

BRIEF RESEARCH REPORT

Communicative functions of parents' child-directed speech across dyadic and triadic contexts

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Abstract

This study examined the roles of parental gender and context in the communicative functions of parents' child-directed speech. Seventy three families with toddlers participated in the study. Dyadic and triadic parent-toddler interactions were videotaped during structured play activities. Results indicated context-dependent variability in parents' facilitative speech and gentle guidance. Parental gender effects were observed in parents' directive speech but no gender or contextual effects were observed in parents' referential speech. Results suggest the need for a closer examination of parental gender and contextual factors related to parents' speech functions.

Keywords: child-directed speech; context; parenting; toddlers; play

Introduction

Research shows that children's language development is dependent on responsive interactions with mothers and fathers (Risley & Hart, 2006). Parental child-directed speech (CDS) has been extensively researched, from its acoustic and prosodic aspects (Rowe & Snow 2020), to debates over the relative importance of quantity versus quality for child outcomes (Genovese et al., 2020; Montag, Jones & Smith, 2018). Our focus in the current study is on the communicative functions of parental CDS which is central to broadening our understanding of its relationship with children's linguistic competencies. Language serves many functions (Bruner, 1981) and parents use speech that facilitates children's engagement in conversation, regulates their emotions, encourages them to vocalise, directs their attention and provides information to the child (Kuchirko, Schatz, Fletcher & Tamis-LeMonda, 2020; Masur, Flynn & Lloyd, 2013; Tamis-LeMonda, Baumwell & Cristofaro, 2012a; Yu, Bonawitz & Shafto, 2018).

One primary function of parental CDS is to facilitate children's verbal interactions. This form of speech as reflected by the use of open-ended (e.g., *where is teddy's coat?*)

and yes/no and prompt questions (e.g., *do you like this puzzle? what colour is teddy's coat?*) permit children to express themselves and share their needs and ideas with parents (Menashe & Atzaba-Poria, 2016). By inviting children into conversations, such parental utterances have been found to confer considerable linguistic advantages on children (Leech, Salo, Rowe & Cabrera, 2013; Rowe, Leech & Cabrera, 2017).

While some forms of parental CDS facilitate verbal responses, others restrict children's engagement in discourse. For instance, research indicates that parents' use of directive speech such as commands (e.g., *put the toy away*) and prohibitions (e.g., *stop throwing your toys*) serves to guide or direct children's behaviours (Hoff, 2006). However, despite its regulatory functions, directive speech has been reported as being controlling or restrictive in nature. Given that directives are relatively short and do not provide much new information, their frequent use with children who are capable of responding verbally may not confer any linguistic benefits (Hoff, 2006). They may even be negatively associated with children's language development (Hoff, 2006; Tamis-LeMonda, Song, Leavell, Kahana-Kalman & Yoshikawa, 2012b).

Parental CDS also serves to praise, encourage and engage children within a multitude of interactive contexts. Such gentle guidance strategies are non-assertive which might encourage children to communicate through verbal means and build upon their confidence and motivation. Parents' use of suggestions (e.g., *maybe we should put the blocks on top of each other*), praise and encouragement (e.g., *good job dressing the teddy*), for instance, while rarely examined in relation to language development, can be proposed as a type of speech that creates a safe and warm emotional environment (Conway et al., 2018) and that encourages and supports young children's verbal and non-verbal attempts to communicate their needs and express themselves. Research on parental praise and encouragement in relation to children's language development is needed for informing intervention plans targeted at enhancing the quality of parental CDS and thus improving children's language outcomes.

Parental CDS also serves to label and describe objects and events in the immediate environment. Referred to as 'referential' or 'didactic' speech, statements such as "*this is a blue fish*" or "*the teddy is feeling cold*" expose children to different word types and classes (Kuchirko et al., 2020), thereby contributing to their vocabulary growth (Huttenlocher et al., 2010; Rowe, 2012). Tamis-LeMonda et al. (2012a, 2012b) found that maternal use of referential speech with infants aged 14 months significantly predicted toddlers' expressive language skills at age 2. The authors suggest that such an association could be explained by the semantic richness of referential speech. This form of speech appeared to orient/ direct infants' attention to specific characteristics of objects and events such as their colour, shape, number and other attributes.

