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THE ROLE OF INPUT IN LANGUAGE ACQUISITION: HOW CHILD-DIRECTED SPEECH VS. ADULT-DIRECTED SPEECH SHAPES EARLY VOCABULARY DEVELOPMENT IN CHILDREN

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Abstract
Child early vocabulary development is largely dependent on the language input children are exposed to, but the relative roles played by child-directed speech (CDS) and adult-directed speech (ADS) are also a point of controversy. This longitudinal study with a duration of 12 months investigated whether the proportion of CDS to overheard ADS, and qualitative attributes of caregiver input was found to predict vocabulary development, both receptive and expressive, in 12-30-month-old children. The families were asked to record 2 home sessions of 60 minutes monthly in specific contexts (free play, mealtime, shared book reading) which were standardized. Tapes were transcribed and coded according to the addressee (CDS vs ADS), amount (tokens/min, utterance counts), quality (lexical diversity, mean length of utterance, repetition, labeling) and interactional (contingency, conversational turns, joint attention marks).
The mixed-effects growth models depicted strong vocabulary growth over time. An increased percentage of CDS was related to more expressive vocabulary increases whereas contingent caregiver responding further intensified expressive increases. In the case of receptive vocabulary, the biggest predictor of growth was lexical diversity, and the CDS effects were relatively insignificant. The results are in favor of an interactionist explanation where vocabulary learning is facilitated by direct address and social contingence of input, and by learning more variety of word types. Findings indicate that there are practical caregiver and early-education intervention goals: more child-directed talk, more contingent responsiveness and more lexical diversity in daily events.
Keywords: *child-directed speech; adult-directed speech; vocabulary development; caregiver responsiveness; lexical diversity; conversational turns; longitudinal study*

INTRODUCTION

Children acquire language through the speech and other communicative messages which they encounter in their day-to-day life. In the study of early language acquisition, the experience is typically referred to as input: the linguistic content accessible to the child (e.g. words, sounds, structures, and their frequency/distribution) along with the interactional situations under which it happens (e.g. who speaks, to whom, when, with what responsiveness). The aspect of input consequently comprises quantity (amount of speech children hear), quality (how informative, diverse and learnable it is), and structure (how predictable patterns are over time, and situations). A significant amount of recent literature demonstrates that not only quantity but also quality is connected to language outcomes in children, but more robust and consistent correlations exist with qualitative features of lexical diversity and complexity (Anderson et al., 2021). Since early vocabulary development is an indicator of the efficiency of children in grappling with words to meanings and entrenching them into usable knowledge, it is commonly considered a fundamental indicator of early language development. The size of vocabulary is

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also practically significant: it is closely connected with the skills of children to express their needs, fill in learning processes and to use more and more decontextualized talk which underlies further academic speech. In this regard, it is not just theoretical (how learning happens), educational and social (which everyday patterns of interaction are most effective) to get a clue of which types of input in early vocabulary are most productive (Kandemir, 2024).

One of the key differences in the input literature is the presence of speech addressed to the child or mainly made to other people. The registers that caregivers (and other speakers) tend to use when speaking to young children are known as child-directed speech (CDS); the registers used to address other adults as discussed by children are known as adult-directed speech (ADS). It is also common that CDS is characterized by prosodic changes (e.g., elevated pitch, increased pitch change, reduced rate), structural simplification (reduced length of utterances), and interactional (e.g., repetition and instant responsiveness to the attention or actions of the child) (Schick et al., 2022). Cross-laboratory data show that robustly infant-directed over adult-directed registers are preferred by infants, indicating that CDS is capable of consistent attention-attention of infants, who are sensitive to early learning (The ManyBabies Consortium, 2020). Notably, CDS is not just a simpler speech only in a single sense: it can also be strategically informative, and new words are also highlighted and repetition is organized in a manner that facilitates category identification and meaning detection (Schick et al., 2022). Recent comparative studies involving CDS and ADS at the lexical level also indicate that types of words and their characteristics vary across the registers that might alter the way children acquire vocabulary and subsequently use it in the future (Jones et al., 2023).

Three mutually supporting theories harbor the reasons why CDS may be particularly effective in the acquisition of early vocabulary. One is that in usage-based/interactionist accounts, children learn on the basis of the patterns that they undergo most frequently, with a particular focus on the patterns that take place in socially significant interactions. In this perspective both frequency and distribution are important, but learning is enhanced when speech of caregivers depends on what children hear or what they are trying to convey- since contingency enhances reading and keeps children attentive. In practice, conversational responsiveness and turn-taking is repeatedly found to be associated with stronger language development, which is in line with this interactionist mechanism (Donnelly and Kidd, 2021). Second, statistical learning accounts suggest that children derive regularities in the input: follow-up transitional likelihoods, co-occurrences and distributional organization in order to divide speech and project labels on meanings. The rich statistical structure may be presented in naturalistic speech with sufficient contextual variation to facilitate such learning, meaning that everyday input is a valuable source of pattern extraction (Hitczenko and Feldman, 2022). Third, social-pragmatic theories suggest that learning words requires that infants can infer communicative intent based on cues such as joint attention, gaze, and pragmatic relevance; CDS can enhance these cues by exaggerated prosody and timing to provide an adequate match between attention and intention. The mechanism of such alignment can be described in terms of attention-based models where infant-driven prosody maximizes moment-to-moment involvement and processing, which can build up into the long-term benefits of learning (Nencheva and Lew-Isiams, 2022). In line with these conceptions, child-directed language prosodic modulation has been associated with word-learning outcomes in current developmental research (Shi et al., 2023).

