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Explaining children's social relationships in early childhood: the role of parental social networks

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ABSTRACT

In this article, we examined young Finnish children's social relationships, characteristics of their parents' social networks and the role of parental networks in children's peer relationships. We drew on the data collected from a Finnish longitudinal study known as Steps to the Healthy Development and Well-Being of Children. The data from two measurement points were included in the analyses to explore children's peer relations at 13 months ($N=1,212$) and 4 years ($N=795$). We further studied the association between children's social networks at different time points and the role of parental sociodemographics and parental social relationships in predicting children's social networks. Special emphasis was placed on examining how parental social networks are linked with children's peer relations. Our results revealed a significant association between children's social relationships at different time points and the significance of parental social networks for children's peer networks.

KEYWORDS

Children; parents; early childhood education; social network; social competence

Introduction

A newborn infant enters a world filled with different kinds of networks; most important of these is their family. Social networks have been described as 'specific sets of linkages between defined sets of people' (Cochran and Niego 2002, 126) or as 'sets[s] of individuals and dyadic relationships that connect the individuals into a social structure' (Veenstra, Dijkstra, and Kreager 2018, 46). Together with family networks, a child's own network gradually expands to encompass other significant people, such as peers and teachers (Lewis 2005), who all have common additive effects on the child's social competence (Ladd 2005; Ladd and Pettit 2002; Parke, Simpkins, et al. 2004; Reich and Vandell 2014; Weissberg et al. 2015). Most conceptualisations of social competence incorporate the notion that it mirrors one's effectiveness in social interactions with others (Burt et al. 2008; Domitrovich et al. 2017; Fabes, Gaertner, and Popp 2008). Social competence includes social, emotional and cognitive abilities – acquired

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through social-emotional learning processes (Domitrovich et al. 2017; Kochenderfer-Ladd and Ladd 2019) – to initiate and maintain positive relationships with other people and to help one feel accepted in the peer group (Burt et al. 2008; Fabes, Gaertner, and Popp 2008; Weissberg et al. 2015).

Infants' first tentative interactions (see Hay, Caplan, and Nash 2018; Vandell, Nenide, and Van Winkle 2008) aid in developing more 'reciprocal and synchronised skills for relating with agemates' as children mature and learn 'the basic principles of social interaction' (Kochenderfer-Ladd and Ladd 2019, 38). Coplan and Arbeau (2009) observed that, from ages 2 to 5 years, children's peer interactions progress rapidly and children assert emerging agency in the selection of their peers and friends. In Krawczyk's (1985) study, parents reported that, at home, their toddlers referred to by name peers with whom they played and spent time in early childhood education (ECE) settings. Preschoolers' friendships can be very stable and constant from preschool to kindergarten (Howes 2009). ECE settings with positive social and emotional climates and practices that support social-emotional learning and development provide children with sustained contact with other people and offer new social experiences (Denham 2015; Howes 2009; Vandell, Nenide, and Van Winkle 2008).

Through multiple interaction opportunities, children learn to engage in social intercourse and co-construct their own social peer networks (Howes 2014), which often comprise both boys and girls (Hartl, Laursen, and Cillessen 2015). Boys' networks have been found to be larger than girls' (Hartl, Laursen, and Cillessen 2015), although Haynie, Doogan, and Soller (2014) found that girls have more reciprocal friends than boys.

Although young children have substantial capacities for social interaction, children in various age groups also differ from one another in their personal characteristics and social, emotional and cognitive skills, which are the predictors of social competence, and therefore also in their abilities to establish and sustain social networks (Dunn 2004; Fabes, Gaertner, and Popp 2008; Howes and Philipsen 1992; Hughes and Dunn 2007). Experiences with other children have been found to be related to the aspects of adjustment, well-being, learning and overall social competence (Bukowski, Buhrmester, and Underwood 2011; Denham 2015; Howes 2014). A lack of social networks, along with difficulties in social competence, can result in reduced psychological adjustment (see Bukowski, Buhrmester, and Underwood 2011; Laine et al. 2010) and deficiencies in academic learning (Denham et al. 2014; Elliott, Frey, and Davies 2015). Hence, budding social competence requires assertion and support from a child's environment and significant people within it (see Cillessen and Bellmore 2014; Fabes, Gaertner, and Popp 2008).