Research indicates that the communicative functions of CDS vary as a function of parent gender. The majority of this research, with the exception of Pancsofar and Vernon-Feagans's (2006) study, suggests that fathers consistently use more questions than mothers (Leaper, Anderson & Sanders, 1998; McLaughlin, White, McDevitt & Raskin, 1983; Rowe, Coker & Pan, 2004). For instance, Rowe et al. (2004) found that fathers placed more linguistic demands on their toddlers by asking significantly more questions than mothers. The authors suggest that such use of facilitative speech led to toddlers assuming more communicative responsibility. Findings are more mixed in relation to parental CDS that limits children's engagement in conversation. For instance, Brachfeld-Child, Simpson and Izenson (1988) and later Goldberg, Clarke-Stewart, Rice and Dellis (2002) found fathers to be more directive such that

they used more commands and prohibitions in their speech directed at children than mothers. Rowe et al. (2004), on the other hand, reported no such differences.

Research on such parental gender effects in relation to gentle guidance and referential CDS is sparse. However, findings from prior research suggest that fathers use more referential speech with toddlers and preschoolers than mothers (Masur & Gleason, 1980). Similarly, a meta-analysis by Leaper et al. (1998) showed that mothers tended to produce more supportive CDS (praise and encouragement, collaborative language) whereas fathers produced more referential speech. Such findings were taken to indicate that mothers and fathers provided gender-typed communicative role-models for their children.

Within the family system, numerous contextual factors can influence parental CDS. One such contextual factor relates to the number of family members interacting (dyadic versus triadic contexts). Triadic interactions are distinct from dyadic interactions as the addition of a third partner modifies the dynamics between the first two communicative partners. The triadic context provides unique information that goes beyond the combined effects of mother-child and father-child interactions (Fosco & Grych, 2013) and therefore must be analysed as a separate context (Favez, Frascarolo & Tissot, 2017). Even though families have long been regarded as dynamic, integrated systems (Cox & Paley, 2003; Minuchin, 1985) there is a dearth of literature that looks at families as systems (Hollenstein, Allen & Sheeber, 2016). Research in the area of parental CDS has focused mainly on the dyadic context (Menashe & Atzaba-Poria, 2016; Rowe et al., 2004; Rowe, 2008; Tamis-LeMonda et al., 2012a, 2012b). This exclusive focus on dyadic interactions overlooks the reality that children acquire language not from two independent contributors but via the shared experience created by interdependent communications (Renzi, Romberg, Bolger & Newman, 2017).

While some early work offered comparisons of parents' child-directed speech across dyadic and triadic contexts (Golinkoff & Ames, 1979; Hladik & Edwards, 1984), few studies in recent years have examined context-dependent variability in mothers' and fathers' CDS. For instance, Bingham, Kwon & Jeon (2013) reported that while both mothers and fathers produced fewer utterances in the triadic context, the difference was significantly greater for fathers. However, we know relatively little about whether such trends would be observed in relation to the functions of parental CDS. For instance, would a dyadic context offer a more intimate interactional environment that evokes more supportive and collaborative parental CDS? Would a triadic context that involves more interactive participants provide fewer opportunities for parents to use speech that facilitates conversation in children? Given that parents engage with children in the presence of each other as well as in one-to-one interactions, an examination of the contextual influences on parental CDS will provide a more ecologically valid understanding of the family linguistic environment.

The current study aimed to answer the following research question: Do the communicative functions of parental CDS vary by parent gender and across dyadic and triadic contexts during structured play activities? Specifically, we looked at parental use of facilitative and directive speech, gentle guidance and referential speech in relation to the overall speech produced by parents during play with toddlers. Our focus is on the functions of parental CDS during the developmental stage of toddlerhood (21 to 27 months). This is a critical period during which there is a rapid growth in toddlers' vocabulary wherein they are graduating from two-word to three-word sentences and using these words to express themselves.