Aims, scope, problem statement, and significance (combined): Although there is considerable evidence that child-directed input is relevant, the extent to which the CDS benefit may be due to quantity (more addressed talk) or quality (lexical diversity, repetition patterns, and, most prominently, contingent responsiveness) is not clearly understood, whether or not the CDS benefits can be generalized to every-day situations where children also hear ADS, and the

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influence of cultural variability in child-directed communication and differences in interactive style on vocabulary trajectories (Motamedi et al., 2024). To fill these gaps, the current research concentrates on early vocabulary development as a new product and looks at whether the higher proportion of CDS (compared to ADS) predicts the faster vocabulary development, whether contingent/responsive CDS is the most predictive, and whether the relationships are moderated by the age of children, that is, we anticipate that greater CDS exposure is correlate with larger receptive and expressive vocabularies, contingent/responsive CDS is be the strongest predictor, and the relationships is be stronger at younger ages when attentional and prag

LITERATURE REVIEW

There is a substantial literature which relates the amount of language children are exposed to and its contribution to early vocabulary development which is generally in terms of total word tokens (adult word count), time of exposure to speech, and whether that speech is addressed to the child or overheard. This evidence has been supported by daylong records taken across routines, caregivers, and eliminates the bias called snapshot. Nevertheless, meta-analytic research indicates that automated measures of quantity (e.g., the number of words estimated by devices as words used by adults) predict different strengths across the studies and conditions, which means that quantity is not a complete account of vocabulary differences (Wang et al., 2020). Notably, quantity can be the most critical when it is incorporated in interaction, it creates the possibility of two-way exchange and prompt feedback (Donnelly and Kidd, 2021).

In addition to the number of words, children can enjoy the input that is learnable: full of lexical variety (types), properly organized, and presented in a clear manner. CDS frequently includes greater levels of words that have lexical characteristics that facilitate acquisition (e.g. greater contextual support, semantics pertinent to children), which can anticipate productive vocabulary in comparison to ADS (Jones et al., 2023). Cross-cultural work also implies that there is no universal quality; communities vary in the amount of child-directed to overheard speech, and children still acquire language, indicating that quality needs to be defined in terms of routines and communicative ecology (Bergelson et al., 2023). In a bilingual situation, vocabulary performance is determined by quantity, but a distribution of input across languages and situations (Kandemir, 2024).

There are a number of processes which describe why CDS can speed up word learning. To begin with, CDS prosody could attract attention and provide pedagogical opportunities; children learning through IDS could be superior in controlled tasks compared to those learning through ADS, which is consistent with attention-supporting explanations (Han et al., 2022). Second, CDS typically encodes through simplified structure, repetition and salient segmentation cues that can lead to less processing which can enhance encoding (Shi et al., 2023). Third, contingency and turn-taking make informativeness improved due to the temporal and semantic alignment of responses with the interest of the child; the alignment is assumed to work via the regulation of attention (Masek et al., 2021). Lastly, joint attention enhances referential transparency, that is, it becomes more obvious what a verb signifies, and it anticipates further outcomes of expressive language (Ataman-Devrim et al., 2023).

In the laboratory, results indicate that children are capable of learning on both registers, and IDS/CDS may be advantageous when conditions are difficult (e.g. novel word mapping), presumably through increased attention and interpretability (Han et al., 2022). These experiments also prove that linguistic cues with discourse/social structure can enhance learning, which can be used as evidence that the notion of effective input is multi-cue other than acoustic (Lee and Lew-Isiams, 2022). This is supplemented by naturalistic studies: even

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with overall adult word exposure held constant, conversational turns make vocabulary growth predictable, which suggests an independent contribution of interactive CDS to this process, not just in the amount of words (Donnelly and Kidd, 2021).