Parents' and children's intertwined social networks

Early relationships introduce the child to a world of reciprocity and mutuality, which influence children's identification with their relational partners and their willingness to respond cooperatively and affectionately to them (Laible, Thompson, and Froimson 2015). In addition to young children's own social activities, parents and parental practices influence children's access to social arenas (Ladd 2005; Ladd and Kochenderfer-Ladd 2019; Ladd and Pettit 2002; Neitola 2011; Parke, Simpkins, et al. 2004). According to Bourdieu (2003), parents' social networks act as arenas for nurturance and access to social capital.

Parental social networks comprise people other than the household who play a meaningful role for the parents themselves and in children's social competence. The support and enjoyment received from parents' social networks seem to benefit parenting behaviours and confirm parenting efficacy, thus influencing their children's social competence (Cochran and Niego 2002; Lähteenmäki, Pihlaja, and Laakkonen 2020; Lefèvre et al. 2016; Strange et al. 2014). Children whose parents have supportive and satisfying relationships in their social networks have more friends and are seen to be more socially competent (Doyle and Markiewicz 1996; Homel, Burns, and Goodnow 1987; Neitola 2011).

Parental social networks can serve as a model for children's interpersonal relationships (Grimes, Klein, and Putallaz 2004; Ladd and Pettit 2002; Parke, Dennis, et al. 2004; Parke, Simpkins, et al. 2004; Romano et al. 2009; Simpkins and Parke 2001), can create opportunities to meet other people and aid in forming social networks (Prinstein and La Greca 1999), help in learning and practising social skills and behaviours (Homel, Burns, and Goodnow 1987; Parke and O'Neil 2000; Prinstein and La Greca 1999; Ross and Howe 2009) and facilitate children's social adjustment, both within and beyond the family (Cochran and Niego 2002).

Children's social networks in early years consist mainly of siblings, peers, friends and other children (Ladd 2005). Cochran and Niego (2002) discovered that 30–44% of six-year-olds' social networks were also included in their mothers' networks, which means that children's playmates were more often the children of their mothers' friends. A relationship can be discerned between the number of friends parents have and their children's close playmates (Prinstein and La Greca 1999). Common and intertwined networks allow parents to share their parental socialisation tasks with other familiar adults, allowing the children to benefit from wider social support through extended adult and peer networks (Parke, Simpkins, et al. 2004; Ross and Howe 2009).

However, the dependency of children's peer networks on parental social networks may be highly intricate (see Putallaz et al. 1994). Therefore, it can be assumed that children's social networks are not only affected by the extent of their parents' social networks but also by parental activity and experiences in these networks. Parents who have satisfying and delightful social relationships usually have children who are more accepted and less aggressive in their peer group (Doyle and Markiewicz 1996; Neitola 2011; Parke and O'Neil 2000). A family's socioeconomic background seems to affect the size of the parents' social network in that parents with high socioeconomic status (SES) have larger and more supportive social networks (e.g. Cochran and Gunnarsson 1990; Neitola 2011).

