



Domains of father involvement, social competence and problem behavior in preschool children

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ABSTRACT: *Many studies reported that father involvement is associated with a wide range of developmental outcomes; however, evidence is weaker when controlling for correlated mother involvement and when using different informants to assess father involvement and children development. Our study aimed to research the association between father involvement and preschoolers' social competence, controlling for mother involvement, family demographics, parental stress, time spent in day-care, existence of siblings and child's characteristics. Participants were 295 children between 36 and 71 months of age, 52% girls, all living in resident-father families. Hierarchical multiple regression models were performed entering the predictors in three blocks: Child related variables, family demographics and stress, father relative involvement with the child. Results suggest that father involvement in leisure activities outdoors is a direct predictor of social competence, and also of lower externalizing problems, especially for boys.*

KEYWORDS: father involvement, social competence, problem behavior

Human species-typical parental care is quite exceptional due to the great amount of father involvement with their offspring associated with bi-parental care strategies (Feldman, Gordon, Schneiderman, Weisman, & Zagoory-Sharon, 2010; Huber & Breedlove, 2007; Kleiman, 1984). Even if fathers typically invest less time and effort than mothers do (Hewlett, 1991), they invest a significant amount of their time and resources in children and are a great deal more involved in childcare than males of most other mammalian species (Geary, 2000; Geary & Flinn, 2001; Lamb, Pleck, Charnov, & Levine, 1985). Not with standing, father parental investment varies greatly in different social ecologies and cultures (Draper & Belsky, 1990; Draper & Harpending, 1988; Huber & Breedlove, 2007) and also in different families within the same culture (Anderson, Kaplan, & Lancaster, 1999). Father investment as a reproductive strategy has been broadly described as having two main components: *Direct* investment and *indirect* investment (Draper & Harpending, 1988; Geary & Flinn, 2001;

Kleiman, 1984; Trivers, 1972). Direct investment comprises proximal processes of interaction with the child, i.e., engagement, typically in the form of caretaking, play, discipline, etc., while indirect investment comprises the provision of subsistence means and accumulation of capital that affords resources both to the offspring as well as to the father himself (Draper & Harpending, 1988).

During the late 20th century, macro-societal and cultural changes in gender roles urged many fathers to be more directly involved in the care of children (Amato & Rivera, 1999; Gershuny, Bittman, & Brice, 2005; Lamb, 2010; Pleck, 2010). In other words, father investment has changed from mostly indirect forms such as breadwinning and masculine role-modeling and has become more direct, proximal and engaged (Pleck, 2010). Although in dual-earner households many fathers still take care of their children less than mothers do, a trend toward greater equity in proximal childcare between parents is clearly evident (Lamb & Lewis, 2010).

FATHER INVOLVEMENT AND DEVELOPMENTAL OUTCOMES

A vast empirical literature has supported the conclusion that father cohabitation and greater involvement with the child have positive effects in

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the behavioral, social, and cognitive development of young children (e.g., Belsky, 2012; Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Frank & Paris, 1981; Lamb & Lewis, 2010; Monteiro, Veríssimo, Vaughn, Santos, & Bost, 2008; Rubin, Bukowski, & Parker, 1998; Tamis-LeMonda & Cabrera, 1999). A recent systematic review of 24 longitudinal studies involving approximately 22,300 individual datasets concluded that active and regular father *engagement* with the child predicts a range of positive outcomes (Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008).

However, the associations found in the above mentioned systematic review are often specific to particular outcomes and/or restricted to specific subgroups such as boys, girls, poor families, etc. For instance, Vaden-Kiernan, Ialongo, Pearson, and Kellam (1995) found that boys in mother–father families were significantly less likely than boys in mother-alone families to be rated as aggressive by teachers, but no significant relations were found for girls. Furthermore, when controlling for confound variables such as socio-economic status, maternal involvement, fathers' parenting quality, and also when controlling for common-method variance (i.e., asking the same informant – usually the mother – to assess *both* father involvement *and* children outcomes; see Podsakoff, MacKenzie, Podsakoff, & Lee, 2003), the evidence is substantially weaker (Amato & Rivera, 1999), and some null and negative findings have also been reported (Brown, McBride, Shin, & Bost, 2007; Sarkadi et al., 2008). Taking in consideration these caveats, the present study will test the association of father involvement with the child's social development controlling for other relevant family and child variables that may also affect social development.

VARIABLES MODERATING THE EFFECTS OF FATHER INVOLVEMENT

Recent literature has emphasized that theoretical models and empirical research on father involvement should take in account its dynamic complexity: Father engagement with the child implies interactions and relationships, and hence there are complex effects between the type of

father engagement and the child characteristics (Cabrera, Fitzgerald, Bradley, & Roggman, 2007; Palkovitz, 2002). Therefore it is important to assess both father and child characteristics, as well as variables affecting the father–child relationship quality.

In fact previous research demonstrated that the quality of father–child interactions and relationships moderates the associations between the quantity of father involvement and the child's socio-emotional outcomes (Cox, Owen, Henderson, & Margand, 1992; Easterbrooks & Goldberg, 1984). In a study measuring the effects of father involvement in attachment security of 2 year-olds, Brown et al. (2007) found that while there were no significant correlations between quantity of father involvement and attachment security, the quality of the father–child interactions in play (e.g., father intrusiveness and positive/negative affect tone of the interactions) moderated the relationship between quantity of father involvement and attachment security.