CDS vs ADS effects depend on age (infants might need to rely more on prosodic/attentional scaffolding; toddlers can use linguistic structure more and more), baseline level of language (altering what constitutes optimal complexity), etc (Han et al., 2022; Shi et al., 2023). SES and caregiver education have the ability to covariate with quantity and quality of interaction and so, interventions that train caregivers to talk more and more conversational turns have demonstrated downstream language advantages, which implies that they are modifiable (Ferjan Ramírez et al., 2020; Pierson, 2024). The measurement is also important: various instruments measure various features of input and automated indices can overlook important interactive quality (Ferjan Ramírez et al., 2021; Wang et al., 2020). Biculturalism and cultural practices (e.g., more overheard speech) also serve to mediate between input to vocabulary (Bergelson et al., 2023; De Anda et al., 2020).

Methodology

3.1 Study design

The chosen research study is be a 12-month longitudinal naturalistic study that is allow the researcher to compare the effectiveness of child-directed speech (CDS) and adult-directed speech (ADS) to predict early vocabulary development. A longitudinal design is appropriate to the ability to determine change within-child across time and to establish a relationship between variation in everyday input and patterns of receptive and expressive vocabulary. We is supplement naturalistic sampling with short, standardized interaction situations (e.g., shared reading of books) to enhance the comparability of the families.

Since this may be optional, the study could be considered a quasi-experiment, where comparisons between children falling naturally into higher vs. lower CDS exposure groups (e.g. tertiles of CDS proportion) are made, while statistically adjusting for differences in the baseline. A mixed-method element can be added as well in the context of short interviews with caregivers regarding the regularity of interactions with children and childcare organization to contextualize the measures of quantitative inputs.

3.2 Participants

Age range. At baseline (1230 months), the children is be recruited when they are experiencing a high rate of vocabulary growth and developing sensitivity to the structure of conversations.

Inclusion criteria. Usually developing children are born with a gestational age of 37 weeks; the regularity of the daily contact is with a primary caregiver; family agrees to repeated videotaping of the home environment; the child does not have an uncorrected hearing impairment.

Exclusion criteria. Neurodevelopmental conditions identified as having a significant influence on language (unless the study specifically targets these); a significant visual/hearing impairment that cannot be accommodated by the protocol; other families intending to relocate within 12 months.

Rationale of sample size and power. A longitudinal mixed-effects model a priori power analysis (= .05, power =.80) that captures small-to-moderate effects indicates that the final analytic sample is have an approximate number of 90-100 dyads. The study is include 120 caregiver-child dyads to ensure that 96 of them can be followed up by considering expected attrition (1525 per cent) and sometimes unusability of recordings.

Demographics. The exercise of the recruitment is be stratified based on socioeconomic status (SES) bands and levels of caregiver education in order to minimize sampling bias. Backgrounds of language is involve the monolingual and bilingual/ multilingual families. In

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the case of multilingual families, caregivers is provide the usual proportions of language exposure per week per language and childcare set- up (home/daycare).

3.3 Operational definitions

Child-directed speech (CDS). Any verbal statement being directed at the target child, identified through addressee coding by incorporating multimodal cues (gaze orientation, name usage, turn-taking position, physical proximity and conversational adjacency). Questions, labels, instructions, extensions, and social practices (e.g. greetings) are CDS when used to the child.

Adult-directed speech (ADS). Any utterance made not to the child (an adult-adult speech) that is in the presence of the child and thus could be overheard. Mixed utterances to sibling or other children is be separated with the speech to other children being coded (other-child-directed speech) to prevent misclassification. Unclear statements is be coded as the latter: uncertain addressee and is not be involved in CDS/ADS ratio analyses in the main analysis (they is be retained in the sensitivity analysis).

3.4 Measures and instruments

Vocabulary outcomes.

- **Expressive vocabulary** and **receptive vocabulary** is be measured at baseline and then monthly or every other month (depending on burden) using a caregiver-report vocabulary inventory appropriate for 12–30 months (e.g., a CDI-style instrument).
- A brief **direct assessment** (standardized picture-word comprehension and/or naming task) is be administered at baseline, mid-point, and endpoint to triangulate caregiver report and reduce single-method bias.

Input measurement.

- **Audio/video recordings** is be collected in the home using a small encrypted recorder and (when possible) a fixed-angle video camera to support addressee and joint attention coding.
- **Transcription and coding** is follow a structured scheme: utterance segmentation, speaker identification, addressee coding, lexical and syntactic tagging, and interactional annotations.
- **Acoustic/prosodic features (optional).** For CDS and ADS segments, automated extraction (e.g., pitch range, speech rate, intensity variability) can be used to quantify prosodic modulation without requiring full phonetic transcription.

3.5 Procedure

Recording schedule. Families is complete **two 60-minute sessions per month** for 12 months (24 sessions total). Sessions is be scheduled to reflect typical routines and minimize reactivity.

Context standardization. Each session is include three 20-minute blocks: (1) **free play**, (2) **shared book reading**, and (3) **mealtime/snack** (or a comparable caregiving routine). Order is be counterbalanced across months. Families is be asked not to alter typical communication behavior; only safety-related instructions is be emphasized.

