Gender-Biased Language in Maternal Directed Speech

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Abstract

This study investigates the presence and implications of gender-biased language within maternal directed speech (MDS) to children, analyzing data from middle-class white American families during the 1980s and 1990s. Through a detailed examination of maternal utterances to 19 children (8 girls and 11 boys) with over 500 recorded words, the research sought to identify patterns in the usage of gender-biased nouns and their potential role in early gender socialization. Statistical analyses, including ANOVA and proportional analysis, revealed no significant effects of the sex of the child on the frequency of gendered nouns. However, subtle tendencies were observed in the preferential use of gender-congruent nouns, albeit constituting a small fraction of maternal speech. The findings are contextualized within its limitations, including the historical period of data collection, the homogeneity of the sample, and the small sample size. Despite these constraints, this research contributes to the broader discourse on gender socialization, highlighting the need for further studies with more diverse and contemporary samples. The study underscores the complex interplay between language, gender, and socialization, pointing towards the evolving nature of gendered linguistic practices and their implications for children's development.

Keywords: Gender-Biased Language, Maternal Directed Speech, Gender Socialization, Linguistics, Child Development

Word count: 1701

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Introductions

Numerous studies in recent decades have demonstrated that gender role socialization starts from birth (e.g., Birns, 1976; Honig, 1983). Parents play a crucial role in influencing their children to engage in gender role stereotyped activities, and that these perceptual biases influence the children's own self-perceptions and activity choices (Eccles, Jacobs, & Harold, 1990).

In the field of language development, researchers have postulated that Maternal Directed Speech (MDS) is an ideal signal for language learning due to infants' strong preference for it, providing attentional, emotional, linguistic, and social cues (Ferjan Ramírez, 2022). Recent studies examining language input to boys and girls reveal distinct biases in IDS content, with boys exposed more to words associated with outdoor scenes and girls to terms related to clothing and body parts (Kachergis, Francis, & Frank, 2023; Wallentin & Trecca, 2023). Parents tend to discuss emotions more with girls than boys (Adams, Kuebli, Boyle, & Fivush, 1995), explain scientific content more to boys in certain settings (Crowley et al., 2001), and engage in cognitive development-promoting discussions more frequently with boys (Weitzman, Birns, & Friend, 1985).

Although parental interactions, name choices, and attire vary based on their children's sex, they are all crucial in shaping gender identity, and carry profound implications for cognitive processes and linguistic development (Perry, Pauletti, & Cooper, 2019). Infants demonstrate an early awareness of gender differences, showing preferences for gender-associated objects within the first year (Levy & Haaf, 1994). By age 3, most children exhibit awareness of gender stereotypes, influencing their preferences and behaviors (Martin & Little, 1990). Moreover, children increasingly regulate their behavior based on these gender-based conceptions once they develop a sense of their gender identity (Bussey & Bandura, 1999). Powlishta (1995) demonstrates that despite own-sex favoritism,

children between 8 and 10 years old already have differing views of the masculinity or femininity of personality traits. Both boys and girls ascribe certain personality attributes as masculine or feminine. Traits such as “polite”, “shares”, “soft-hearted”, “gentle”, “affectionate”, “gloomy”, and “cries” are perceived as feminine whereas qualities like “bold”, “strong”, “messy”, “fights”, “cruel”, “loud”, and “crude” are associated with masculinity. This divide aligns with the Stereotype Content Model (Cuddy, Fiske, & Glick, 2008). Researchers have also identified distinction between stereotypically feminine communal traits (matching the warmth dimension) and stereotypically masculine agentic traits (matching the competence dimension; Cuddy et al. (2008)).

Despite this rich understanding, little is known about how gender-biased IDS from parents influences children’s development of gender concepts. It is vital for us to ask these questions because biases in parental communication can significantly shape children’s attitudes towards relationships, educational equality, career aspirations, and overall well-being (Wei & Hendrix, 2009).

Methods

This study investigates the presence of gender-specific nouns within MDS. We hypothesize that the sex of the child significantly alters the frequency and type of gendered nouns in MDS, potentially fostering early gender bias.

Hypothesis

It is posited that MDS to male infants will contain a higher frequency of nouns related to male stereotypes. Conversely, speech directed at female infants is expected to feature more nouns aligned with female stereotypes.