Gender is another child characteristic that has shown to influence and moderate the outcomes of father involvement; for instance in a sample of children that were temperamentally reactive at 6 months old, higher paternal involvement at 21 months predicted more pro-social behavior and less emotional and behavioral problems at 81 months for girls, but not for boys (Ramchandani, van IJzendoorn, & Bakermans-Kranenburg, 2010; see also Sarkadi et al., 2008). Additionally the quality of the father–child relationship and interactions can have different effects in different contexts, such as playful contexts, direct care contexts (i.e., bathing, feeding, etc.) or disciplinary contexts. In a previous study with preschool children using a five domains measure of relative father involvement (direct care, indirect care, teaching/discipline, play, and leisure outdoors) we found that for children rated as temperamentally 'difficult' by their mothers, higher father involvement in direct care was related to higher disruptive play with peers, while higher father involvement in teaching/discipline was related to more pro-social play with peers (Torres, Veríssimo, Monteiro, & Santos, 2012).

The processes determining negative outcomes of father involvement with certain children and in some specific contexts are not yet clear. They probably involve a higher probability of negative patterns of father–child interaction (Carson & Parke, 1996), and patterns of interaction with children that are specific to fathers. Actually, fathers' interactions with infants, toddlers and preschoolers tend to be more physically stimulating than mothers', and fathers tend to engage in more unpredictable play than mothers (see Bretherton, Lambert, & Golby, 2005; Lamb & Lewis, 2010, for revisions). Fathers' are also more likely to issuing commands to the child (Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004) and they tend to be less affectionate and less responsive with children who are perceived as more difficult (Manlove & Vernon-Feagans, 2002). Negative affect sequences between father and child when playing together (but not between mother and child) were also associated with lower interaction competence of the child with peers (Carson & Parke, 1996). In the present study we will assess difficult temperament of the child and parental stress in order to control for negative interactions between father and child.

FATHER INVOLVEMENT IN THE PRESCHOOL AGE

The amount and type of father investment varies with different developmental stages of the child (Cabrera et al., 2007; Lamb, 2010). Previous literature reported that the preschool years represent a peak in levels of father–child interaction (Lamb & Lewis, 2010), and that the sharpest increase in parenting activities in the last decades has occurred among fathers of preschoolers (Tamis-LeMonda & Cabrera, 1999). Concurrently, children at the preschool age are usually in professional day-care for long periods, and are challenged by relationships with peers (Santos, Vaughn, & Bost, 2008; Strayer & Santos, 1996). Among the more salient developmental tasks at this age are the positive adaptation to the peer group, the flexibility in managing impulses and in engaging problems and opportunities in the environment, and

sex-role identification (Waters & Sroufe, 1983; LaFreniere, Strayer, & Gauthier, 1984; Strayer & Santos, 1996). In particular, competent adaptation to the peer group was found to be a precursor of great importance to the developmental trajectories in areas such as emotional regulation (Denham et al., 2001), academic achievement and school readiness (Coolahan, Fantuzzo, Mendez, & McDermott, 2000), social adjustment and mental health (Cicchetti, Toth, & Bush, 1988; Frank & Paris, 1981; Parker & Asher, 1987).

CONFOUNDING FACTORS IN FATHER INVOLVEMENT AND SOCIAL COMPETENCE OF CHILDREN

However, there are other important factors, which determine both the quality of father involvement and the social competence of preschool children, and therefore are candidates to alternative explanations that would turn out the association between father involvement and social competence a spurious correlation. Among these factors are the parents' educational and employment status (Cabrera et al., 2007; Palkovitz, 2002). These factors on one hand influence the quantity and quality of time available to spend with children, and the parental couple arrangements to share tasks (Lamb & Lewis, 2010), and on the other hand will also influence the amount of time parents tend to rely on alloparental child-care, i.e., time spent by children in day-care and age of entry in day-care. Prospective research has shown that the more time children spent in early childhood professional care arrangements (non-parental and non-relatives) across the first 4.5 years of life, the more externalizing problems they manifested later in preschool, kindergarten and elementary school even when controlling for quality, type, and instability of child care, and when maternal sensitivity and other family background factors were taken into account (Belsky et al., 2007). Also, the level of parenting stress when caring for a particular child has been directly related to teacher ratings of social competence and behavioral problems of preschool children (Anthony et al., 2005), and parenting stress is also associated with attributes of the child

such as temperament (McBride, Schoppe, & Rane, 2002). It is possible that fathers' parenting stress would determine both the fathers' involvement and the child's development.

In summary, the effects of father involvement on children's developmental outcomes, and specifically in social development outcomes in the preschool age, are enmeshed with a series of confounds from various levels of analysis: Child attributes, parental constraints and stress, family level variables, and furthermore they may be specific to some contexts of father-child interactions but not to others.

The goals of this study were to: (1) assess fathers' involvement with preschoolers from two-parent families in five different contextual domains of childcare activities (direct care, indirect care, teaching/discipline, play and leisure outdoors); (2) analyse the association between the type and the amount of fathers' involvement and preschoolers' social competence as rated by their teachers; (3) assess the role of individual characteristics of the child: Age, gender and temperament, as well as of age of entry in day-care and number of hours in day-care – in the preschoolers' social competence; (4) control for parenting stress and child's characteristics in analyzing the association between father involvement and social competence.