Method

Participants

Seventy-three predominantly middle-class families with cohabiting parents and their typically developing toddlers aged 21 months to 27 months (38 females; $M = 24.09$, $SD = 1.36$) were recruited through social media, crèches, parenting forums and participant panels to take part in a study on parent-infant interaction. The sample was predominantly Caucasian and all participating families were English speaking. Mothers were aged between 25 to 46 years ($M = 33.96$, $SD = 6.99$) and fathers aged between 23 and 55 years ($M = 34.90$, $SD = 8.77$). Among mothers, 18% had completed second-level/third level non-degree education, 75% had a bachelors/masters degree and 7% had a doctoral degree. Among fathers, 7% had completed second-level education, 25% had completed second-level/third level non-degree education, 64% of fathers had a bachelors/masters degree and 4% had a doctoral degree. The majority of mothers (80%) and fathers (95%) were in full-time employment.

Procedure

The current study which is part of a large parent-child interaction study received full approval from the local ethics review committee and written parental consent was sought from all participating families. Each family made a one-time visit to a university laboratory during which a developmental assessment was carried out with the child. In addition, parent-child interactions were video recorded during a structured play task across dyadic (each parent alone with the toddler in the room) and triadic (both parents and toddler present in the room) contexts. The structured play tasks differed for the dyadic and triadic context but were selected to be similarly challenging. In the dyadic context, magnetic puzzle boards of either a fish or car design were presented to the parent and toddler. The magnetic puzzle consisted of a stick with a magnet attached to the end resembling a fishing rod and a board consisting of ten puzzle pieces. The task required the toddler to use the magnetic fishing rod to pull out each of the ten pieces from the board. Once each piece had been pulled out, the toddler was required to replace each piece into the correct slots. When one parent interacted with the toddler in the dyadic context, the other parent left the room to complete a set of questionnaires. In the triadic context, both parents and toddler were presented with a teddy bear skills puzzle board. The board consisted of 6 removable pieces each containing a specific dressing skill including tying, zipping, buckling, snapping, buttoning and lacing. Once each piece had been worked through, they were to be replaced into the correct slots to finish dressing the bear. Each structured task lasted for five minutes and parents were requested to play with their toddlers as they normally would at home. Both structured tasks presented a challenge to toddlers for which parental assistance was required. The order of the dyadic sessions was counterbalanced with 50% of the interactions beginning with either the mother-child dyad or the father-child dyad. Once the research assistant left the room, parent-toddler interactions were video-recorded using the Mangold VideoSync Pro 1.5. Child-directed speech produced during these interactions were later transcribed by trained research assistants in the laboratory.

Measures

Socio-demographic data

Both parents provided information about their age, education level, employment, their child's age and gender.

Parents' child-directed speech

Parental CDS was transcribed verbatim by trained research assistants using standardised conventions (MacWhinney, 2000): Codes for the Analysis of Human Language (CHAT). The transcripts were analysed using the Computerised Language Analysis software (CLAN) to determine the total number of utterances produced by parents and toddlers in dyadic and triadic contexts. An utterance was defined as a unit of speech marked by a change in intonation, pause or change in grammatical structure (Miller & Chapman, 1993). We included only the parental utterances that were directed to the toddler as our primary focus was on examining how mothers and fathers conveyed information and meaning to their toddlers and the functions they served (such as inviting them into discourse, directing their actions or guiding their behaviours and describing events and objects during play). Parental speech directed at each other or at the researcher and conversational fillers (e.g., *hmm*, *uh-oh*) were excluded from the total number of utterances produced and from any further analyses.

We then calculated the proportions of four broad categories of parental CDS: (1) facilitative speech: all open-ended, yes/no and prompt questions (e.g., *what do you want to do next? do you like this puzzle? what colour is the fish*); (2) directive speech: all commands and prohibitions (e.g., *put the puzzle down; stop throwing the puzzle pieces*); (3) gentle guidance: all suggestions, praise and encouragement (e.g., *maybe we should turn Mr Bear around and try again; good job getting all the fish out with your stick*) and (4) referential speech: all descriptive and labelling utterances (e.g., *the teddy is feeling cold; this is a pink fish*). Proportions were calculated to account for the amount of each type of speech produced by parents relative to all other types of child-directed speech. The Kappa statistic was used to test inter-rater reliability between two researchers which ranged from .89 to 1 for mothers' speech functions and .86 to 1 for fathers' speech functions.