Evidence from previous research strengthens the view that capacities for relationships with peers and parents develop in parallel (Hay, Caplan, and Nash 2018). Deepening knowledge of the stability and correlates of infants' and toddlers' relationships can increase our understanding of the underpinnings of social competence for supportive interventions in family services and children's educational environments (e.g. Fabes, Gaertner, and Popp 2008). Thus, we aim to explore very young children's social networks and their parental correlates in southwestern Finland. Normatively, ages 3–6 years are a crucial period for social-emotional development and learning (Bierman and Motamedi 2015; Brownell et al. 2007; Bukowski, Buhrmester, and Underwood 2011; Howes et al. 1988). In Finland, every child 0–7 years has a subjective right to ECE by law (Act on Early Childhood Education and Care 540/2018). Although children under 3 years old participate in formal ECE less often than those over 3 years old (OECD 2022; Statistics

Finland 2021), parents caring for children at home (e.g. during home care subsidy) can utilise different kinds of informal open ECE services and family/child clubs organised by municipalities and parishes. Additionally, Finnish parents appreciate ECE and family services and hobbies, especially due to the company of other children and the learning of social skills (Neitola 2011; Sulkanen et al. 2020). These services create a good framework for parents to design and mediate their children's social contacts and networks (Ladd and Kochenderfer-Ladd 2019), which further affords children the world of play vital to social competence (Bierman and Motamedi 2015; Bukowski, Buhrmester, and Underwood 2011; Howes 2009).

Purpose of the study

The study objectives include (a) describing Finnish children's peer relations at 13 months and 4 years, (b) examining the differences between girls' and boys' social networks and (c) studying the associations between children's social networks at different time points, parental SES (as linked to education and occupation) and parental social relationships. Special emphasis is placed on examining the ways in which parental social networks (their extent and activities and perceived peer experiences) influence children's peer relations.

Methodology

Ethical considerations

The Ministry of Social Affairs and Health and the Ethics Committee of the Hospital District of Southwest Finland approved the Steps to the Healthy Development and Well-being of Children study (STEPS study; 27 February 2007). The parents gave written informed consent. They were informed of their right to withdraw from the study at any point. The description of the scientific data file was formulated according to the standards given by the Office of the Data Protection Ombudsman. The data were securely stored in password-protected computers at the Faculty of Medicine, Department of Clinical Medicine, University of Turku. The data gathered about the children were based on their parents' consent and information received from them (Finnish National Board on Research Integrity 2019). We use the term 'parents' regardless of whether the father was the child's biological parent or not.

Sample and procedure

This longitudinal study is based on data provided by children and their parents who agreed to participate in the STEPS study (see Lagström et al. 2013 for details). All mothers who had delivered a living child between 1 January 2008 and 31 April 2010 in the Hospital District of Southwest Finland formed the cohort population and were informed of and invited to participate in the study by nurses at prenatal clinics and hospitals (9811 mothers and 9936 children). Of this cohort, a total of 1797 mothers, 1,827 children and 1658 fathers/partners volunteered to participate in the intensive follow-up group of the STEPS study.

Within the STEPS study, data were collected using a variety of methods, including registers, questionnaires, follow-up diaries, study visits and biological samples to obtain a complete picture of the overall well-being of the child and the family (for a more precise description of the data collection and the questionnaire contents, see Lagström et al. 2013). For the purpose of the present study, the parents (mother and father/partner) reported their children's social contacts through a detailed social network and peer relationship questionnaire when the child was 13 months ($n = 1212$) and 4 years old ($n = 795$). In addition, the parents (both mother and father/partner) filled in questionnaires regarding their own social relations when their child was 4 years of age. The study items from the child and parental questionnaires were combined and anonymised by the data statistician using family IDs. The number of parents who completed the survey at both time points in the present study resulted in a sample of 795 children (52.6% boys), which corresponds to a response rate of 65.5% between the surveys. The number of participants varied regarding the study questions based on the questionnaire data availability.

Data attrition

Participant dropout occurs in all longitudinal studies (de Leeuw and Lugtig 2014). The present study experienced relatively high rates of attrition. Previous studies with this cohort have revealed that families participating in the STEPS study differ from the whole cohort population in terms of family background. Compared to non-participants, participating mothers were, on average, 7 months older than in the whole cohort population and were more likely to be parenting a first-born child, married, living in an urban area and of a somewhat higher occupational status (see Lagström et al. 2013). To investigate whether the participant losses in the present study were random or systematically related to participants' characteristics, we examined the differences in explanatory variables between those who continued to participate in the study and those who were enrolled at the 13 months' time point but dropped out before the data collection at 4 years (Table 1). The differences between groups were analysed using cross tabulation and a chi-square test for categorical variables and independent samples *t*-test for continuous variables.

