 (0.25) /0.85	−1.63(0.46) /0.20***	−1.01 (1.05) /0.36	2.10 (0.32)/8.14***	2.02(0.36) /7.54***	−0.97 (0.40) /0.38*
Pseudo-R2	0.19	0.09	0.12	0.07	0.07	0.09	0.06	0.05	0.09	0.13	0.14	0.03
Num. obs	6325	6325	6325	6325	6325	6325	6325	6325	6325	5778	5778	5778

The level of significance is cued as follows: * $p < .05$; ** $p < .01$; *** $p < .001$

Table 7 Categories of words by activity and SES

	Bath nouns	Washing & dressing verbs	Food	Eating & cooking Verbs	Clothing nouns	Animals	Toys	Small household Items	Utensils	Vehicles	Furniture
						β(SE)/exp(β)					
Intercept	−4.68(0.25) /0.01***	−4.73(0.25) /0.01***	−3.86(0.17) /0.02***	−2.97(0.12) /0.05***	−5.51(0.34) /0.00***	−3.95(0.21) /0.02***	−3.90 (0.23) /0.02***	−4.04(0.22) /0.02***	−6.70(0.47) /0.00***	−5.62(0.51) /0.00***	−3.35(0.17) /0.04***
DADMeals	0.40(0.35) /1.49	0.51(0.32) /1.66	2.22(0.17) /9.21***	1.28(0.12) /3.61***	−0.07(0.44) /0.93	−0.56(0.20) /0.57	−2.26 (0.42) /0.10***	−1.10(0.26) /0.33***	1.87(0.36) /6.47***	−1.07(0.45) /0.34*	−1.06(0.30) /0.35***
DADGrooming	2.90(0.25) /18.12***	2.27(0.25) /9.65***	−0.31(0.29) /0.73	−0.54(0.20) /0.58**	1.84(0.31) /6.29***	−0.80(0.22) /0.45***	−1.42 (0.30) /0.24***	−1.80(0.35) /0.17***	−0.40(0.59) /0.67	−1.21(0.49) /0.30*	−1.47(0.38) /0.23***
DADHousehold chores	−0.37(0.63) /0.69	0.97(0.37) /2.64**	0.73(0.27) /2.07**	−0.16(0.24) /0.85	1.23(0.42) /3.41**	−0.95(0.37) /0.39*	−2.26 (0.72) /0.10**	0.34(0.23) /1.4	2.15(0.41) /8.62***		0.07(0.28) /1.07
SES: Middle	−0.33(0.16) /0.72*	−0.07(0.18) /0.94	−0.19(0.13) /0.83	−0.08(0.11) /0.92	0.54(0.28) /1.71	1.10(0.22) /3.00***	0.90(0.25) /2.46***	1.07(0.22) /2.92***	1.55(0.38) /4.72***	1.51(0.53) /4.55**	−0.35(0.20) /0.71
Pseudo-R2	0.18	0.10	0.13	0.07	0.08	0.03	0.10	0.06	0.11	0.05	0.04
Num. obs	5670	5670	5670	5670	5670	5670	5670	5670	5670	5123	5670

The level of significance is cued as follows: * $p<.05$; ** $p<.01$; *** $p<.001$

words in the CDS of this particular activity. We report results only for those regressions in which the model explained at least 3% of the variance.

The regression analysis showed that certain types of activities explained a considerable proportion of the variance for the following categories of words: food, eating and cooking verbs, bath nouns, utensils, animals, small household items, washing and dressing verbs, clothing nouns, reading and writing verbs, literacy nouns and toys (see Table 6). SES effects were observed regarding some categories of words: children living in middle SES households have a higher probability of hearing words referring to utensils, small household items, and toys (see Table 7).

Meals increase the probability of food and utensils nouns and eating and cooking verbs in CDS. These categories of words sum up 28% in the middle SES group and 40% in the low SES: food nouns (middle SES: 12%, low SES: 20%), cooking and eating verbs (middle SES: 13%, low SES: 19%), and utensils (middle SES: 3%; low SES: 0,1%). Grooming increases the probability of hearing bath and clothing nouns and washing and dressing verbs. These words altogether represent 30% of the child-directed words in the middle SES group and 26,9% in the low SES. Additionally, **in** the CDS of this type of activity, there is a high number of verbs, especially in the low SES households: gross motor verbs (24%, in the low SES group and 19% in the middle SES) and manual verbs (20% in the low SES group and 17% in the middle SES). The household chore activity increases to a certain degree the semantic specificity of the words children hear, particularly in middle SES households. In this social group, the words refer to small household items (7%), furniture (4%), clothing (3%), utensils (5%), eating and cooking (4%) and food (7%), which in total represent 32% of the words children are addressed in these activities. In the low SES group, these categories, all together, represent only 10% of the words. Also, in both social groups, but especially in low SES, the gross motor verbs category makes up a big portion of the words in CDS (low SES: 37%, middle SES: 23%). The probability of hearing utensils and food is significantly increased during this activity in both groups of households (see Tables 6 and 7, and Fig. 4).