Results

Analyses were carried out using SPSS version 25 and data were checked for normality to proceed with parametric statistics. Tables 1 and 2 show the descriptive statistics for parental utterances and the communicative functions. To examine the combined effects of context and parental gender on mothers' and fathers' CDS, repeated general linear mixed-effects models (GLM) with posthoc tests were conducted (see Table 3). In relation to parental utterances, Tables 1 and 3 show that both mothers and fathers produced significantly more utterances in the dyadic as compared to the triadic contexts although the decrease in utterance production in the triadic context was more pronounced for fathers than mothers. A significant interaction effect of context and parents' gender on mothers' and fathers' utterances was also observed. It should be noted that although both mothers and fathers produced fewer utterances in the triadic context, toddlers hear more utterances from the combined input of mothers and fathers in the triadic context than in the dyadic context. Paired t-tests showed that parents' combined utterances in the triadic context ($M = 93.08$, $SD = 28.86$) were significantly higher than that in the dyadic context (average of the means for dyadic interactions with mothers and dyadic interactions with fathers) ($M = 86.15$, $SD = 18.92$); $t(72) = -2.290$, $p = .02$.

In relation to the communicative functions of parental CDS, Tables 2 and 3 (also see Fig. 1–5) show that there was only a main effect of context on parents' facilitative speech and gentle guidance such that both parents used significantly more facilitative speech

Table 1. Descriptive statistics for mothers' and fathers' total number of utterances across dyadic and triadic contexts

	Mean	SD	Min	Max
Mother				
Dyad	86.36	25.79	37	171
Triad	54.24	21.64	12	111
Father				
Dyad	85.93	22.97	38	144
Triad	38.83	18.29	0	88

and less gentle guidance in the triadic context. There was also a main effect of parental gender on parents' directive speech such that fathers produced more directives than mothers in both contexts. No main or interactions effects were observed for parents' referential speech. In addition, a one-way repeated measures anova with post-hoc tests compared toddlers' verbosity in the dyadic context with fathers and mothers and in the triadic context. There was a significant effect of context on toddlers' verbosity, Wilks' Lambda = .82, $F(2, 70) = 7.321$, $p = .001$. Specifically, toddlers produced significantly more utterances in the dyadic context with fathers ($M = 38.16$, $SD = 19.16$) than in the triadic context ($M = 29.75$, $SD = 14.06$); $t(71) = 3.842$, $p = .000$. However, there was no significant difference in toddlers' verbosity between the dyadic context with mothers ($M = 32.97$, $SD = 20.12$) and the triadic context; $t(71) = 1.578$, $p = .119$.

Discussion

This study examined the communicative functions of parental CDS in dyadic and triadic contexts. Specifically, we looked at parents' use of speech that facilitates or limits toddlers' engagement in discourse, guides toddlers' behaviours in non-assertive and encouraging ways and teaches or provides information about objects and events in the environment. To our knowledge, no other study has offered an in-depth examination of the role of context and parental gender in the communicative functions of parental CDS.

First, in terms of the total number of utterances, both parent gender and context played significant roles in determining the total amount of parental CDS. Mothers and fathers produced significantly fewer utterances in the triadic context. This was expected given that triadic interactions involve more participants who contribute to the ongoing interactions, providing less scope for one-on-one parent-child interactions (McHale & Fivaz-Depeursinge, 1999).