METHOD

Participants

Participants were the parents and the teachers of 295 children, drawn from a Portuguese convenience sample of 26 day-care preschools. All families participating were resident-father families and of European descent. Children's age was between 36 and 71 months ($M = 54.0$, $SD = 10.0$), 52.8% were girls, 54.0% were the first-born child, 65.4% had siblings and of these 36.8% were the first-born child. Children entered day-care between 1 and 64 months ($M = 26.5$, $SD = 15.6$), of which 74.5% entered day-care with ≤ 3 years of age (36 months), and at the time of the survey were attending day-care between 4 and 11 hours per weekday ($M = 7.6$, $SD = 1.3$), of which the majority (36%) attended 8 hours per weekday.

Mothers' age was between 22 and 47 years old ($M = 34.3$, $SD = 4.9$), their educational level ranged from 4 to 21 academic years ($M = 12.3$, $SD = 3.8$), they worked between 5 and 16 hours/day ($M = 7.6$, $SD = 1.5$), and 72.1% were employed full-time, 4.4% half-time and 20.5% were unemployed. Fathers' were between 24 and 70 years old ($M = 36.7$, $SD = 4.9$), their educational level ranged from 4 to 19 academic years ($M = 10.8$, $SD = 3.9$), worked between 5 and 16 hours/day ($M = 8.3$, $SD = 1.5$), 88.0% were employed full-time, 2.1% half-time and 9.9% were unemployed.

Of a total of 435 parental couples invited to participate in the study, 428 mothers participated (98.4% response rate), while 343 fathers participated (78.9% response rate) and 295 parental couples returned complete information (67.8% complete response rate). One-way ANOVAs showed that there were no significant differences on demographic variables between the couples who had complete response rate (both father and mother) and the couples who gave partial information either from father or mother.

Instruments

Involvement of the father was assessed using the *Parental Involvement: Care and Socialization Activities* (Monteiro et al., 2008) questionnaire, with 26 items referring to the organization and realization of activities related with the child and that occur in routine daily family life. The instrument has a five-domain structure: (1) Direct care (five items), related with caretaking tasks, that imply direct contact and interaction with the child (e.g., 'Who feeds the child'); (2) Indirect care (seven items) activities that are related with the arranging resources to be available to the child, do not necessarily imply interaction (e.g., 'Who usually buys your child clothes'); (3) Teaching/discipline (five items) related with teaching skills and rules for the child (e.g., 'Who teaches the child new skills'); (4) Play (five items) related with play activities between the child and the parent (e.g., 'Who plays physical games with the child: Football or rough and tumble'); (5) Leisure outdoors (four items) activities done

with the child outside the home (e.g., ‘Who takes the child to the park’). The questionnaire assesses the relative participation of one parental figure in relation to the other, that is, it represents the division or the sharing of activities between the two parents. Both parents were asked independently to answer on a five point scale: (1) Always the mother, (2) nearly always the mother, (3) both the mother and the father, (4) nearly always the father, (5) always the father. Hence, the involvement of one parent is considered the proportion of involvement that is not attributed to the other parent. Higher scores represent a greater involvement of the father. The Cronbach’s Alpha reached acceptable values, both for mothers’ reports (direct care = 0.77; indirect care = 0.73; teaching/discipline = 0.80; play = 0.72; leisure outdoors = 0.71) and for fathers’ reports (direct care = 0.77; indirect care = 0.69; teaching/discipline = 0.70; play = 0.69; leisure outdoors = 0.76). Agreement between reports of parents of the same couple, measured by Intra Class Correlation was very high for all domains (see Table 1) and due to the high agreement between parents an aggregated measure was computed by averaging fathers’ and mothers’ reports.

Parental assessment of the child’s temperament was made using the *Child Characteristics’ Questionnaire* in the preschool version (Bates, Freeland, & Lounsbury, 1979), which assesses

the temperament of children according to the parents’ representations about their typical behaviors. It is composed of 32 items, on a seven-point response scale; for the present study only the Difficult Temperament scale was used (7 items), which includes statements about frequent and intense negative affect, and the degree of difficulty the infant presents caregivers. The Cronbach’s alpha for mothers’ reports on difficult temperament was 0.80, while for fathers’ reports was 0.79. Agreement between parents of the same couple measured by Intra Class Correlation coefficient was 0.78, and an aggregated measure was computed by averaging fathers’ and mothers’ reports.

Parenting stress was assessed using the questionnaire *Parenting Experiences* (Barnett & Marshall, 1991), a 20-item questionnaire that includes 10 negative or concern items about raising the children and 10 positive or reward items. Examples of negative/concern items are: ‘The financial strain,’ ‘The unending responsibilities,’ ‘Feeling tied down because of the children.’ Examples of positive/reward items are ‘Sharing interests or activities with your child,’ ‘The meaning and purpose your child gives your life,’ and ‘The companionship your children provide.’ Each item is rated on a four-point scale ranging from 1 = not at all to 4 = extreme. An overall parenting stress score is computed as the

TABLE 1: DESCRIPTIVE STATISTICS AND RELIABILITY OF FATHER INVOLVEMENT, PARENTING STRESS, DIFFICULT TEMPERAMENT AND SCBE-30 SUBSCALES’ SCORES

	Minimum	Maximum	Mean	SD	Reliability measures
SCBE-30 social competence	1.30	5.90	3.76	0.95	0.88 ^b
SCBE-30 anger-aggression	1.00	5.70	1.93	0.89	0.92 ^b
SCBE-30 anxiety-withdrawal	1.00	4.90	1.75	0.61	0.79 ^b
Difficult temperament	1.21	5.43	2.86	0.81	0.78 ^a
Father involvement in direct care	1.00	3.80	2.34	0.52	0.94 ^a
Father involvement in indirect care	1.00	3.57	2.26	0.44	0.91 ^a
Father involvement in teaching discipline	1.30	3.80	2.78	0.33	0.73 ^a
Father involvement in play	1.40	4.20	2.99	0.38	0.93 ^a
Father involvement in leisure outdoors	1.00	5.00	2.72	0.47	0.80 ^a
Mother parenting stress	1.00	3.00	1.72	0.28	0.77 ^b
Father parenting stress	1.05	2.65	1.72	0.28	0.76 ^b