As seen in Table 1, the dropout sample did not differ significantly from the study participants in any of the tested background variables (gender, parental SES or education) or

Table 1. Comparison of the characteristics of dropouts and study participants.

	Variables	Dropouts	Study participants	<i>p</i>
Child	Gender: boys, %	48.9	51.1	.226
	Peer contacts at 13 months, mean	2.68	2.63	.423
Mother	Social network: extent, mean	3.29	3.26	.870
	Social network: activity, mean	2.72	2.78	.669
	Social network: experience, mean	4.44	4.38	.571
	Occupation: at least professional, %	64.1	67.1	.638
	Education: at least tertiary degree, %	61.9	67.7	.117
Father/partner	Social network: extent, mean	3.21	3.00	.061
	Social network: activity, mean	2.37	2.20	.142
	Social network: experience, mean	4.46	4.39	.331
	Occupation: at least professional, %	58.6	61.3	.427
	Education: at least tertiary degree, %	47.1	49.7	.403

regarding other explanatory variables (the extent of the social network at 13 months or parents' social network variables).

Measures

Parental measures

Parents' SES was measured by parent-reported occupations during pregnancy. The open-ended questions were coded according to an International Standard Classification of Occupations (ISCO-88; International Labour Organization 1990), and the scale ranged from 1 (highest) to 9 (lowest). With a mean of 2.92 and standard deviation (SD) of 1.63, the study sample was coherent with the targeted substudy population, although the study participants' SES was slightly higher than the national average (see Lagström et al. 2013). Parents' education was measured by asking them about their level of vocational education. The alternatives ranged from 1 (no vocational education) to 9 (licentiate/ doctoral degree). Both mothers' and partners' vocational education was high (35.1% = highest college-level education versus 64.9% = lowest college-level education), which is equivalent to the general education level of Finnish citizens (Statistics Finland 2017). Both parental SES and education were dichotomised for further analysis. Parents' SES was coded as 1 (at least professionals in high positions, such as managerial and middle positions) versus 0 (service and others, such as clerical, sales workers and blue-collar workers in industry or agriculture). Similarly, parents' education was coded as 1 (higher education at a lower-degree level) versus 0 (at most college-level education).

Parental social relationships, which were the independent variables, were composed of three measurements per parent: the extent of their circle of friends, their activities with friends and experiences with their own childhood peer group. All items for the independent social network variables were measured on a 5-point scale of 1 (does not fit me at all) to 5 (fits me very well). The extent of the circle of friends was an aggregated mean score for the items 'I have lots of close friends' and 'I have a wide circle of acquaintances and friends' ($\alpha \geq .70$ for mothers and partners). We assume that the more friends a parent has, the larger their social network. Parents' activity within their social network was formed based on the statement 'I spend lots of time within my social relations.' We assumed that the more time a parent spends with their friends, the more active agent they are in their social network.

Parents' experiences in their childhood peer relations were measured with an aggregated mean score using the same scale for the items 'I have vivid memories of my childhood and school friends', 'I am still troubled by the experiences of childhood and adolescence social relationships' and 'I had a good friend/many good friends in my childhood' ($\alpha \geq .60$).

As far as children's networks are concerned, we cannot determine the quality of these networks using these measures, as parents' own perceptions of a good friend can vary greatly. In addition to parental social relationships, children's peer contacts at 13 months were used as an independent variable to explain variances in children's peer relations at the age of 4 years. Similar to the measure of peer contacts at 4 years, peer contacts at 13 months were a combined score based on the parents' indications of with whom and how often their children spent time; the score for the aggregated scale ranged from 0 to 8.