In comparison with play, meals, household chores and grooming decrease the probability of hearing words referring to toys and animals. Note that words referring to toys, animals, other objects, such as playground (swings, slides and roundabouts) or small household items, and other specific actions represent 22% of CDS during play in middle SES households and only 6% in low SES: toys (middle SES: 5%; low SES: 1%), animals (middle SES: 6%; Low SES: 1%), eating and cooking verbs (middle SES: 6%; low SES: 2,%), and small household items (middle SES: 5%; low SES: 2%). Lastly, booksharings (only recorded in middle SES households) increase the probability of being exposed to significantly more words referring to literacy nouns and also reading and writing verbs (respectively, 5% and 4%). This activity also increases the probability of hearing words referring to food (5%), animals (18%) and body parts (3%), that refer to common topics in children's storybooks (See Table 6 and 7 and Fig. 4).

Discussion

This study adopted a naturalistic perspective to examine the specificity of the words addressed to children across household activities in an Argentinian Spanish-speaking population. It also provides evidence on the quantity, syntactic complexity, lexical diversity and pragmatics of CDS across these activities and SES groups in this diverse population. In Argentina, social fragmentation is currently very marked. In the local context, low SES children are usually part of extended families. Activities are often not child focussed, but centred around daily household life and shared with many adults and children. Typically, several activities and conversations between diverse participants overlap in a single household space (Author et al., 2020; Author et al., 2021b). This displays a panorama which is very similar to that described in low SES families in other cultural groups (Sperry et al., 2019). Children are socialised in social and linguistic environments that differ greatly from the caregiver–child dyad interactions embedded in routine activities, mostly child centred, which are very common in the middle SES families previously studied (e.g. Tamis-LeMonda, 2019). Therefore, it is worth asking what impact SES differences have on the language to which children are exposed across everyday household activities.

Coinciding with previous research (Hoff-Guinsberg, 1991; Söderström & Wittebolle, 2013; Tamis-LeMonda et al., 2019), our findings show that across activities children are addressed with different quantities and diversity of words through utterances that serve distinct pragmatic functions in communication. Booksharing displayed a greater quantity of tokens, higher lexical diversity and more referential language than play activities (Hoff-Guinsberg, 1991; Söderström & Wittebolle, 2013; Tamis-LeMonda et al., 2019). Similarly to Söderström & Witterbolle (2013) personal care activities and to Hoff-Ginsberg (1991) dressing contexts, the grooming activities registered in middle as well as low SES households showed a higher quantity of tokens than play. Compared to play situations, booksharing and meals increase the probability of child-directed utterances being referential, and conversely, grooming and household chores increase their probability to be regulative. Speech during meals, despite not being dense, showed higher lexical diversity than other activities, as it was previously observed by Weizman and Snow (2001).

It should be noted that CDS in middle SES households, independently of the ongoing activity, showed an increased probability of being more lexically diverse, replicating previous findings in other populations (Hoff, 2003; Rowe, 2008). No activity effects were observed in the syntactic complexity of CDS and, unexpectedly, neither did we observe an effect of SES in this characteristic, nor in the quantity of tokens per minute. Additionally, across these activities, SES differences on the proportion of regulative versus referential language replicated those found in previous studies (e.g. Rowe, 2008): CDS in middle SES household activities was characterised by a lower proportion of regulative than referential utterances.

Importantly, for the purpose of this study, CDS showed a certain degree of semantic specificity, indicating a link to the objective, routine actions and objects that characterised the activities in which speech occurred. In each activity, some categories of concrete nouns or action verbs were very frequent and others did

not occur at all. Overall our results regarding the middle SES group coincide with previous findings in North American population, as activity-bound words comprise around 30% of words in most of the activities considered. Tamis-LeMonda et al. (2019) suggested that the other 70% of nouns and verbs possibly function as the kind of background variability that could facilitate learning.