^aAgreement between reports of parents of the same couple, measured by Intra Class Correlation;

^binternal consistency by Cronbach’s alpha.

sum of the 20 items, with the positive/reward items reversed. The Cronbach's alpha for mothers' reports was 0.77, while for fathers' reports was 0.76. The correlation between mothers' and fathers' scores was significant but moderate ($r = 0.44$; $p < 0.05$), meaning that there is a common couple trend for parental stress dealing with the same child, but there is also substantial independence on the amount of parenting stress of mother and father, since there is only about 19% common variance in mother and father reports.

Social competence was assessed from teachers' reports to the *Social Competence and Behavior Evaluation Scale: The Short Form* (SCBE-30) developed by LaFreniere and Dumas (1996). This is a 30-item questionnaire which has a six-point Likert-type response format: *Never, rarely, sometimes, often, frequently, and always*, and is composed of three summary subscales: (1) Anger-aggression (e.g., 'easily frustrated'); (2) Anxiety-withdrawal (e.g., 'avoids new situations'); and (3) Social competence (e.g., 'comforts or assists children in difficulty'). The Cronbach's alphas were all acceptable (see Table 1).

Procedures

The research team contacted preschool centers from all regions of the country using a public list available through internet browsing and previous institutional contacts. Twenty-six childcare centers accepted the invitation for participating in the study. After the ethical committees of the directive boards of the centers gave a positive answer, the teachers were invited to participate in the study and made contact with parents for inviting them to participate. The criteria for child selection were that: (1) he/she was attending the preschool where we collected the data; and (2) was a biological child of the couple. Participants were told that when there were two children of the same couple in the preschool day-care centers, their replies should concern the first-born child. Father and mother completed each an omnibus survey consisting of the self-report instruments: Relative father involvement with the child, Temperament of the child, Parenting Stress, and Demographic

information; parents were instructed to complete the survey independently from each other in order to obtain subjective information from each of them. While waiting for the return of the parents' survey, the teachers completed the SCBE-30 questionnaire reporting on the child's behavior and interaction with peers in the classroom.

Data analysis plan

Analyses were conducted in two steps. First, bivariate tests (product-moment correlations and one-way ANOVAs) were conducted to explore the interrelationships among all the variables under study. A second step was to conduct three multiple regression hierarchical models with the three SCBE-30 subscales as dependent variables (one model for each subscale: social competence, anger-aggression and anxiety-withdrawal), and the following variables as predictors: Child's age, child's gender, child's difficult temperament, number of hours in day-care and age of entry in day-care, parents' age, educational level, occupational status and parenting stress, father involvement in direct care, indirect care, teaching discipline, play, and leisure outdoors.

This second step of the analysis had the objective of statistically control (i.e., partial out) the effects of the other child and family variables in the relation between father involvement and the SCBE-30 scores. The variables were entered in the regression models in four hierarchical blocks. Block 1 was composed of child variables, block 2 was composed of family level and parent variables, block 3 was composed of the five father involvement scales, finally block 4 was composed of the interactions terms of gender with father involvement.

RESULTS

One-way ANOVAs with occupational status as independent variable (employed full-time or part-time *versus* non-employed) showed that there were significant differences in father involvement related to the occupational status of both parents: Fathers were significantly more involved in the domain of direct care ($F[1,297] = 10.26$, $p = 0.002$, $\eta^2 = 0.03$)

when the mother was employed full-time or part-time ($M = 2.4$, $SD = 0.5$) then when she was non-employed ($M = 2.1$, $SD = 0.5$). Fathers were also significantly more involved in direct care ($F[1,297] = 4.17$, $p = 0.042$, $\eta^2 = 0.01$) if they were unemployed ($M = 2.5$, $SD = 0.4$) than if they were employed ($M = 2.3$, $SD = 0.5$). There were no significant differences in the other father involvement domains – indirect care, teaching/discipline, play or leisure outdoors – related to occupational status of neither parent.

Furthermore, one-way ANOVAs also showed that children spent significantly more time in day-care ($F[1,297] = 13.18$, $p = 0.000$, $\eta^2 = 0.04$) if their mothers were employed ($M = 7.8$, $SD = 1.3$) than if they were not employed ($M = 7.0$, $SD = 1.2$), and that children entered day-care at an earlier age ($F[1,297] = 18.64$, $p = 0.000$, $\eta^2 = 0.06$) in families of employed mothers ($M = 25.1$, $SD = 15.4$) versus non-employed mothers ($M = 33.0$, $SD = 15.1$). There were no differences in children's time in day-care or in the age of starting day-care related to the occupational status of parents.