Child-related measures at 13 months and 4 years

The contexts of children's social relationships were assessed by asking about children's day care arrangements at 13 months and 4 years. The questions enquired about the children's participation in ECE outside their home (yes/no) and their use of open ECE services or other activities aimed at meeting other children (multiple-choice questions). ECE included both public and private services, whereas home care encompassed the care that parents arranged at home through home care allowances, including open ECE services.

The extent of children's social networks (including sibling relationships and relations to other children) at 13 months and 4 years were both assessed using three measures regarding diverse social contacts. Parents rated on a 5-point scale of 0 (never) to 4 (daily) how often their children spent time with their siblings (applied as an aggregated mean score for siblings and half and non-biological siblings) and other children; the score for aggregated scale ranged from 0 to 8. Both scales for the social network were significantly skewed to the higher end (13 months: -1.49 , Standard Error, SE = 0.062 ; 4 years: -1.47 , SE = 0.029). The other two outcome variables represented the number of good friends at home and at ECE. The questions 'Does your child have any good friends at home?' and 'Does your child have any good friends at ECE?' were assessed on a 5-point scale of 1 (no) to 5 (yes, more than five good friends). Parents were guided to ask their children about these issues. Pairwise deletion of Missing Data (MD) was used to handle the small number of missing values regarding outcome variables ($0.30 \leq MD \leq 0.80$).

Statistical analyses

All statistical analyses were performed using SPSS version 21.0 (IBM Corp 2012). Frequency distributions of children's social contacts are presented according to background variables. Other descriptive statistics for the characteristics of children's peer contacts and their parents' social relationships are presented using means and standard deviations. Collinearity analysis was performed to exclude multicollinearity. Independent two-tailed t-test and chi-square analysis were used in the attrition analysis between the dropout and study sample. Due to the skewness of the data, a Spearman's rho correlation test was used to examine the bivariate associations between children's social network at 13 months and 4 years and their social networks, their parents' social networks and family sociodemographics. Finally, multivariate linear regression models were applied to study the predictive role of a child's own early social network, family sociodemographic and the aspects of parental social networks on the child's social networks at the age of 4 years. Only independent variables that were significantly associated with the outcomes were included in the regression analysis. A p -value of less than .05 was considered statistically significant. In addition, a confidence interval was constructed to estimate the population parameter with 95% confidence.

Results

Children's and parents' social networks

Table 2 presents the frequencies of children's social contact at age 4 years according to their sociodemographics. Children's peer contacts consist of their siblings, stepsiblings

or non-biological siblings (applied as an aggregated mean score) and other children (referred to as peers). Most children had social contact every day or nearly every day. Boys had more daily contacts than girls (77%, 74.3%). Only 1.7% of all the children met other children seldom or never. Weekly contacts were less common than monthly contacts (Table 2). Monthly contacts were more common for girls than boys (20.4%, 14.8%).

No differences were observed in the social networks between boys and girls, nor were there any differences in the frequency of social contact for children with lower socioeconomic backgrounds than their counterparts with higher SES. However, children of parents with lower education had fewer social contact than children of highly educated parents.

Table 3 presents the means and standard deviations for the study subscales. As seen in Table 3, children's activity in social networks tends to extend with age.

Mothers reported higher scores in every dimension of parents' social relationships than fathers did. While the difference in the extent of the networks proved to be statistically significant, it showed little practical significance (Cohen's effect size, $ES_r = .22$). The difference in parents' activities in their social networks was found to be substantial ($ES_r = .52$). Mothers were found to be more active than fathers were. Fathers perceived the experiences of their childhood peer relations slightly more positively than mothers did. However, the difference between mothers and fathers was not significant.

The correlates of children's peer relations

Bivariate associations between the study dimensions were tested to determine the potential role of predictor variables in explaining the extent of childhood social networks at the age of 4 years. Table 4 shows the correlations between explanatory child, mother and father variables and children's social network variables. Except for the children's gender, all other explanatory variables were significantly correlated with at least one of the child outcomes. Peer contacts at 13 months were significantly associated with peer contacts at 4 years. The positive association indicated that the more contacts children had at 13 months, the more contacts they would have at the age of 4 years.