Data Source and Selection Criteria

We will conduct a re-analysis of data from 6 previously compiled corpora within the CHILDES database (McCune, Providence, Warren, Gleason, VanHouten, and Weist), focusing on transcripts of mother-child interactions. The CHILDES database, part of the TalkBank system, offers extensive transcripts of naturalistic child language data. For the purposes of this study, we will examine interactions involving 58 children (age: 12-36 months), ensuring that only utterances recorded at least 500 times are considered to maintain robust data validity. The gender-biased nouns are extracted from the two lists "Most female/male biased words in English (America) for comprehension data" of the Wordbank data report (2016).

Analytical Approach

This study will employ statistical methods to compare the frequency of gender-biased nouns and adjectives in maternal speech directed toward sons and daughters. A two-way ANOVA will be utilized to evaluate the significance of any observed differences, taking into account the multiple comparisons being made.

Results

After preliminary data processing and analysis, this study yielded basic information about the 19 children (8 girls, 11 boys) who had more than 500 total utterances across the six corpora analyzed. This subset of data includes a detailed examination of the total number of utterances and the number of nouns within these utterances that exhibited gender bias.

Table 1

Frequency of maternal input of gender-biased nouns

Name.of.child	Sex	Utterances	Female.biased.nouns	Male.biased.nouns
Alex	male	19296	135	225
Alice	female	2081	106	66
Benjamin	male	914	36	1
David	male	688	75	24
Ethan	male	23210	269	715
Jase	male	1777	88	71
Jillian	female	2550	75	6
Laura	female	1360	55	25
Lily	female	38035	1289	356
Martin	male	773	33	2
Matt	male	3947	85	50
Naima	female	36986	964	410
Nanette	female	609	15	0
Patricia	female	567	3	3
Rick	male	974	51	21
Ronny	male	721	46	47
Victor	male	504	6	2
Violet	female	14361	460	52
William	male	15388	160	286

As can be seen in Table 1, the frequency and distribution of gender-biased nouns in maternal input vary across the children.To better visualize the data.