One-way ANOVAs with child gender as independent variable showed that there were no differences between girls and boys in father involvement, parental stress and children's difficult temperament. In contrast, the SCBE-30 scores' of social competence were significantly higher ($F[1,297] = 8.76$, $p = 0.003$, $\eta^2 = 0.03$) for girls ($M = 3.9$, $SD = 0.9$) than for boys ($M = 3.6$, $SD = 0.9$), and the scores of anger-aggression were significantly lower ($F[1,297] = 7.39$, $p = 0.007$, $\eta^2 = 0.02$) for girls ($M = 1.8$, $SD = 0.8$) than for boys ($M = 2.1$, $SD = 0.9$). There were no gender differences in the SCBE-30 scores' of anxiety-withdrawal. There were also no differences in any family variable or child variable between first-born children and other children, between children having siblings *versus* non-having siblings.

Interrelationships between continuous variables were explored using correlation coefficients presented in Table 2. Starting with the associations of child SCBE-30 scores with family and parents' variables, results show that: Social

competence is significantly correlated with more parental education, less maternal stress, and with more father involvement in indirect care and leisure outdoors. Anger-aggression is significantly correlated with less father involvement in leisure outdoors. In respect to the associations of SCBE-30 scores with child characteristics results show that: Social competence is negatively correlated with difficult temperament, anger-aggression and anxiety-withdrawal are positively correlated with difficult temperament; more social competence and less anger-aggression are correlated with age, anger-aggression and anxiety-withdrawal are correlated with more hours in day-care, and anger-aggression is correlated with younger age when starting day-care.

As to the correlations between the sets of family and parents' variables and father involvement domains, Table 2 shows that father involvement in the five domains is correlated with lower father parenting stress, father involvement in indirect care is correlated with higher education of both parents, and higher education of fathers is related to father lower stress. Finally, as to the associations between the family and parents' variables and child characteristics results show that father involvement in indirect care and father involvement in play (indoors) are correlated with the child's age; parental stress is correlated with difficult temperament, and higher parental education is associated with earlier entry in day-care and more hours in-care.

In the second step of the data analysis, the three multiple regression models summarized in Table 3 show that teachers' SCBE-30 scores of children's social competence and anger-aggression had a significant proportion of their variance explained, for which contributed significantly the blocks of child characteristics' variables (11 and 13%, respectively) and of father involvement domains (4 and 6%, respectively). The anxiety-withdrawal regression model had a non-significant amount of explained variance, and only the block of child characteristics' variables attained statistical significance.

Table 3 also shows that father involvement in leisure outdoors had the strongest *beta* estimates

TABLE 2: CORRELATIONS BETWEEN TEACHER SCBE-30 REPORTS', CHILDREN'S VARIABLES, FAMILY VARIABLES, AND FATHER INVOLVEMENT

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Social competence	-	-0.41**	-0.16**	0.25**	-0.14*	0.08	0.02	0.08	0.02	0.13*	0.16**	-0.14*	-0.06	-0.01	0.14*	0.05	-0.05	0.17**
2. Anger/aggression		-	0.09	-0.13*	0.19**	-0.26**	0.20**	-0.03	-0.08	-0.09	-0.07	-0.04	0.02	0.02	-0.04	-0.02	-0.01	-0.18**
3. Anxiety/withdrawal			-	0.03	0.13*	-0.05	0.15**	-0.03	-0.08	0.00	0.10	-0.02	-0.01	-0.03	-0.04	-0.03	-0.01	0.00
4. Age				-	-0.16**	0.19**	-0.16**	0.04	0.00	-0.00	0.06	0.08	-0.08	0.08	0.15**	0.07	0.16**	0.11
5. Difficult temperament					-	-0.08	0.18**	-0.07	-0.12*	0.04	0.08	0.16**	0.23**	-0.09	-0.04	-0.09	0.05	-0.3
6. Age entering day-care						-	-0.36**	-0.08	-0.04	-0.25*	-0.21*	0.07	-0.03	-0.03	0.09	0.04	0.04	0.09
7. No. hours in day-care							-	0.14*	0.05	0.15**	0.19**	-0.02	0.02	0.03	-0.06	-0.09	-0.06	0.01
8. Mother's age								-	0.60**	0.11	0.11	0.02	-0.09	0.00	0.04	-0.04	0.01	0.01
9. Father's age									-	0.06	0.02	0.08	0.02	-0.02	0.03	-0.04	0.00	-0.01
10. Mother's education										-	0.62**	-0.08	-0.11	0.06	0.12*	0.05	0.02	0.09
11. Father's education											-	-0.08	-0.15**	-0.00	0.16**	0.10	0.01	0.05
12. Mother's stress												-	0.44**	-0.06	-0.03	-0.08	-0.03	-0.08
13. Father's stress													-	-0.20**	-0.19**	-0.13*	-0.12*	-0.15**
14. Direct care														-	0.41**	0.43**	0.38**	0.43**
15. Indirect care															-	0.49**	0.33**	0.57**
16. Teaching discipline																-	0.44**	0.47**
17. Play																	-	0.51**
18. Leisure outdoors																		-

*p < 0.05; **p < 0.01, two-tailed tests.