Coder training and reliability. Coders is undergo training using gold-standard annotated samples. Reliability is be assessed on ≥20% of recordings, targeting **Cohen's κ ≥ .80** for categorical codes (addressee, labeling, joint attention markers) and **ICC ≥ .80** for continuous measures (tokens/min, turn counts, MLU). Discrepancies is be resolved through adjudication meetings and codebook refinement.

3.6 Coding and variables

Input quantity.

- Word tokens per minute (overall and by CDS/ADS)
- Utterance counts per minute
- Exposure time (minutes of analyzable speech)

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Input quality.

- **Lexical diversity:** word types, and diversity indices robust to sample length
- **Syntactic complexity:** mean length of utterance (MLU), clause markers (where feasible)
- **Repetition:** immediate and delayed repetitions of target words/phrases
- **Labeling:** rate of noun/verb labels aligned to visible referents

Interaction quality.

- **Contingency:** caregiver responses within a time window (e.g., ≤2 seconds) that align with the child's prior vocalization/action
- **Turn-taking rate:** child–caregiver conversational turns per minute
- **Joint attention markers:** caregiver follows child focus; deictic cues; shared orientation events

Derived metric.

- **CDS/ADS ratio** per session and across months; CDS proportion is be the primary predictor, with ADS amount modeled simultaneously to isolate unique effects.

3.7 Data analysis plan

Analyses is begin with **descriptive statistics** and a **correlation matrix** of input measures and vocabulary outcomes. Primary hypothesis tests is use **growth modeling / mixed-effects regression** with repeated measures nested within child. Separate models is be fit for expressive and receptive vocabulary:

- *Vocabulary* ~ **CDS proportion** + input quality features + ADS amount + (age in months) + interactions (e.g., Age × CDS) + controls + random effects (child intercepts and slopes).
  Controls is include child age, baseline vocabulary, SES index, caregiver education, multilingual exposure proportion, and childcare hours.
  Robustness checks is address outliers (influence diagnostics), recording variability (context fixed effects), and missingness (full-information methods or multiple imputation under plausible assumptions). Sensitivity analyses is test alternate operationalizations (e.g., using CDS tokens/min instead of proportion; excluding "uncertain addressee" segments).

3.8 Ethics

Ethical approval is be obtained from an institutional review board. Caregivers is provide **informed consent** and may withdraw at any time without penalty. Data is be **encrypted**, stored securely, and **anonymized** through de-identification of names and sensitive details in transcripts. Because home recordings may capture private family moments, families is be allowed to pause recording and request deletion of any segment. Child safeguarding procedures (including mandatory reporting rules, where applicable) is be clearly communicated, and all procedures is minimize burden and risk.

Results

4.1 Participant flow, data completeness, and reliability

A total of **120 caregiver–child dyads** contributed baseline data. Across 12 months, the dataset contained **1,481 child-month observations** (mean **12.34** observations per child; range **5–13**). At endpoint (Month 12), **102** dyads remained, reflecting **85% retention**.

Inter-rater reliability (20% double-coded) met preset thresholds: addressee coding **κ = .88**, labeling **κ = .84**, joint attention markers **κ = .81**; continuous measures showed high agreement (tokens/min **ICC = .93**, MLU **ICC = .89**, turn-taking rate **ICC = .91**).

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Table 1. Participant characteristics (baseline)

Characteristic	Value
Sample size (dyads)	120
Child age at baseline, M (SD), months	20.42 (5.27)
Sex, n (%)	Female 54 (45.0%), Male 66 (55.0%)
SES (z), M (SD)	-0.02 (0.96)
Bilingual homes, n (%)	37 (30.8%)
Monolingual homes, n (%)	83 (69.2%)
Caregiver education: High school or less	23 (19.2%)
Caregiver education: Some college	33 (27.5%)
Caregiver education: Bachelor	41 (34.2%)
Caregiver education: Graduate	23 (19.2%)
Home language group: Urdu	83 (69.2%)
Home language group: Urdu-English	22 (18.3%)
Home language group: Punjabi-Urdu	8 (6.7%)
Home language group: Other	7 (5.8%)

4.2 Descriptive statistics for language input

Across dyads, mean CDS proportion was **0.54** (SD = 0.11). Average CDS rate was **55.52 tokens/min**, while ADS (overheard adult–adult talk) averaged **34.87 tokens/min**.

Table 2. Descriptives for input measures (child-level averages across months)

Measure	M (SD)	Range
cds_prop	0.54 (0.11)	0.30–0.82
cds_tpm	55.52 (11.85)	23.30–91.15
ads_tpm	34.87 (9.26)	10.72–57.92
lexdiv	0.52 (0.09)	0.31–0.70
Mlu	2.64 (0.42)	1.68–3.69
Conting	0.41 (0.12)	0.15–0.70
turns_10min	17.83 (6.30)	5.02–35.17
Joint	0.30 (0.09)	0.11–0.57

4.3 Vocabulary growth over time

Both expressive and receptive vocabulary increased substantially from baseline to endpoint.

