



The Different Use of CDS and the Effects of CDS with Child Language Development

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Abstract. The different use of Child Directed Speech (CDS) and the effects of CDS on children's language acquisition was analysed in this paper. It is necessary to investigate the relationship between child's language development and CDS since it could lead a new view for academic researchers and a new way of communicating with children could be provided for mothers/caregivers. First, some families use CDS communicating with their children while some families do not. Mothers tend to use CDS in order to pass the conversational turn to their children. Mothers of high socioeconomic status did not tend to use CDS, but tended to use longer and more complex utterances. The investigations in finding the effect of CDS on children's language acquisition have conflicting predictions, some researchers find the simplicity of CDS has no correlation with children's language progress, while some researchers find some features in CDS help children in some domain of language acquisition. The research procedure of former studies might have possibilities of not considering some other study models that could affect the accuracy of the prediction, which could provide suggestions for future studies to consider other existing study models.

Keywords: Child Directed Speech · Language development · Prosodic cues · social interactions

1 Introduction

Infants firstly sitting in a communicative environment with their mothers or caregivers, the interactions between infants and their mothers provide the linguistic data for the children [1]. It has been clearly stated that the speech addressing children and the speech among adults have systematic differences [2], this particular style of speech called Child Directed Speech (CDS) which embodies the features of short utterances, a higher pitch, fewer false starts, exaggerated intonation, and repetitions for example, "moo moo" for "cow" [3]. To further explore the relationship between CDS and infants' language acquisition, there are many different studies investigating the usage of CDS and the potential influences of CDS.

The application of CDS is different in different families, in some families the mothers or caregivers use the CDS addressing to children, while some families tend not to use the CDS. In families where mothers using CDS, the main purpose have connection with

passing the conversational turn to their children [3]. In families where mothers not using CDS seem to have connections with their socioeconomic status (SES), since High-SES mothers uses more and longer utterances than Low-SES mothers [4].

There are differences in applying CDS within different families, the effects of CDS might be different as well. On account of the large number of studies investigating the potential effect between CDS and children's language acquisition, there are some conflicting predictions presented in different studies. For example, the study by Newport et al. [1]. Presented the prediction that there is no correlation between the simplicity of CDS and child's language progress. However, in some studies there are correlations found between CDS and children's language growth. Since former studies didn't do a systematic representation of these information, therefore, a systematic sorting of these information is going to be present in this paper.

In this paper, the main research is the different use of CDS and the effect of CDS on children's language acquisition. This paper is going to briefly introduce the nature and specific performance of CDS, the application details in different families and the starting point of mothers for using or not using CDS. Further, this paper will review former research on the effect and non-effect of CDS, particularly with the relationship between prosodic cues and children's language learning, and the relationship between social interactions and children's language learning. Further, the individual differences by using CDS is going to be represented as well. Furthermore, a possible limitation of former research which might affect the accuracy of the prediction and an expectation for future investigation is going to be presented in this paper.

2 The Nature and Specific Performance of CDS

The Child Directed Speech (CDS) refers to a stylistic variant of everyday speech used by adults when talking to infants [1]. It is found in many recent investigations that the speech used for speakers like mothers' speech addressing a very young child differs from the speech uses among adults, therefore it gained its own name—"Motherese" [1]. There are some certain characteristics embodies in this speech style. It is always simpler than adult speech at first glance, for instance, it is often short since in the study the mean MLU was 4.24 while the mean MLU to adults was 11.94 [1]. According to Pine [3], Child directed speech tends to contain hesitations or fewer false starts, it is often short, well-formed and tends to embody fewer subordinate clauses and complex sentences. It also has a more exaggerated intonation, a higher pitch and is also slower in tempo compared to adults' speech and highly redundant since it contains part or whole repetitions. In addition, "the high pitch, exaggerated intonation, the short utterances spoken slowly with pauses" these features could be classifying into prosodic characteristics which belongs to motherese [5]. However, Motherese is not invariably syntactically simpler than adult speech since 70% of sentences from the mothers to children are complex which includes questions, negatives, embedded sentences, passives, imperatives [1].

2.1 The Application Details of CDS in Different Families

By analysing the potential influence of CDS on language acquisition from children, it is important to compare the different nature of language children exposed to. One of

the distinguishing features of different nature of language is that some families use the child-directed speech when talking to infants, while some families not. The reason for using CDS was stated as “mothers do not talk at children, but with them” [6]. Unlike the conversation between adults which simply communicating information, the purpose of using CDS is to pass the conversational turn to their children in order to engage them in conversation [3]. As Pine [3] stated, the speech of mothers is shaped by the children’s interests, ideas, their cognitive and linguistic abilities which could be reflected in the simplicity of semantic in CDS and the high percentage use of questions in CDS.