TABLE 3: SUMMARY OF THE HIERARCHICAL MULTIPLE REGRESSION MODELS OF THE SCBE-30 SCORES

Block		Dependent variables (SCBE-30)					
		Social competence		Anger–aggression		Anxiety–withdrawal	
		β	ΔR^2	β	ΔR^2	β	ΔR^2
1	Children variables						
	Age	22***	0.11***	0.04	0.13***	-0.14*	0.05*
	Sex (0 = Girl; 1 = Boy)	-0.15**		0.11*		0.00	
	Difficult temperament	-0.12*		0.17**		0.07	
	No. of hours in day-care	0.07		0.13*		0.11	
	Age entering day-care	0.09		-0.23***		0.02	
2	Family variables						
	Mother's age	0.06	0.05	0.03	0.04	0.01	0.02
	Father's age	-0.04		0.07		-0.08	
	Mother's education	0.04		-0.08		-0.09	
	Father's education	0.11		-0.10		0.16*	
	Mother work status	0.02		-0.03		-0.02	
	Father work status	0.00		-0.01		-0.05	
	Mother parenting stress	-0.14*		-0.05		-0.03	
	Father parenting stress	0.09		-0.03		-0.02	
3	Father involvement						
	Direct care	-0.08	0.04*	0.05	0.06**	0.00	0.00
	Indirect care	0.03		0.08		-0.05	
	Teaching/discipline	-0.01		0.04		-0.02	
	Play (indoors)	-0.15*		0.14*		0.02	
	Leisure outdoors	0.24***		-0.32***		0.04	
4	Interaction terms						
	Sex X direct care	0.03	0.02	-0.08	0.02	-	-
	Sex X indirect care	0.03		-0.02		-	
	Sex X teaching/discipline	0.02		-0.08		-	
	Sex X play (indoors)	0.15*		-0.10		-	
	Sex X leisure outdoors	0.07		-0.17*		-	
	Total R^2	0.22***		0.24***		0.07	
	Adjusted R^2	0.16***		0.18***		0.01	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

for both the social competence and for the anger–aggression: Specifically father involvement in leisure outdoors was significantly associated with higher social competence and lower anger–aggression. Of smaller magnitude, but still statistically significant, were the associations of father involvement in play (indoors) with lower social competence and higher anger–aggression.

The child characteristics' block of variables had also a significant effect on the SCBE-30 scores: Male gender and difficult temperament

had significant associations with lower social competence and higher anger–aggression; older age of the child was positively associated with more social competence and with less anxiety–withdrawal; earlier age entering day-care and more hours spent in day-care were associated with higher anger–aggression. Finally, in the anxiety–withdrawal model only two variables were significantly associated with the teacher scores: Younger age of the child, and higher father education.

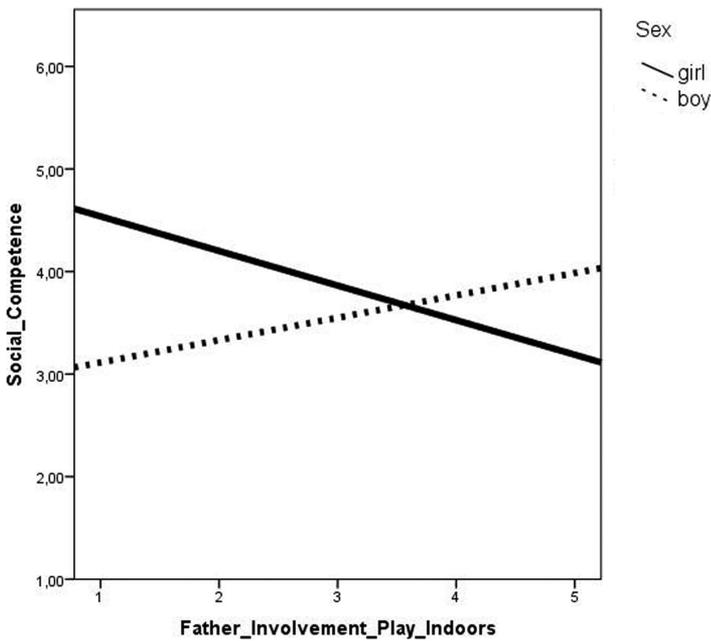


FIGURE 1: INTERACTION OF GENDER WITH FATHER INVOLVEMENT IN PLAY (INDOORS) ON SOCIAL COMPETENCE SCORES

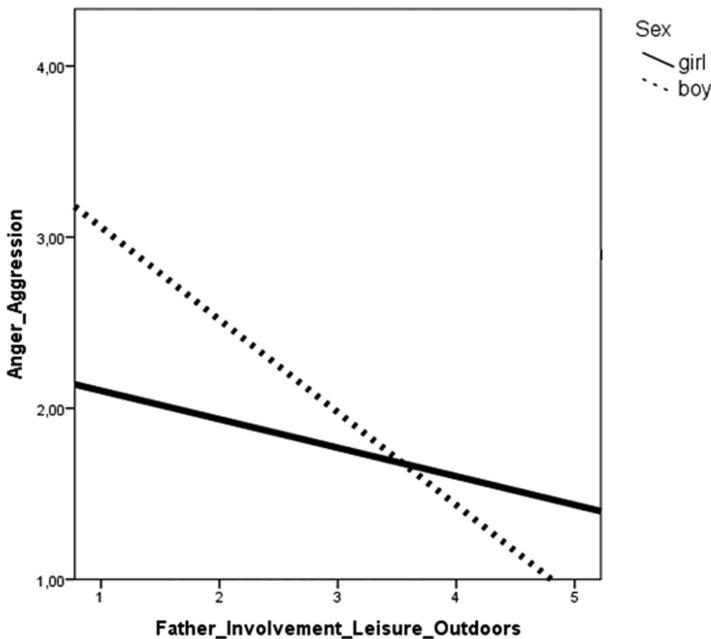


FIGURE 2: INTERACTION OF GENDER WITH FATHER INVOLVEMENT IN LEISURE OUTDOORS ON SOCIAL COMPETENCE SCORES

Since there were gender differences in anger-aggression and social competence, we further added to the model a block 4 that included interaction terms for gender with father involvement in the five domains. Inspection of Table 3 shows that there were significant effects of the interaction terms of gender and father involvement in the social competence and anger-aggression scores, specifically in the domains of play indoors and leisure outdoors. These significant interaction terms are illustrated in Figures 1 and 2.