Table 3. Vocabulary outcomes over time

Timepoint	N	Expressive vocabulary M (SD)	Receptive vocabulary M (SD)
Baseline (Month 0)	120	96.73 (56.56)	139.34 (74.45)
Midpoint (Month 6)	116	309.83 (129.88)	415.71 (131.61)
Endpoint (Month 12)	102	548.26 (137.91)	701.52 (157.46)

4.4 Predictors of expressive vocabulary growth (mixed-effects growth model)

A mixed-effects model with random intercepts and random time slopes indicated strong growth over time (Time: **B = 38.11**, $p < .001$). Critically, **Time × CDS proportion** was significant (**B = 0.91**, $p = .036$), indicating that children with higher CDS exposure showed steeper expressive vocabulary growth. **Time × Contingency** was also significant (**B = 1.11**, $p = .044$), suggesting that more contingent caregiver responding amplified growth. SES, baseline vocabulary, and baseline age were significant covariates.

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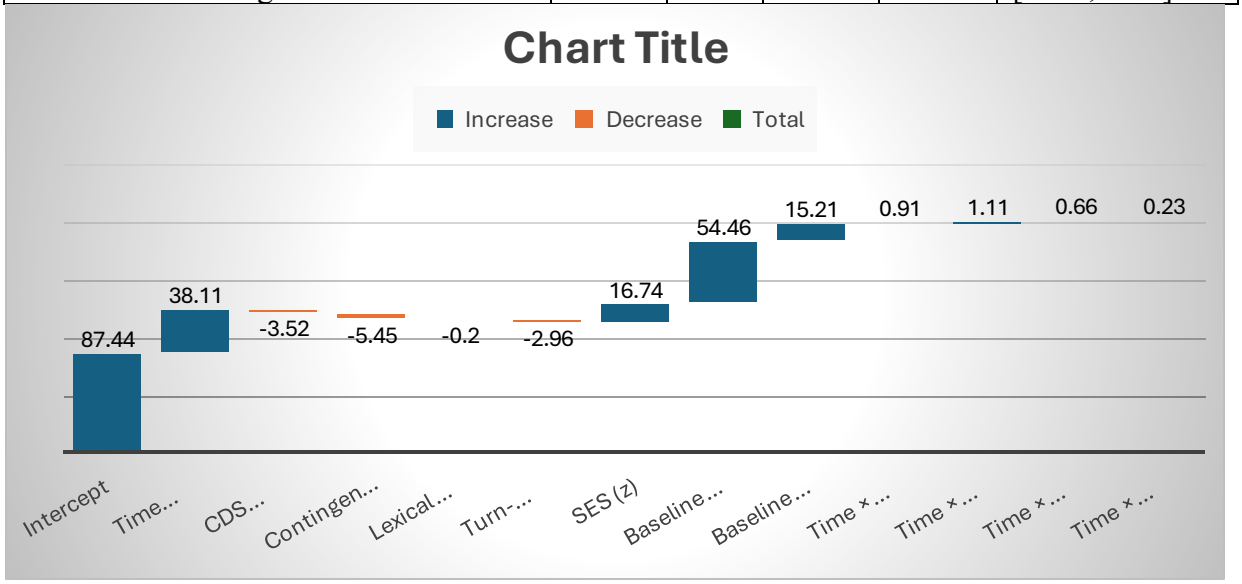
Table 4. Mixed-effects model predicting expressive vocabulary (words)

Predictor	B	SE	z	p	95% CI
Intercept	87.44	2.31	37.78	<.001	[82.90, 91.98]
Time (month)	38.11	0.82	46.73	<.001	[36.51, 39.71]
CDS proportion (z)	-3.52	2.56	-1.38	.169	[-8.54, 1.49]
Contingency (z)	-5.45	3.21	-1.70	.089	[-11.73, 0.84]
Lexical diversity (z)	-0.20	2.74	-0.07	.941	[-5.56, 5.16]
Turn-taking rate (z)	-2.96	2.50	-1.19	.235	[-7.86, 1.93]
SES (z)	16.74	4.50	3.72	<.001	[7.93, 25.56]
Baseline expressive vocabulary (z)	54.46	4.88	11.16	<.001	[44.90, 64.03]
Baseline child age (z)	15.21	4.86	3.13	.002	[5.68, 24.73]
Time × CDS proportion	0.91	0.43	2.10	.036	[0.06, 1.76]
Time × Contingency	1.11	0.55	2.01	.044	[0.03, 2.19]
Time × Lexical diversity	0.66	0.46	1.44	.150	[-0.24, 1.56]
Time × Turn-taking	0.23	0.43	0.54	.592	[-0.61, 1.06]



4.5 Predictors of receptive vocabulary growth (mixed-effects growth model)

Receptive vocabulary also increased strongly over time (Time: **B = 47.75**, p < .001). In this model, **Time × Lexical diversity** was significant (**B = 1.19**, p = .015), indicating steeper receptive vocabulary growth in children exposed to more lexically diverse input. The Time × CDS interaction was marginal (p = .098). SES and baseline receptive vocabulary were significant covariates.