Furthermore, our results regarding the low SES CDS only manifest a similar pattern in the degree of semantic specificity for nouns and verbs to that of middle SES in those activities oriented to satisfying children's basic needs, such as meals and grooming. Conversely, CDS during play and household activities in low SES households was less semantically specific than that of the middle SES. This could reflect deeper social disparities in the access to a diversity of general and child-specific objects (toys, utensils, small household items and furniture) that may be commonly used in middle SES households but not in low SES, as such reducing the opportunities for episodes of joint and verbal engagement around the objects. Thus, disparities in material living conditions could contribute to explain the lesser degree of semantic specificity of the word types in CDS during these activities in the low SES households.

The greater diversity of utensils, furniture, vehicles and toys in the middle SES households than in the low SES may also contribute to explain the higher proportion of referential versus regulative language in the interactions with children, that was shown by the regression analysis. Indeed, the attention shared on these objects may give rise to back-and-forth conversations, which drive adults and older children's referential use of language in which the objects are lexicalized. The lower use of nouns and the greater use of verbs (gross motor verbs and manual verbs) in the CDS during play activities and household chores in low SES households could, to a certain extent, be explained by these contextual characteristics. As pointed out by Rosemberg et al. (2020), even though Spanish is a pro-drop language (subject nouns may be omitted, being inferable from the grammatical information in verb morphology), the speech addressed to low and middle SES children showed differences in the number of nouns and verbs, which can be partly explained by the ongoing activity. Yet, it is also likely that the specific practices and objects that comprise these activities in each social group also contribute to these differences. The ongoing activity determines the language environment, and the diversity of contexts of talk (Rowe & Weisleder, 2020) in which certain categories of words can be said. In this respect, it is worth noting the fact that only one booksharing activity was identified in the low SES sample, and so certain categories of words such as literacy nouns and reading and writing verbs were almost absent from the speech addressed to low SES children. Although low SES households are more dense and usually include a greater number of participants than middle SES households, it should be noted that, even if the number of participants is controlled, SES effects on the number of different word types are still identified in this population (Stein, 2021).

There are some limitations to this study. First, although the methodological approach employed to collect data, without the presence of an observer, guarantees an ecological panorama of how language textures the children's everyday activities, the audio-recordings do not provide visual information about participants' gestures and actions which would have been helpful to determine the ongoing activities. However, the use of handheld video-camera, which provides this visual information,

needs the presence of an observer, making the situation less natural, and even blurring or distorting children's everyday language experience, by inflating input measures and yielding specific words in interaction (Bergelson et al., 2019). Second, while our four-hour audios capture a good portion of children's everyday life, due to the high costs involved, we were only able to transcribe the two middle hours (60 h in total), which involved hundreds of hours of work by well trained and experienced research assistants and researchers.

Regarding the impact of SES, the results of this study mainly help to understand the linguistic environments of children from populations that resemble ours, regarding social fragmentation, household density and quantity and quality of parents' education. Even though this could make generalisation difficult and could be regarded as a disadvantage, therein lies the value of the present study: it represents a step towards understanding the diversity in children's linguistic experience across communities and cultural groups.

To sum up, the results of this study offer a picture of the complexity of real language environments. They give support to previous findings regarding the impact of the type of activity on general indicators of quantity of speech, lexical diversity, syntactic complexity, pragmatics, and more importantly, the semantic specificity of the words included in CDS. They provide new evidence that reveal that social disparities, affecting household's living conditions, may constrain children's transactions with the world and thus limit the semantic content of the speech to which children are exposed in their early experiences. These findings help us to understand how the macrosocial dimensions of the context operate at the microlevel (Rowe & Weisleder, 2020), shaping the sources from which children learn vocabulary. Taking into account the social conditions under which children learn language is important to build theories of language development. Furthermore, this scientific evidence is the basis for the design of childhood educational programmes in Argentina (Rosemberg et al., 2013, Rosemberg & Stein, 2016). In line with a strand of international early literacy and language acquisition applied research (Lynch & Prins, 2022), these programmes aim to broaden children's vocabulary development trajectories through educational actions and materials targeting families and childhood educators. The design of the activities takes into account the diversity of contexts in which children are brought up in order to broaden children's opportunities for learning language.

Declarations

Conflict of interest We confirm that we do not have neither personal nor financial conflicts of interest to disclose.

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