However, in some families the mothers or caregivers do not tend to use CDS in their communications with their children, and it seems to have connections with socioeconomic status (SES). According to Rowe [4], mothers who have higher socioeconomic status tends to use more different words and more longer utterances during their conversation with their children, which is the opposite to CDS since CDS is more likely to be simple and short. Rowe’s idea could be supported by Hart and Risley [7] since they investigated the estimation of utterances from high-SES families and low-SES families which is around 11000 and 700, respectively. In addition, parents’ belief about their communication and child development matters in whether using CDS or not. The reason behind this is the parents believe their babies are unable to understand speech therefore it is senseless to communicate with them [8]. For instance, in the research with the Kaluli of Papua New Geinea [9], the adults have a belief that their children have no understanding so they do not provide communicative interactions with their children.

3 The Effects of Using CDS

There has been a large number of studies about the correlation between CDS and children’s language development, the first study among these were the study by Newport et al. [1]. In Newport et al.’s study, fifteen mothers and their daughters were involved visiting two sessions spaced half a year apart. The children were divided into three groups equally from 1;0 to 2;3, the families involved in this study were all middle class, and the mothers were informed about the study was only to investigate their children’s speech instead of investigating both their language and their children’s language. 100 utterances to babies from their mothers and 50 utterances to the experimenter from the mothers were involved in this study, and the language growth from the children between session 1 and session 2 were computed based on the characteristics of the mothers’ speech recorded in interview 1. The main task in this study was to investigate whether the child language growth could be predicted by the individual differences in their mothers’ speech. After the initial language of the children and children’s starting age in the research were partially excluded, Newport et al. found the result which support the idea that there is no correlation between children’s language progress and the simplicity of mother’s speech [1]. In addition, in the study by McDonald and Pien [10], they found negative relationships between mothers’ use of conversation-eliciting devices and mothers’ use of directives, verbal reflective, and report questions. According to Pine [3], the negative relationship found by McDonald and Pien may be a reflection of mothers’ adopting a “conversation-eliciting” style of interaction by the negative relationships between children’s language growth and mothers’ imperative use.

However, Furrow et al. [11] argues that the study of Newport et al. was not entirely convincing. In the study of Newport et al. it was assumed that the effects of motherese on different ages and different levels of language development are similar, and regardless of a child's age or language development stage the changes of particular forms were equal. However, according to Furrow et al. [11], the effects will be different depends on different ages or stages. The study of Furrow et al. [11] involves seven mothers and their children which includes 4 male and 3 female, they were all middle class. They accessed the effects on children's language growth from mothers' speech and measures the children's speech at 2:3 [11]. In the study by Furrow et al. [11], they have found the relationship between maternal MLU and children's subsequent language growth and have found the relationship between the specific aspects of children's language growth and the correlated features from maternal speech. In this study they have found that several characteristics of CDS for example like the use of pronouns provide a significant prediction for later child's language. In addition, in the study of Irvin et al. [12] which investigating the causality between the child's language development and CDS complexity, they found correlations between children's language development and CDS. They used dynamical systems to detect whether or not there are some causal relations between child's language development and the complexity of CDS which could further detect whether or not there exist some correlations. 12 children aged 2:0 to 3:0 approximately were involved in this study, they analysed the recordings which recorded the interactions between children and their mothers. The results reflect a causal link between the amount of words produced by children and the amount of words produced by their mothers, they also found that the richness of children's vocabulary production could be influenced by the richness of their mothers' vocabulary production. Therefore, the study of Irvin et al. [12] indicates that the CDS used by mothers could influence the children's language development.

3.1 The Relationship Between Prosodic Cues and Language Learning

There are many special characteristics in Motherese, prosodic characteristics could be one of these that could play a role in promoting syntax acquisition. According to the study of Broen [13], it was found that the pause in maternal speech is more reliable than the cues found in adult speech which is clause boundaries. Moreover, the rising pitch in maternal speech could be seen as a distinctive cue to segment clauses [14]. The more recent study from Ratner [15] further confirmed the idea, Ratner found that the lengthening of final segment in a clause before one clause boundaries is used more frequently than in adult speech. In addition, the study from Hirsh-Pasek et al. [16] investigated the relationship between child's language development and prosodic cues, they have found that the infants are particularly sensitive to prosodic cues in the ages from 0:7 to 0:10, and they found that the prosodic cues plays a role in helping children to segment the speech. Therefore, the prosodic cues in CDS may help the children to segment speech and help them to reveal some structure of the language which corresponding to grammatical units of the language, which could further help the children in syntax acquisition [5].