We observed that the variability in the amount of speech produced across the dyadic and triadic contexts was more pronounced for fathers than mothers. This finding corroborates previous research (Bingham et al., 2013; Goldberg et al., 2002; Golinkoff & Ames, 1979) and may be attributable to family roles and parenting dynamics (Johnson, 2001; Pancsofar & Vernon-Feagans, 2006). Even with greater paternal involvement in parenting and higher maternal employment rates, mothers continue to devote more time to childcare (Raley, Bianchi & Wang, 2012). As such, within a

Table 2. Descriptive statistics for the proportions of functions of parents' CDS across dyadic and triadic contexts

	Mother				Father			
	Dyad		Triad		Dyad		Triad	
	M(SD)	Min-Max	M(SD)	Min-Max	M(SD)	Min-Max	M(SD)	Min-Max
Facilitative speech	34.53 (12.50)	4.55-70.97	39.87 (12.82)	9.09-66.00	33.53 (13.13)	0.00-70.00	37.06 (15.26)	0.00-86.27
Directive speech	19.42 (12.01)	0.00-59.48	21.19 (12.03)	0.00-51.97	25.02 (14.60)	1.25-71.90	22.88 (15.56)	0.00-64.00
Gentle guidance	9.19 (7.20)	0.00-32.89	6.13 (5.62)	0.00-27.78	6.98 (6.51)	0.00-37.29	6.06 (6.05)	0.00-27.59
Referential speech	36.86 (11.75)	18.42-65.48	32.78 (11.73)	12.31-72.41	34.47 (11.41)	14.88-63.16	34.00 (21.01)	3.33-175.00

Table 3. Results of repeated GLM for parents' total number of utterances, facilitative speech, directive speech, gentle guidance and referential speech by parent gender and context (N = 73)

Variable		MS	F	n ²
Utterances	Parent gender	4584.41	6.63*	.04
	Context	114,531.12	373.14***	.72
	Parent gender* Context	4091.26	13.32***	.08
Facilitative Speech	Parent gender	190.43	.73	.00
	Context	1311.93	13.76***	.08
	Parent gender* Context	85.01	.89	.00
Directive Speech	Parent gender	1324.09	5.04*	.03
	Context	25.42	.23	.00
	Parent gender* Context	98.54	.89	.00
Gentle guidance	Parent gender	85.82	1.55	.01
	Context	300.75	11.54**	.07
	Parent gender* Context	76.53	2.93	.02
Referential speech	Parent gender	1.65	.00	.00
	Context	149.98	.83	.00
	Parent gender* Context	503.36	2.81	.01

Notes. MS: mean square *p < 0.05; **p < 0.01; ***p < 0.001

triadic context, fathers may feel less responsible for leading the interaction and thereby adopt a more peripheral role. Thus, even though we are ascribing differences in parental CDS to parental gender, it is likely that such differences are at least partly attributable to caregiver roles within the family system. Disentangling the effects of the two is particularly challenging with the developmental period under consideration.

As already noted, even though both parents produced fewer utterances in the triadic context, toddlers heard significantly more utterances from the combined parental input in the triadic context than in the dyadic context. This suggests that the triadic family-level interactional context presents an 'additive' linguistic environment that may have critical implications for children's later language outcomes. Further analysis showed that toddlers produced significantly more utterances in the dyadic context with fathers (but not significantly more in the dyadic context with mothers) than in the triadic one. Greater toddler verbosity in the dyadic contexts can be attributed to triadic interactions presenting as a more challenging context to toddlers who must engage with, and respond to, two communicative partners simultaneously. This is not to say that family-level interactions impede children's verbosity but that it may represent a complex interactional environment for toddlers whose linguistic competencies are limited but rapidly advancing. Aside from directiveness (discussed later), we did not observe significant differences in mothers' and fathers' CDS in the dyadic context. So greater toddler verbosity in the dyadic context with fathers needs additional investigation. We suggest that there are other aspects of fathers' CDS that