To further explore the substantive meaning of these interaction terms, we ran two separate regression models for girls and boys. In what respects social competence, the estimates of father involvement in play indoors for boys and girls were $\beta = 0.09$ (n.s.) and $\beta = -0.18$ ($p < 0.01$), respectively, the difference between the β s of boys and girls was statistically significant ($z = 2.31$; $p = 0.02$). In what respects the anger-aggression scores, the estimates of play indoors for boys and girls were $\beta = -0.28$ ($p < 0.01$) and $\beta = 0.09$ (n.s.), respectively, the difference between the β s of boys and girls was also statistically significant ($z = -3.21$; $p = 0.001$).

DISCUSSION

Our results show that father involvement was fairly egalitarian with mother involvement in the domains of play, teaching/discipline and leisure outdoors: These domains of father involvement had means close to the

value 3 of the response scale (i.e., corresponding to the response category 'both the father and the mother' performing the tasks). However, results also show that fathers were clearly less involved in the domains of direct care and indirect care (average values are close to the value 2 corresponding to the response category 'Nearly always the mother'). These results are in accordance with consistent findings of previous research in several cultures: Fathers tend to spend a great proportion of time with children in play activities whereas mothers typically spend a higher proportion of time in functional childcare activities (Hewlett, 1991; McBride & Mills, 1993; Monteiro et al., 2010; Torres et al., 2012).

Correlates of differences in father involvement

As to the correlates of individual family differences in father involvement, our results show that: (1) Father involvement with the child was significantly higher in families where the mother was employed or the father was unemployed (however in the present study this was true only in the domain of direct care tasks); (2) Father involvement with the child was significantly higher in families with higher parental educational level (but only in indirect care tasks). These results are in accordance with previous literature on the determinants and correlates of father involvement (Monteiro et al., 2010; see also Lamb & Lewis, 2010 for a thorough revision), and they likely reflect contemporary trends in western urban societies: When mothers are employed, men are unemployed and/or when the educational level of the couple is higher, the childcare tasks tend to become more egalitarian, or less women-biased (Amato & Rivera, 1999; Lamb, 2010; Lamb & Lewis, 2010; Pleck, 2010). Our results specify a little more these trends: While the work status of the parents was related to father involvement in direct care (e.g., feeding, bathing, and dressing the child), the educational status of the parents was related to father involvement in indirect care tasks (e.g., buying clothes, going to school meetings).

Furthermore, our results show that father involvement in all the five domains was negatively correlated with the fathers' parenting

stress. Although the correlational nature of the present study prevents inferring causality, it is conceivable that there are bi-directional pathways in the association between father parenting stress and father involvement. Stressful fathering experiences can decrease fathers' willingness to be involved with children, which then can lead to less rewarding and meaningful experiences of being a father; on the other hand, more involved fathers can have more rewarding fathering experiences that may reinforce their willingness to be involved with the child. In this respect McBride et al. (2002) have reported an indirect link between father parenting stress and father involvement, *via* the child's temperamental dimensions of emotional intensity and sociability. Our results are in line with McBride et al. (2002), since in our study higher father parenting stress was significantly correlated both with the child's difficult temperament and with less father involvement.

Parenting stress and children(s) social competence

Our results show that mothers' parenting stress was significantly related to lower child social competence, while fathers' parenting stress was not significantly related to child social competence. This result is congruent with previous research that has also used teacher ratings of social competence (Anthony et al., 2005). In order to explain why mothers' stress was negatively associated with social competence, while fathers' stress was not, we hypothesize that there may be important differences in mother and father involvement in relation to their levels of parenting stress. As we have seen above in the results section, fathers tend to be less involved with the child when they have more parenting stress; however our results also show that mothers are involved regardless of their own parenting stress. This difference between mothers and fathers is quite important because it means that mothers tend to be equally involved with the child even if they suffer high parenting stress, while the fathers tend to be less involved with the child when they suffer high parenting stress. The mothers' parenting stress may have

a stronger effect on children's socio-emotional development due to a spillover effect of frequent negative mother-child interactions on the child's social competence with peers. A previous study has indeed reported that family level interactions were associated with observed social behavior with peers at preschool (McHale, Johnson, & Sinclair, 1999).

Sex differences

In the present study, social competence was significantly higher for girls, while anger-aggression was significantly higher for boys. These results are congruent with previous research using the SCBE-30 questionnaire, which has reported similar gender differences in preschool aged children (Lafreniere & Dumas, 1996). These results are also in line with research using other methods. Two previous cross-cultural studies using different assessment methods have reported comparable gender differences in social competence, namely girls had higher peer sociometric acceptance (Santos, Peceguina, Daniel, Shin, & Vaughn, 2013; Santos, Vaughn, Peceguina, Daniel, & Shin, 2014). As to gender differences in anger-aggression, Ostrov and Keating (2004) found that preschool boys displayed more physical and verbal aggression than girls, while girls displayed more relational aggression than boys. It is therefore likely that the SCBE-30 questionnaire assessed overt physical anger-aggression more typical of boys.