3.2 The Relationship Between the Naming in Social Interactions and Language Learning

CDS provided the opportunities for children's social interactions, learning their own names is an important step for children as a pre-requisite of normal social interactions [17], and the usage of children's name may affect children's use of personal pronoun. In the investigation of Durkin et al. they randomly selected eighteen mothers with their children divided into three different age groups—1:0, 1:6, 2:0, respectively. Mothers and their children were filmed for about 12 to 15 min in order to find the use of children's name and the mothers' use of their own name. In the results of this study they have found that the major use of the child's name are Instruction to Act and Attention-Orienting, and when using proper names the mothers/adults engage in deviant speech. The possible explanation they have found is that the children was found by their parents of having highly desirable to learn their own names and its familiar interactants' names [17], which could further help them developing their learning in pronouns.

3.3 Differences in Specific Population

It is interesting to investigate the potential differences of language development caused by individual difference. Landau and Gleitman [18] investigated the language development of three blind children from preschool, they found that the blind children were delayed on "the mean number of morphemes that appear in the verb + auxiliary" compared to sighted children at a similar MLU. Landau and Gleitman interpret this difference as an index of auxiliary growth based on the study of Newport et al. which stated that there exist correlations between the auxiliary verb growth and the frequency of the use of yes-no questions [19]. Therefore, Landau and Gleitman compared the frequency of yes-no questions addressing two of the blind children with the sighted children's MLU presented in the study of Newport et al. study. They further confirmed their idea that the blind children were exposed to the environment containing a relatively low range of yes-no questions [19].

While the most effective approach for hearing mothers to express information is the voice quality, it is unavailable for deaf mothers. It is the facial expression to be the most effective approach for deaf mothers to express information. As Reilly and Bellugi [20] stated, in American Sign Language (ASL), the facial behaviours function affectively in communicating information, also function as grammatical markers in condition of using specific facial behaviours. In the study of Reilly and Bellugi [20], they investigated 15 children with their deaf mothers, the children ages from 0:9 to 2:8 with the main focus of analysing child-directed maternal wh-questions. As Reilly and Bellugi [20] stated, facial behaviours are required as morphological markers in ASL. For example, conditionals, relative clauses and questions. As being morphological markers in these instances, the speakers represent head tilts and/or lip pursing, particular brow movement [20]. The results presented in the study of Reilly and Bellugi [20] showed different patterns at age two, the adults ask wh-questions addressing to the children under age two with the expression of mock surprise or blank face, which could be seen as ungrammatical since they lack the feature of grammatically obligatory furrowed brows. However, the adults ask the wh-questions addressing to the children at about age two with grammatical facial

expression which is a slightly tilted head with furrowed brows. Therefore, the conclusion found by Reilly and Bellugi [20] was that there is a dramatic shift occurs when the child was about 2;0, that is, the motherese becomes fully grammatical when the children enter the language grammar.

4 Limitation of Prior Research and Future Investigation

Since the complex and contradictory theories were found in literatures, there might exist potential limitations which could affect the accuracy of the prediction. For example, the cross-validation might be incomplete in the studies, which could further affect the conclusions be considered tentative. It suggests that further studies should complete the procedure in studies to ensure the accuracy of the results. Moreover, in some findings of the studies might contradicts with other study models. This suggests that future studies should consider the existing models to fulfill the findings. In addition, some sample size in the studies is relatively small, which could influence the accuracy of the prediction. Therefore, the future studies should implement a larger sample size to see if the relationship is positive or not.

5 Conclusion

The main research problem in this paper is the differences of CDS application in different families and the effects of CDS. To conclude, in analysing the different use of CDS, this paper has found the fact that mothers tend to use CDS in order to pass the conversational turn to their children, while the mothers who tend not to use CDS usually have higher socioeconomic status and they tend to use more complex and longer utterances in conversations with their children. In analysing the effects of CDS on children's language acquisition this paper has found contradictory predictions in former research, some researchers found there is no correlation between children's language progress and the simplicity of CDS, while some researchers found the MLU of CDS predicts some aspect of children's language growth. Further, this paper includes the idea that the prosodic cues in CDS could help children in syntax acquisition. Furthermore, the naming in social interactions between mothers and children could help them to develop their pronoun learning. In addition, the different features and different quantity of some features in CDS form as an input to blind children or deaf children could lead to the difference in language development. This paper tends to get attention from mothers who are interested in teaching their children about language, mothers who may wonder whether or not their speech influences their children's speech, and academic researchers who are interested in first language acquisition. The previous research might be not considering other study models, this suggests that for researchers who would like to do further investigations on the relationship between child's language development and CDS need to consider other existing study models to make more accurate prediction.