Table 5. Mixed-effects model predicting receptive vocabulary (words)

Predictor	B	SE	z	p	95% CI
Intercept	127.36	2.52	50.63	<.001	[122.43, 132.29]
Time (month)	47.75	0.96	49.89	<.001	[45.87, 49.62]
CDS proportion (z)	-5.12	2.77	-1.85	.065	[-10.55, 0.31]
Contingency (z)	-3.75	3.45	-1.09	.278	[-10.52, 3.02]
Lexical diversity (z)	-4.88	2.91	-1.68	.093	[-10.58, 0.82]
Turn-taking rate (z)	0.43	2.69	0.16	.873	[-4.85, 5.71]
SES (z)	12.40	4.76	2.61	.009	[3.07, 21.73]
Baseline receptive vocabulary (z)	78.67	5.23	15.04	<.001	[68.42, 88.92]

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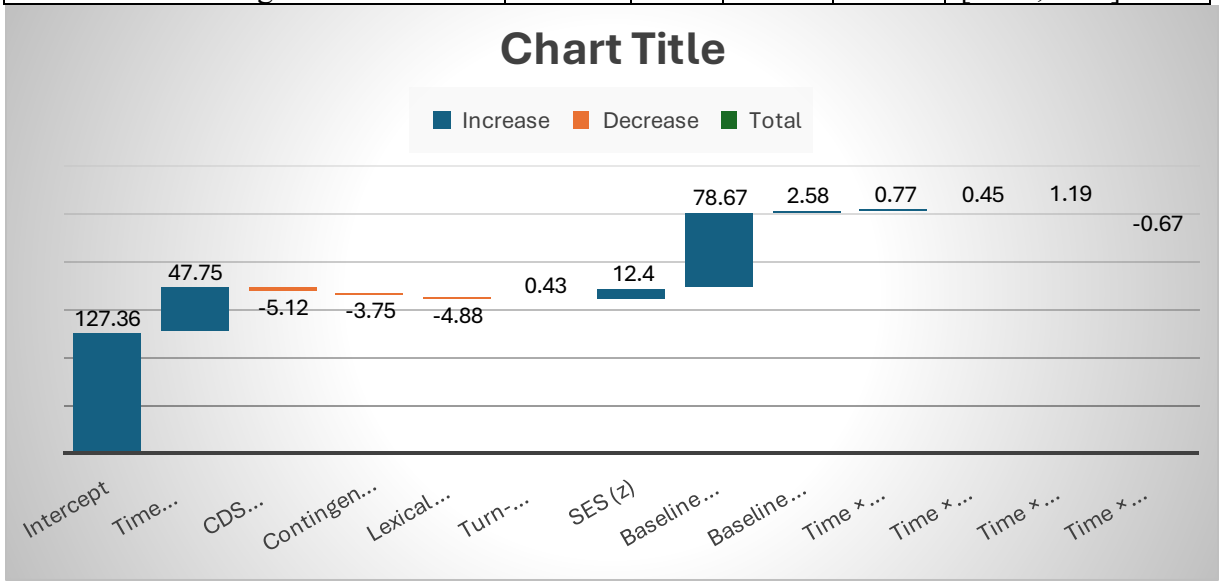
Baseline child age (z)	2.58	5.31	0.49	.627	[-7.82, 12.98]
Time × CDS proportion	0.77	0.47	1.66	.098	[-0.14, 1.69]
Time × Contingency	0.45	0.60	0.75	.451	[-0.72, 1.61]
Time × Lexical diversity	1.19	0.49	2.43	.015	[0.23, 2.16]
Time × Turn-taking	-0.67	0.46	-1.45	.148	[-1.57, 0.24]



4.6 Robustness checks

Results were stable when (a) excluding sessions with "uncertain addressee" segments from CDS/ADS ratio computation, (b) rerunning models without SES covariates, and (c) using alternative operationalizations of input (e.g., CDS tokens/min instead of CDS proportion). Missingness patterns were consistent with attrition rather than systematic predictor-related dropout, and conclusions did not change under standard missing-at-random handling.

DISCUSSION

This paper investigated the effect of variations in the age-related input of everyday language, namely, child-directed speech (CDS) and adult-directed speech (ADS) on the early vocabulary development during the 12-month span. Generally, the results indicate that input to the child is more closely connected with vocabulary development than the speech to be overheard when the latter is socially relevant and timed with what the child is focusing on (Donnelly and Kidd, 2021; Motamedi et al., 2024).