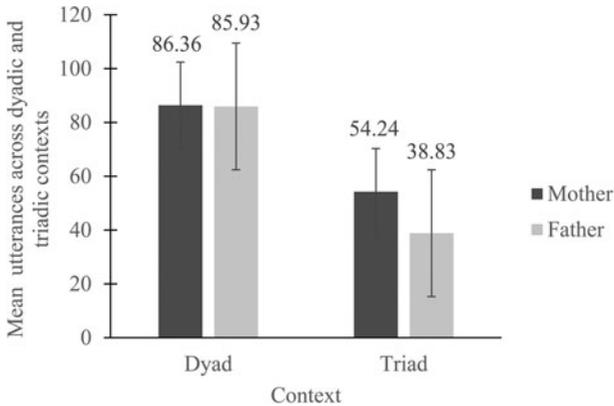


Figure 1. Mothers' and fathers' utterances across dyadic and triadic contexts

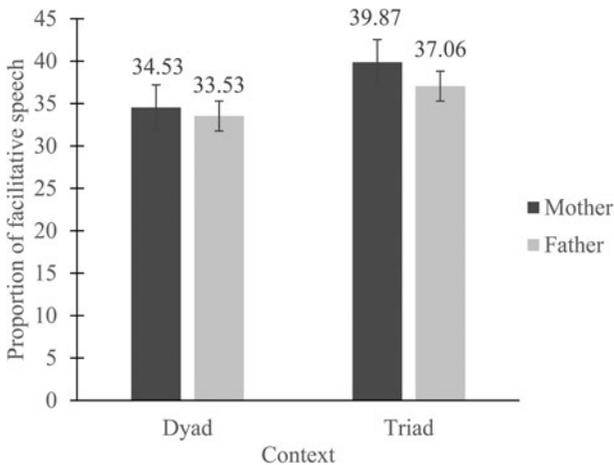


Figure 2. Mothers' and fathers' facilitative speech across dyadic and triadic contexts

can account for this finding. For instance, fathers may produce more directive utterances that require verbal responses from toddlers (e.g., "say thank you"). Further research investigating such aspects of parents' CDS may help to illuminate our findings further.

In relation to the communicative functions of parental CDS, context played a critical role in mothers' and fathers' use of facilitative speech. Both mothers and fathers used significantly more facilitative speech in the triadic context. Within this context, parents may be more focused on keeping their toddlers engaged in the play process by asking more questions. However, even though toddlers hear significantly more questions, it may be challenging for them to provide verbal responses to two communicative partners. Future research examining toddlers' responses to parental questions may help to explain our findings further. In addition, parental questions may also help to sustain or redirect toddlers' attention to the play task and research

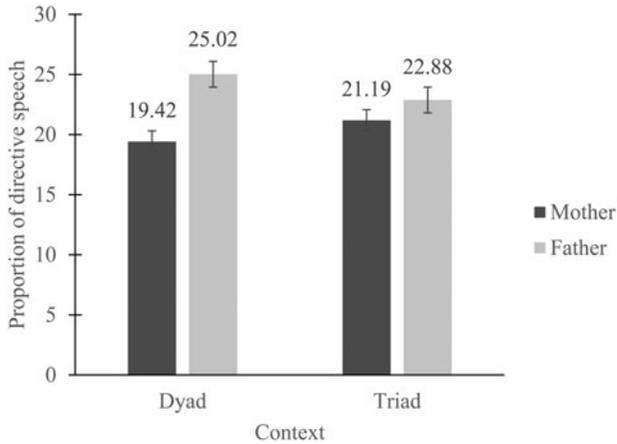


Figure 3. Mothers' and fathers' directive speech across dyadic and triadic contexts

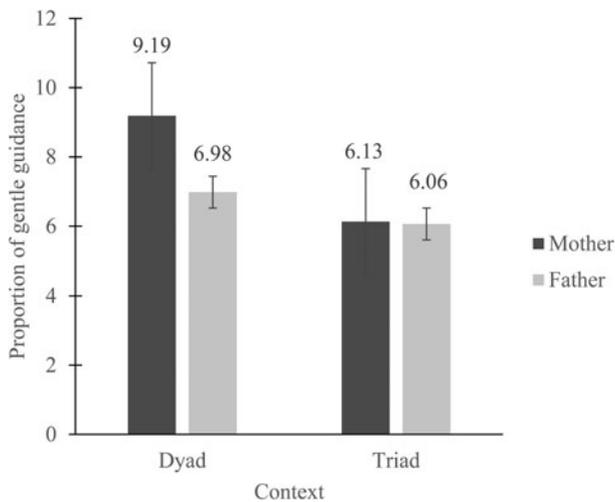


Figure 4. Mothers' and fathers' gentle guidance across dyadic and triadic contexts

examining facilitative CDS in relation to children's behavioural and cognitive skills may lead to novel findings.