The results also showed that mothers' extent of participation in social network activities was strongly associated with children's social networks. The wider the mother's network was and the more active she was in it, the more social contacts and good friends her child would have. Fathers' social network subscales showed the most

Table 2. Frequency of social contact at 4 years according to gender, parental socioeconomic status (SES) and parental education (%).

Grouping variable (n)		Daily or almost daily	Weekly	Sometimes (monthly)	Seldom or never
Gender	Male (418)	77.0	6.9	14.8	1.2
	Female (377)	74.3	4.8	20.4	0.5
Family SES ^a	High (564)	77.1	4.8	17.2	0.9
	Low (185)	71.4	9.7	18.4	0.5
Family education ^b	High (580)	76.9	4.5	17.9	0.7
	Low (204)	73.0	10.3	15.7	1.0
Total		75.7	5.9	17.5	0.9

Note: ^aClassification: Professionals = high (in high positions, e.g. managerial, but also in intermediate positions, such as nurses) vs others = low [blue-collar workers (in industry or agriculture) and service (e.g. clerical and sales workers)].

^bLow = lowest college-level education, High = highest college-level education.

Table 3. Descriptive statistics for children's social contacts, number of good friends and parents' social relationships.

	<i>n</i>	scale	Mean	SD
Child:				
Social contacts at 13 months	1209	0–8	4.59	2.17
Social contacts at 4 years	795	0–8	6.75	1.63
Number of good friends at home (4 years)	793	1–5	2.41	0.98
Number of good friends in ECE ^a (4 years)	595	1–5	3.02	0.85
Mother				
Social network: extent	794	1–5	3.20*	1.21
Social network: activity	791	1–5	2.73**	1.07
Social network: experience	794	1–5	4.41 ^{ns}	0.74
Father/Partner				
Social network: extent	618	1–5	2.97	1.19
Social network: activity	613	1–5	2.24	1.00
Social network: experience	618	1–5	4.38	0.76

Note: ^aEarly childhood education, ECE; ** $p < .01$, * $p < .05$.

significant associations with the number of good friends that children had at home. Mothers' and fathers' occupations were modestly but significantly associated with children's peer contact, suggesting that children with highly educated parents and high occupational status tend to have more social contact.

To assess the predictive value of explanatory variables on children's social relationships, we calculated three multiple linear regression models. Only variables that showed correlations with at least one of the peer relation subscales were included in the analysis. The relationships between parents' sociodemographics, children's peer relations at 13 months, parental social networks and children's peer relations at 4 years are presented in Table 5.

Based on the analysis, the only predictor of children's social networks at the age of 4 years was the extent of their social networks at 13 months (Table 5). The extent of the early social network explained 11% of the variance in the later social network ($\beta = 0.33$; $0.16 \leq \mu \leq 0.36$). When looking at the number of good friends at home, the

Table 4. Bivariate correlations between predictor variables and children's social relationship outcomes at 4 years.

	Extent of social network		Number of good friends at home		Number of good friends in ECE ^a	
	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>
Child:						
Gender	795	-.05	793	.02	595	.04
Extent of social network at 13 months	793	.28***	791	.06	593	.08*
Mother						
Occupational status	700	.10*	699	.08*	473	-.01
Education	773	.08*	771	.02	577	-.01
Social network: extent	729	.17***	729	.24***	542	.18***
Social network: activity	727	.11**	727	.18***	539	.06
Social network: experience	730	.05	730	.08*	542	.10*
Father/Partner:						
Occupational status	633	.09*	634	.05	473	.07
Education	752	.13**	750	.02	562	.03
Social network: extent	522	.01	520	.19***	376	.06
Social network: activity	518	.04	516	.15***	374	.05
Social network: experience	522	.02	520	.15**	376	.07

Note: ^aEarly childhood education, ECE; *** $p < .001$, ** $p < .01$, * $p < .05$.