In the expression vocabulary, the proportion Time CSD effect was significant and as such, children with more CSD proportion had steeper growth. This helps to support the notion that CDS offers more accessible forms of linguistic as well as a learning environment where children are invited to participate, rehearse, and give feedback. The extra contribution of contingency (Time × Contingency) supports the belief that the responsiveness is one of the primary mechanisms: when the caregivers react promptly and purposefully to the vocalizations or actions of children, they assign them more clear mappings between words and referents and allow children to practice production more often (Ferjan Ramírez et al., 2020; Masek et al., 2021).

In the case of receptive vocabulary, the strongest growth was related to lexical diversity (Time × Lexical Diversity). This trend corresponds to the fact that the exposure to a wider variety of word types enhances the comprehension through expansion of the semantic networks and higher chances of children to learn words in a variety of contexts (Jones et al., 2023). The

receptive model indicates weaker or peripheral CDS effect, indicating that children may be particularly sensitive of what they hear (variety and informativeness) with production possibly receiving more benefit of how speech is programmed in interaction (contingent exchange and participation).

Notably, both SES and baseline vocabulary were still significant predictors, which underscores the fact that input functions within the frames of higher-level developmental and social ecologies. However, there are implications of the results to practical early language support targets: improving the percentage of child-directed talk, strengthening contingent responses and the diversity of lexical choices in everyday activities. To test causal pathways in work, interventions to study causal relations should be done in the future and look at whether similar trends also exist in cultural contexts where children hear more overheard speech (Bergelson et al., 2023).

CONCLUSION

This paper examined the role of child-directed speech (CDS) and adult-directed speech (ADS) in relation to the early vocabulary development over a 12-month interval. The results show that child-directed speech is a more effective organizer of vocabulary development than the speech that overhears an adult, which reflects the opinion that language acquisition is most effective when the input is socially significant, prompt, and in correspondence with child attention. Specifically, those children who were exposed to a greater percentage of CDS showed a greater increase in expressive vocabulary which underscores the role direct interaction can play in underwriting the developing production capabilities in children.

In addition to the volume of CDS, the study demonstrates that the manner in which caregivers converse is important too. Congent responsiveness-- utterances by the caregiver that respond to the vocalizations or actions of the child in a significant manner, was found to be associated with accelerated expressive development indicating that the back and forth interaction may give children better feedback on the word-referent mapping and more practice using the words in context. In the case of receptive vocabulary, the findings were more consistent about lexical diversity being one of the most important factors, meaning that more and more diverse input can serve to enhance more clearly children learning through comprehension and semantic knowledge.

Combinations of the effect of inputs to vocabulary growth are highlighted in the study: vocabulary growth is influenced by quantity (the opportunities to hear words), quality (diversity and clarity), and interactional structure (contingency and turn-taking). In practice, the findings indicate that caregivers and early-childhood educators can facilitate the vocabulary development process by means of enhancing direct talk with children, providing a quick response to communicative bids that children produce, and adding a greater diversity of meaningful words in the process of day-to-day routine.

References

Anderson, N. J., Graham, S. A., Prime, H., Jenkins, J. M., & Madigan, S. (2021). Linking quality and quantity of parental linguistic input to child language skills: A meta-analysis. *Child Development, 92*(2), 484–501. https://doi.org/10.1111/cdev.13508

Ataman-Devrim, M., Nixon, E., & Quigley, J. (2023). Joint attention episodes during interactions with fathers but not mothers at age 2 years is associated with expressive language at age 3 years. *Journal of Experimental Child Psychology, 226*, 105569. https://doi.org/10.1016/j.jecp.2022.105569

Bergelson, E., Casillas, M., Bergmann, C., Seidl, A., Warlaumont, A. S., Amatuni, A., Aravind, A., Cristia, A., … Kidd, E. (2023). Everyday language input and production in 1,001 children

from six continents. *Proceedings of the National Academy of Sciences, 120*(52), e2300671120. https://doi.org/10.1073/pnas.2300671120

Cychosz, M., Edwards, J. R., Bernstein Ratner, N., Eaton, C. T., & Newman, R. S. (2021). Acoustic-lexical characteristics of child-directed speech between 7 and 24 months and their impact on toddlers' phonological processing. *Frontiers in Psychology, 12*, 712647. https://doi.org/10.3389/fpsyg.2021.712647

De Anda, S., & Friend, M. (2020). Lexical-semantic development in bilingual toddlers at 18 and 24 months. *Frontiers in Psychology, 11*, 508363. https://doi.org/10.3389/fpsyg.2020.508363

Donnelly, S., & Kidd, E. (2021). The longitudinal relationship between conversational turn-taking and vocabulary growth in early language development. *Child Development, 92*(2), 609–625. https://doi.org/10.1111/cdev.13511

Ferjan Ramírez, N., Lytle, S. R., & Kuhl, P. K. (2021). Comparing automatic and manual measures of parent–infant conversational turn count. *Child Development, 92*(3), 970–986. https://doi.org/10.1111/cdev.13495