Father involvement, social competence and behavior problems

Results of the regression models showed that, controlling for all other variables, greater father involvement in the domain of leisure outdoors was the strongest predictor of children's higher social competence and lower anger-aggression. Since the present study is cross-sectional and correlation, our use of the term 'predictor' in this context is limited to the conceptual sense of the term. We are assuming that relative father involvement is determined at a hierarchically higher level of organization: That is to say at the family system organizational level (Bronfenbrenner, 1986; Cairns & Cairns,

1995). In other words, we are assuming that the allocation and sharing of childcare tasks by the parental couple is determined by the family system ecological dynamics, and is a social environment for the developing child. In line with this view, longitudinal studies (see for instance, the systematic review of Sarkadi et al., 2008) support the notion that father involvement is a prospective predictor of child outcomes, at least since birth and post-partum.

Our findings of significant associations of father involvement in leisure outdoors with higher social competence and less anger-aggression is congruent with Pleck's (2010) conceptualization of paternal 'positive engagement' as a determinant of good developmental outcomes. Indeed at the preschool age, child development is characterized by rapid change in several areas that include physical and locomotor growth, and the desire for autonomy (e.g., Lamb & Lewis, 2010). Concurrently, fathers tend to engage children in interactions that involve vigorous physically stimulating play (Hewlett, 1991) and their play is often directed toward the child's active exploration of the environment (Feldman et al., 2010). Hence, fathers' involvement in leisure outdoors may turn out to be specially rewarding for both the father and the child, as these outdoors activities are an opportunity for the stimulatory play and exploratory activities typical of agreeable father-child interactions. By increasing positive arousal, fathers' leisure outdoors activities with children are plausibly a salient form of 'positive engagement' specifically in the preschool years. Such outdoors activities may promote an important component of social competence which is the positive affect tone of the child (Santos, Vaughn, Peceguina, & Daniel, 2014; Waters & Sroufe, 1983). Father involvement in leisure activities outdoors can also contribute to the socialization of anger-aggression at this developmental period. According to previous evidence, preschool children are more compliant with fathers than with mothers, and fathers' show greater ability to provide clear directions for the child (Calzada, Eyberg, Rich, & Querido, 2004). In the context of outdoors activities, with freedom

to explore and opportunities to interact with other children, the effective directiveness from fathers is likely to foster authoritative practices, which are positive features of paternal control (Pleck, 2010).

In contrast, the significant associations of father involvement in play (indoors) with lower social competence and higher anger–aggression were unexpected. Playing with the father is generally considered a form of ‘positive engagement’ linked to good developmental outcomes (Pleck, 2010). In order to explain our unexpected result we hypothesize that the kind of physically stimulating play typical of fathers may be antagonistic with the constraints associated with playing indoors. Object-mediated play and verbal play, which is typical of mothers, may be more adequate forms of playing indoors. Brown et al. (2007) found that father intrusive behaviors in play were associated with negative outcomes, and it is conceivable that playing inside the house may result in negative affect if the child gets over-stimulated. Playing with the father inside the house may often result in the need to discipline the child and hence in more intrusiveness and coercive control to contain the child’s arousal (Bretherton et al., 2005). This is a speculative proposal that needs to be tested using a measure of fathers’ behavior playing with the child indoors versus outdoors.

Interaction of gender and father involvement

The interaction terms of gender and father involvement showed that the effects of father involvement in the domains of play (indoors) and of leisure outdoors on social competence and anger–aggression was significantly different for boys and girls. Higher father involvement in play (indoors) was negatively associated with social competence in girls, while for boys the effect was positive (albeit non-significant). Because the measure of father involvement used in the present study is a relative measure, i.e., of how much fathers *versus* mothers are involved, this result means that social competence in girls is associated with playing indoors with mothers. Additionally, while leisure outdoors with the father was significantly associated with lower anger–aggression for boys, it was of a smaller magnitude and

non-significant for girls. In a nutshell we could summarize these findings by stating that: Whereas more leisure outdoors with the father is associated with boys’ lower anger–aggression, for girls more playing indoors with their mothers associated with higher social competence.

Gender-role identification is a plausible explanation for the differences between boys and girls. Previous research showed that preschool children have strong same-gender preferences in social behavior and peer relationships (Vaughn, Colvin, Azria, Caya, & Krzysik, 2001). Additionally, behavioral observations revealed that preschool boys and girls relied on different tactics when interacting with peers during free play (Ostrov & Keating, 2004).

Limitations

There are some limitations to this study: The first is the cross-sectional design which does not allow inferring causality; although it may be argued that father involvement patterns are determined at the family organizational level, transactional effects between child characteristics and the couples’ organization of childcare tasks are also plausible, but these cannot be teased-out in a correlational study like the present one. Another limitation is inherent to the instrument we used to assess father involvement: The questionnaire measures relative father involvement yet it is unknown what the absolute involvement of both parents is in each domain measured. Additionally, the present sample was restricted to heterosexual resident-father families, and composed of a majority of dual-earner families (both father and mother employed), which limits the generalization of the present findings.

CONCLUSION

The present study was focused on relative father–mother involvement in father-resident families, and results showed that after controlling for several family and child variables father involvement was significantly associated with independent assessments of children’s social competence and anger–aggression. Using a measure that differentiates five different domains of father involvement, we found significant effects in only two domains

that were related to leisure outdoors and indoors play activities. These findings suggest the relevance of assessing father involvement in several contextual domains instead of using a unidimensional assessment. In line with previous literature, we found significant interactions of gender with father involvement in these activities, suggesting that involvement with the father at the preschool age has significantly different effects for girls and boys. These different effects are likely related to gender-specific types of social behavior in the preschool age.

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