Table 5. Multiple linear regression of explanatory variables on children's peer relations at 4 years (standardised coefficients).

	Social network (<i>n</i> = 510)		Good friends at home (<i>n</i> = 439)		Good friends in ECE ^a (<i>n</i> = 537)	
	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>
Child						
Social network at 13 months	.328	<.001	–	–	.079	ns ^b
Mother						
Occupational status	.073	ns	.070	ns	–	–
Education	.015	ns	–	–	–	–
Social network: extent	.062	ns	.167	<.01	.191	<.001
Social network: activity	.027	ns	.052	ns	–.045	ns
Social network: experience	–.057	ns	–.004	ns	.073	ns
Father/Partner						
Occupational status	.029	ns	–	–	–	–
Education	.042	ns	–	–	–	–
Social network: extent	–	–	.141	<.05	–	–
Social network: activity	–	–	.044	ns	–	–
Social network: experience	–	–	.068	ns	–	–
Adjusted <i>R</i> ²	.11		.09		.04	

Note: ^aEarly childhood education, ECE; ^bns = not significant.

extent of both the mothers' ($\beta = 0.16$; $0.04 \leq \mu \leq 0.22$) and fathers' ($\beta = 0.12$; $0.01 \leq \mu \leq 0.20$) social networks were found to be significant in explaining the number of good friends; the wider the parental network, the more good friends children had. The extent of the mothers' social networks was also associated with the number of good friends at ECE, explaining 4% of the response variance ($\beta = 0.24$; $0.07 \leq \mu \leq 0.28$). Neither of the variables explaining parental SES played a role in explaining any of the children's peer relationship subscales at 4 years.

Discussion

This study examined Finnish children's peer relations at two time points (13 months and 4 years), differences between girls' and boys' social networks, parental networks and the associations between children's and parental social networks at different time points. There are two key findings of our research. First, results indicate that children's peer networks during infancy are predictive of their future networks, supporting the ideas of Dunn (2004), Hay, Caplan, and Nash (2018), Howes et al. (1988) and Hughes and Dunn (2007) that children are able to form distinct relationships with peers very early. Second, parental networks are significant to children's social relationships (also Doyle and Markiewicz 1996; Grimes, Klein, and Putallaz 2004; Homel, Burns, and Goodnow 1987; Ladd and Pettit 2002; Parke, Dennis, et al. 2004; Parke, Simpkins, et al. 2004; Prinstein and La Greca 1999).

Children's peer contacts and networks during infancy and toddlerhood

At the age of 4 years, regardless of family SES, the majority of the children had daily contacts with other children. This finding can be explained by parental choices of manifold ECE and family/child services offered by various organisers, as well as parents' valuing of these services (Neitola 2011; Sulkanen et al. 2020). Parental choices and activity in

initiating peer contacts have been found to affect the number of playmates (Ladd and Kochenderfer-Ladd 2019). Measures at two time points (13 months and 4 years) revealed that the children's activity in their social networks increased with age. This finding is in congruence with Rubin et al.'s (1998) findings. The importance of infants' early peer experiences for future relationships is supported by the inferences of, for example, Bukowski, Buhrmester, and Underwood (2011), Hay, Caplan, and Nash (2018) and Kochenderfer-Ladd and Ladd (2019). It can be assumed that establishing positive relationships with peers during the infant period advances children's social and psychological development and learning.