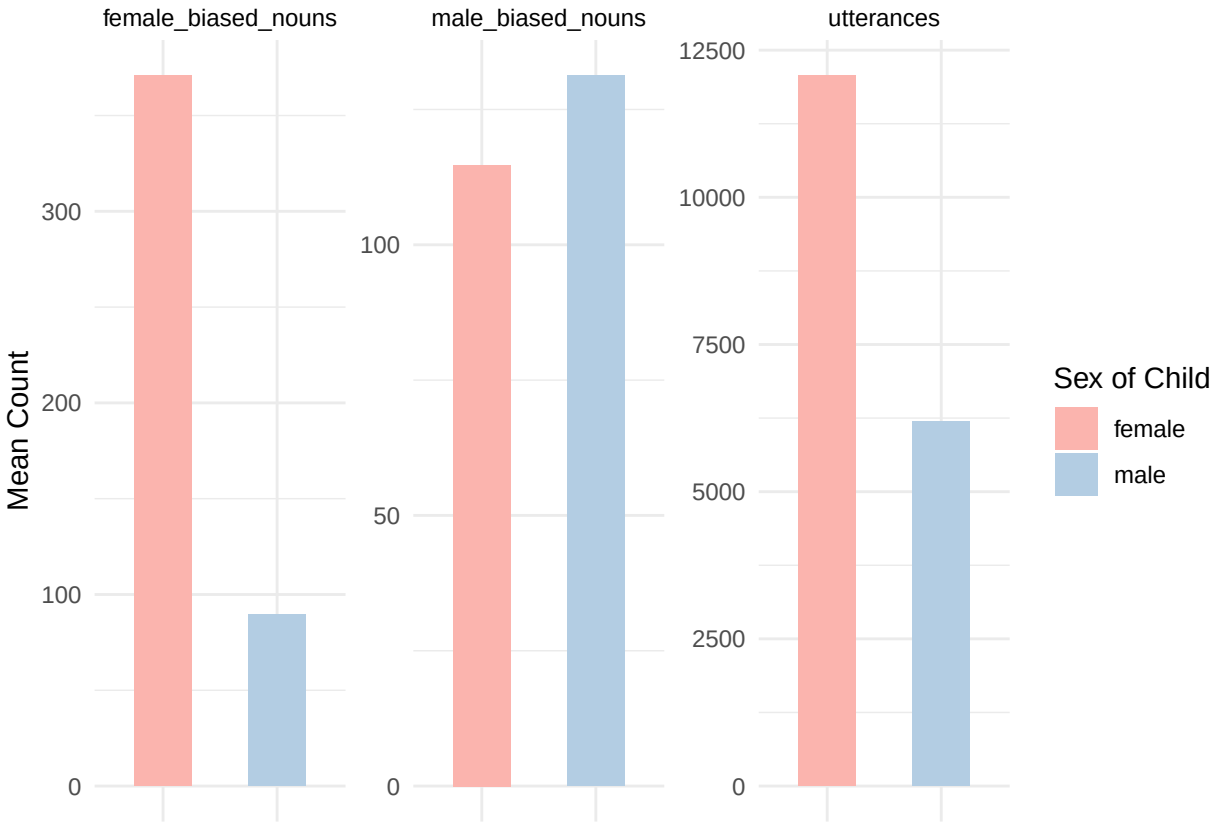

Figure 1. Comparison of Mean of Occurrence

Building upon this quantitative foundation, Figure 1 provides a compelling visual representation of the data, facilitating a more intuitive understanding of the patterns observed. The mean occurrence of female-biased nouns is significantly higher in mothers' directed speech to female infants compared to male infants. This suggests a tendency among mothers to use nouns associated with female stereotypes more frequently when interacting with daughters.

Conversely, the mean occurrence of male-biased nouns shows a slight increase in speech directed toward male infants over female infants. Although this difference is not as pronounced as that observed with female-biased nouns, it nonetheless indicates a subtle preference for using nouns related to male stereotypes when mothers communicate with their sons.

Notably, the analysis also highlights that both male-biased and female-biased nouns constitute a small fraction of the total number of utterances. This observation suggests that while gendered language is present in maternal speech, it represents a relatively minor component of the overall linguistic input provided to infants.