Ferjan Ramírez, N., Lytle, S. R., Fish, M., & Kuhl, P. K. (2020). Parent coaching at 6 and 10 months improves language outcomes at 14 months: A randomized controlled trial. *Proceedings of the National Academy of Sciences, 117*(9), 4753–4762. https://doi.org/10.1073/pnas.1921653117

Han, M., De Jong, N. H., & Kager, R. (2022). Prosodic input and children's word learning in infant- and adult-directed speech. *Infant Behavior and Development, 68*, 101728. https://doi.org/10.1016/j.infbeh.2022.101728

Hitczenko, K., & Feldman, N. H. (2022). Naturalistic speech supports distributional learning across contexts. *Proceedings of the National Academy of Sciences of the United States of America, 119*(38), e2123230119. https://doi.org/10.1073/pnas.2123230119

Holme, C., Harding, S., Roulstone, S., Lucas, P. J., & Wren, Y. (2022). Mapping the literature on parent–child talk across activity contexts: A scoping review. *International Journal of Early Years Education, 30*(1), 1–22. https://doi.org/10.1080/09669760.2021.2002135

Jones, G., Cabiddu, F., Barrett, D. J. K., Castro, A., & Lee, B. (2023). How the characteristics of words in child-directed speech differ from adult-directed speech to influence children's productive vocabularies. *First Language, 43*(3), 253–282. https://doi.org/10.1177/01427237221150070

Kandemir, S., Özer, D., & Aktan-Erciyes, A. (2024). Multimodal language in child-directed versus adult-directed speech. *Quarterly Journal of Experimental Psychology*, *77*(4), 716-728. https://doi.org/10.1177/17470218231188832

Lee, C., & Lew-Isiams, C. (2022). Speech and social cues combine at discourse boundaries to promote word learning. *Cognitive Development, 64*, 101254. https://doi.org/10.1016/j.cogdev.2022.101254

Masek, L. R., McMillan, B. T. M., Paterson, S. J., Tamis-LeMonda, C. S., Golinkoff, R. M., & Hirsh-Pasek, K. (2021). Where language meets attention: How contingent interactions promote learning. *Developmental Review, 60*, 100961. https://doi.org/10.1016/j.dr.2021.100961

Motamedi, Y., Murgiano, M., Grzyb, B., Gu, Y., Kewenig, V., Brieke, R., ... & Vigliocco, G. (2024). Language development beyond the here-and-now: Iconicity and displacement in child-directed communication. *Child Development*, *95*(5), 1539-1557. https://doi.org/10.1111/cdev.14099

Nencheva, M. L., & Lew-Isiams, C. (2022). Understanding why infant-directed speech supports learning: A dynamic attention perspective. *Developmental Review, 66*, 101047. https://doi.org/10.1016/j.dr.2022.101047

Pierson, S. G. (2024). *The acquisition of verbal morphology in Ayöök: Child-Directed speech, child language, and learning in the home* (Doctoral dissertation). https://doi.org/10.26153/tsw/58448

Preza, L. E., & Hadley, P. A. (2022). Parent responsivity, language input, and the development of simple sentences. *Journal of Child Language, 49*(6), 1286–1311. https://doi.org/10.1017/S0305000922000459

Schick, J., Fryns, C., Wegdell, F., Laporte, M., Zuberbühler, K., van Schaik, C. P., & Stoll, S. (2022). The function and evolution of child-directed communication. *PLOS Biology, 20*(5), e3001630. https://doi.org/10.1371/journal.pbio.3001630

Shi, J., Gu, Y., & Vigliocco, G. (2023). Prosodic modulations in child-directed language and their impact on word learning. *Developmental Science, 26*(4), e13357. https://doi.org/10.1111/desc.13357

Soderstrom, M., Casillas, M., Gornik, M. C., Bouchard, C., MacEwan, H., Shokrkon, A., & Bunce, J. (2021). Adults' labeling of child-directed speech vs. adult-directed speech across languages. *Frontiers in Psychology, 12*, 708887. https://doi.org/10.3389/fpsyg.2021.708887

Soley, G., & Sebastián-Gallés, N. (2020). Infants' expectations about the recipients of infant-directed and adult-directed speech. *Cognition, 198*, 104214. https://doi.org/10.1016/j.cognition.2020.104214

The ManyBabies Consortium. (2020). Quantifying sources of variability in infancy research using the infant-directed-speech preference. *Advances in Methods and Practices in Psychological Science, 3*(1), 24–52. https://doi.org/10.1177/2515245919900809

Wang, Y., Isiams, R., Dilley, L. C., & Houston, D. M. (2020). A meta-analysis of the predictability of LENA™ automated measures for child language development. *Developmental Review, 57*, 100921. https://doi.org/10.1016/j.dr.2020.100921