References

1. Newport, E. L., Gleitman, H., & Gleitman, L. R. (1977). Mother I'd rather do it myself: Some effects and non-effects of maternal speech style. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition*. Cambridge University Press.

2. Snow, C. E. (1972). Mothers' speech to children learning language. *Child development*, 43, 549–565.
3. Pine, J. M. (1994). The language of primary caregivers. In C. Gallaway & B. J. Richards (eds.), *Input and interaction in language acquisition* (pp. 15–37). Cambridge Press. <https://doi.org/10.1017/CBO9780511620690.003>
4. Rowe, M. (2008). Child-directed speech: Relation to socioeconomic status, knowledge of child development and child vocabulary skill. *Journal of Child Language*, 35(1), 185–205. <https://doi.org/10.1017/S0305000907008343>
5. Nelson, D., Hirsh-Pasek, K., Jusczyk, P., & Cassidy, K. (1989). How the prosodic cues in motherese might assist language learning. *Journal of Child Language*, 16(1), 55–68. <https://doi.org/10.1017/S030500090001343X>
6. Snow, C. E. (1986). Conversations with children. In P. Fletcher & M. Garman (Eds.), *Language acquisition: Studies in second language development* (2nd ed.). Cambridge University Press.
7. Hart, B., & Risley, T. (1995). *Meaningful differences in the everyday experience of young American children*. Brookes.
8. LeVine, R. A. (2004). Challenging expert knowledge: Findings from an African study of infant care and development. In U. P. Gielen & J. L. Roopnarine (Eds.), *Childhood and adolescence: Cross-cultural perspectives and applications* (pp. 149–165). Praeger.
9. Ochs, E., & Schieffelin, B. B. (1984). Language acquisition and socializations: Three developmental stories and their implications. In R. A. Shweder & R. A. LeVine (Eds.), *Culture theory: Essays on mind, self and emotion* (pp. 276–320). Cambridge University Press.
10. McDonald, L., & Pien, D. (1982). Mother conversational behaviour as a function of interactional intent. *Journal of Child Language*, 9(2), 337–358. <https://doi.org/10.1017/S030500090000475X>
11. Furrow, D., Nelson, K., & Benedict, H. (1979). Mothers' speech to children and syntactic development: Some simple relationships. *Journal of Child Language*, 6(3), 423–442. <https://doi.org/10.1017/S0305000900002464>
12. Irvin, J., Spokoyny, D., & del Prado Martin, F.M. (2016). Dynamical systems modelling of the child-mother dyad: Causality between child-directed language complexity and language development. In *CogSci*.
13. Broen, P. (1972). The verbal environment of the language learning child. *American Speech and Hearing Association Monographs* 17.
14. Garnica, O. K. (1977). Some prosodic and paralinguistic features of speech to young children. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition*. C.U.P.
15. Berstein, N., & Pye, C. (1984). Higher pitch in BT is not universal: Acoustic evidence from Quiche Mayan. *Journal of Child Language*, 11, 515–522.
16. Hirsh-Pasek, K., Kemler Nelson, D. G., Jusczyk, P. W., Cassidy, K. W., Druss, B., & Kennedy, L. (1987). Clauses are perceptual units for young infants. *Cognition*, 26, 269–286.
17. Durkin, K., Rutter, D. R., & Tucker, H. (1982). Social interaction and language acquisition: Motherese help you. *First Language*, 3(8), 107–120. <https://doi.org/10.1177/014272378200300803>
18. Landau, B., Gleitman, L. R., & Landau, B. (2009). *Language and experience: Evidence from the blind child* (Vol. 8). Harvard University Press.
19. Richards, B. J. (1994). Child-directed speech and influences on language acquisition: Methodology and interpretation. *Input and interaction in language acquisition*, 74–106.
20. Reilly, J., & Bellugi, U. (1996). Competition on the face: Affect and language in ASL motherese. *Journal of Child Language*, 23(1), 219–239. <https://doi.org/10.1017/S0305000900010163>

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