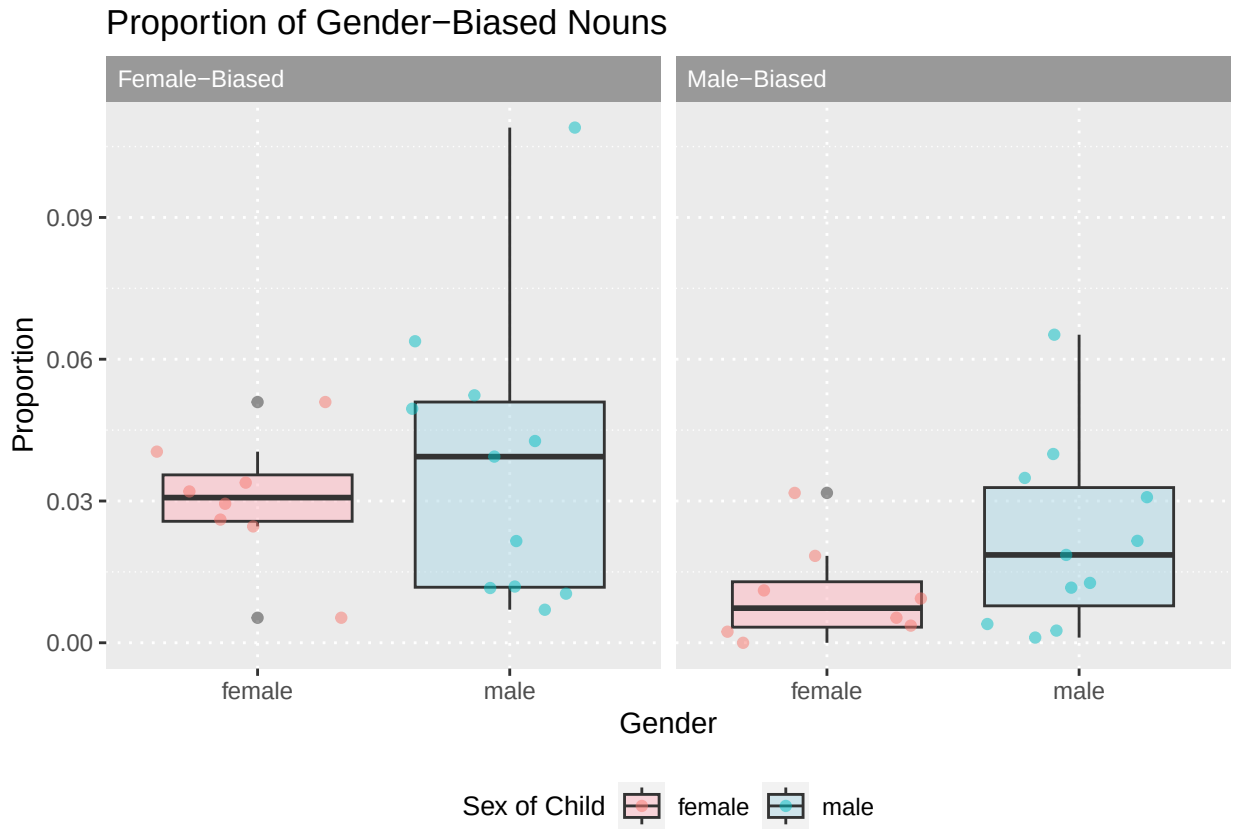

Figure 2. Proportion of Gender Biased Nouns in MDS

As depicted in Figure 2, our analysis reveals distinct patterns in the usage of gender-biased nouns within maternal speech. The box plots illustrate that the proportions of both male-biased and female-biased nouns slightly favor the corresponding child's gender, albeit with considerable individual variability. Notably, the overall proportion of gender-biased nouns remains low, indicating that such language forms a minor part of maternal input.

```
##             Df   Sum Sq   Mean Sq F value Pr(>F)
```

```
## Sex          1 0.000652 0.0006516    2.44  0.137
## Residuals   17 0.004540 0.0002671
```

```
##             Df  Sum Sq   Mean Sq F value Pr(>F)
## Sex          1 0.00028 0.0002797   0.446  0.513
## Residuals   17 0.01066 0.0006273
```

As shown above, the ANOVA results for male-biased nouns indicated no significant effect of the child's sex on the usage frequency of these nouns in MDS ($F = 2.44$, $p = 0.14$). Similarly, the analysis for female-biased nouns also showed no significant effect ($F = 0.45$, $p = 0.51$). These results suggest that the sex of the child does not significantly influence the frequency of gender-biased nouns used by mothers in their directed speech.

Proportional Analysis

Further analysis of the data revealed that, on average, mothers used female-biased nouns more frequently when addressing female children (370.88) compared to male children (89.45). Conversely, male-biased nouns were used slightly more in speech directed towards male children (131.27) than female children (114.75). However, the proportional analysis, which examined the frequency of these nouns relative to total utterances, indicated a more nuanced pattern. Male children received a higher proportion of both male-biased (0.02) and female-biased (0.04) nouns compared to female children, who had mean proportions of 0.01 for male-biased and 0.03 for female-biased nouns, respectively.

The results highlight a complex interaction between the child's sex and the type of gender-biased language used by mothers. While the ANOVA results did not show significant differences in the use of gender-biased nouns based on the child's sex, the proportional analysis suggests a subtle variance in how these nouns are distributed in maternal speech. This finding underscores the importance of considering both the

frequency and context of gendered language in understanding its potential impact on children's gender bias development. Further research is needed to explore the implications of these patterns for children's socialization and the formation of gender stereotypes.

Discussion

The present study's exploration into the nuances of gender-biased language within MDS offers valuable insights, yet is contextualized within specific limitations that warrant consideration. Firstly, the temporal context of the data, collected during the 1980s and 1990s, reflects linguistic and social norms of a period significantly removed from the present day. The societal attitudes and norms surrounding gender have evolved considerably since then, potentially affecting the generalizability of these findings to contemporary contexts. This historical aspect underscores the necessity for cautious interpretation of the results, acknowledging that the dynamics of gendered language and its influence on child development might manifest differently in today's sociocultural environment.

Furthermore, the demographic homogeneity of the sample, comprising middle-class white American families, introduces another layer of limitation. This lack of diversity restricts the study's ability to account for the multifaceted nature of language use across different cultural, racial, and socioeconomic backgrounds. Given that family dynamics, linguistic practices, and gender socialization processes can vary widely across cultures and social strata, the findings of this study may not fully encapsulate the diversity of maternal linguistic behavior and its impact on children's perception of gender.

Additionally, the small sample size—restricted to children who had more than 500 words in their recorded utterances—presents a limitation in terms of statistical power and representativeness. While this criterion was established to ensure a robust analysis of linguistic patterns, it inevitably narrows the scope of the study, potentially omitting valuable insights from children with fewer recorded utterances. This limitation highlights

the challenge of balancing methodological rigor with the need for a comprehensive and inclusive analysis.

Despite these constraints, the study contributes to the ongoing discourse on gender socialization and the role of language in shaping children's understanding of gender roles. It underscores the subtle yet significant ways in which gender-biased language permeates early childhood environments, albeit within a specific historical and demographic context. The findings prompt further research that addresses these limitations, advocating for more recent, diverse, and extensive datasets to examine the evolution of gendered language practices and their implications for child development.

In conclusion, while this study provides a foundational understanding of the intersection between maternal speech and gender socialization, it also delineates clear avenues for future research. By expanding the temporal, cultural, and demographic breadth of research in this area, scholars can better elucidate the complex dynamics at play in the transmission of gender norms through language, contributing to a more nuanced understanding of gender development across diverse contexts.

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