Children's possibilities of forming new, stable relationships increase when participation in ECE grows (OECD 2022; Statistics Finland 2021). New social experiences and interactions enhance opportunities to establish enduring peer relationships (Bukowski, Buhrmester, and Underwood 2011; Dunn 2004; Howes 2009; Howes and Philipson 1992) and enable children to create social networks, as Howes (2014) and Vandell, Nenide, and Van Winkle (2008), for example, have concluded. Parallel to earlier research by Hartl, Laursen, and Cillessen (2015), there were no statistical differences in the social networks between boys and girls. Observational research would better illuminate the characteristics and quality of girls' and boys' social networks. Generally, children should be encouraged to play with other-gender peers, which would thus promote social-emotional skills, such as prosocial interaction and inclusive attitudes (Fabes, Martin, and Hanish 2019; Martin, Fabes and Hanish 2018).

Parental social networks' influence on children's social networks

Ladd and Kochenderfer-Ladd (2019) emphasised exploring the association of parental educational level with peer relations. We found modest significance in the number of peer contacts between the children of highly educated parents and the children of lower-educated guardians. This may result from the ability of better-off families to make use of different services for the benefit of their children and themselves (Neitola 2011). Cochran and Gunnarsson (1990) argued that less well-off families do not have enough supporting social networks, which may mean that they lack resources and social capital that these networks could offer them (Bourdieu 2003). Furthermore, children of less well-off families may miss out on using these measures the benefits of parental networks.

Mothers and fathers differed from each other in the extent of their social networks and activity in it. Fathers' social networks were smaller than mothers' (also Pleck and Masciadrelli 2004). However, both mothers' and fathers' network sizes were associated with their children's number of good friends at the age of 4 years. Fathers' networks were associated with the number of children's good friends at home, while mothers' networks were related to the number of good friends both at home and in ECE. Our results reinforce the discoveries of Parke, Dennis, et al. (2004) that structural characteristics of parental networks are linked with children's peer relationships. Although we did not examine the quality of the parents' social networks, we can presume – based on our findings regarding children's peer contact and networks and on previous studies by, for example, Grimes, Klein, and Putallaz (2004), Lewis (2005), Parke, Simpkins, et al. (2004), Romano et al. (2009) and Simpkins and Parke (2001) – that parental networks have had positive outcomes for children's social competence, including peer

relationships, and admittedly for that of the parents themselves (Lähteenmäki, Pihlaja, and Laakkonen 2020; Lefèvre et al. 2016; Strange et al. 2014).

This research has some limitations. Our enquiry concerned children's general relationships with other children rather than their peers only. This orientation may have yielded contradictory evidence compared to earlier studies, which have focused on same-aged children. This study can barely inform us of whether the other children are mainly age-mates or younger or older children. Based on the Finnish ECE system and the division of children into age groups, we presume that the other children are mostly same-aged peers in ECE. We cannot prove much about the quality of these relationships, although we discovered that children have proper access to and prerequisites for social relationships, which can help them develop their social and emotional competence in peer groups (Kochenderfer-Ladd and Ladd 2019; Ladd 2005; Ladd and Pettit 2002).

Dropout is a prevalent complication in the analysis of data from longitudinal studies. With regard to the study variables in the present study, the completers did not differ from the participants who dropped out. Thus, the data were missing at random. However, the present study relied on a relatively small and local sample of Finnish families and children and overrepresented families with higher SES on a national scale. Therefore, the related results should be generalised with caution. Furthermore, the present data are based on self- and parent-reported information on social networks.

Hence, the present data may have been affected by e.g. parental recall or social desirability bias. Future research should consider the reports from multiple informants (e.g. children, parents and ECE teachers).

Conclusions

Despite these limitations, our study contributes to existing research by demonstrating the associations of infants' social contact with their social relationships at an older age and the linkages between parents' and young children's social networks. Parental networks are relevant agents in the onset of children's peer relationships.

Thus, different social networks and relationships can provide children with social capital even from a very early age. This calls for ECE services to gain a deeper understanding and greater engagement in creating optimal social-emotional learning conditions for preschoolers in close cooperation with families. Furthermore, the importance of parental social networks and their influence on children's social lives should be realised better in ECE and family/child services in order to more effectively support parents' and children's overall well-being.

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No potential conflict of interest was reported by the author(s).

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