Next, we observed that context played a critical role in parental gentle guidance. Both parents used more gentle guidance in the dyadic context than in the triadic context. This may be because the responsibility of praising and encouraging toddlers during play gets shared in the triadic context. However, it should be noted that there was very low incidence of such utterances overall (less than 10%). As such, findings around this specific function of CDS need to be interpreted with caution.

Our results showed that parental gender played a significant role in mothers' and fathers' use of directive speech. Fathers produced significantly more directives than mothers in the dyadic context and more directives in the triadic context (although

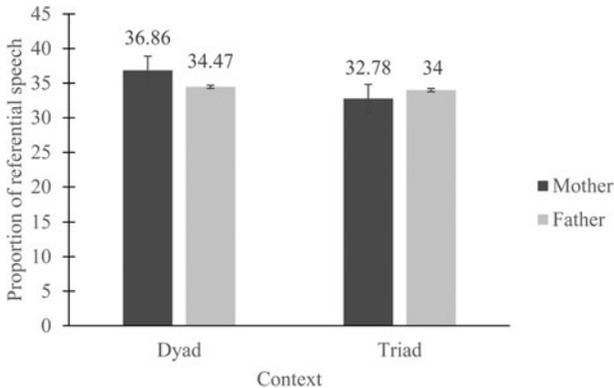


Figure 5. Mothers' and fathers' referential speech across dyadic and triadic contexts

this difference was observed to be non-significant). This finding corroborates previous research that fathers tend to be more directive in their interactions with young children (Brachfeld-Child et al., 1988; Goldberg et al., 2002; Leaper et al., 1998). This might indicate that mothers and fathers have different goals for their interactions with toddlers (Rowe et al., 2004). Fathers may be primarily concerned with directing their toddlers' behaviours and verbal responses than mothers.

Finally, results showed that neither parental gender nor context played a significant role in mothers' and fathers' use of referential speech. Both parents used similar amounts of referential speech in both contexts, which can be attributed to the novelty of the toys used in the current study. In both contexts, parents had the responsibility of familiarising their toddlers with the novel play object and describing ongoing events during play which were critical aspects to completing the task. As with the other communicative functions, toddlers in the triadic context hear more labelling and descriptive utterances from the combined input of both parents than in either dyadic context. Whether the family interactional environment offers additional benefits for toddlers' later language development is yet to be understood.

Findings from this study reflect the complex interactions and contributions of parental gender and interactional context to the functional aspects of parental CDS. While previous studies have mostly focused on the linguistic properties of parental CDS, our study makes an additional contribution by examining contextual variability in the communicative functions of parental CDS. Such investigations are crucial as they help to disentangle and identify the unique contributions of maternal and paternal speech to toddlers' language development. In addition, such examinations raise professional awareness which can aid in the design of interventions aimed at enhancing the quality of parental CDS both at the dyadic and triadic interactional levels.

Findings from this study should be considered in light of some limitations. The current study employed a cross-sectional design which if repeated longitudinally might reveal more about the relations between the functions of parental CDS and child language outcomes. Also, play sessions were brief and carried out in structured-play contexts within a laboratory setting. This might limit the ecological validity of the findings as there is increasing evidence that parents' language input varies by the observational setting (e.g., lab-based versus home observations)

(Tamis-LeMonda, Kuchirko, Luo, Escobar & Bornstein, 2017). Different toys were used in the dyadic and triadic sessions which may have influenced both the quantity and pragmatic functions of parental CDS. Although the toys were selected on the basis of being similarly challenging for this age group, equivalence was not directly tested and, as such, we cannot rule out that toy differences may have influenced the different findings across dyadic and triadic contexts. Finally, the sample was advantaged in terms of social class and parental education, and participating families were predominantly Caucasian with the majority of mothers and fathers in full-time employment and, as such, the findings should be generalised with caution and interpreted within the bounds of the sample in the current study.

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