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# Infant Behavior and Development

Brief report

# Gender differences in the relationship between language and social competence in preschool children

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## ARTICLE INFO

## ABSTRACT

The present study examined gender differences in the relation between language and social competence in 268 children aged 18 to 35 months. Correlational and regression analyses demonstrated that the association between expressive language and social ability was significantly stronger in boys than in girls.

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Empirical evidence supports the existence of a positive association between language ability and social competence in typically-developing children (e.g., Bornstein, Haynes, & Painter, 1998; Longobardi, Spataro, Frigerio, & Rescorla, 2015; Longoria, Page, Hubbs-Tait, & Kennison, 2009; Nærland, 2011), as well as in children with specific language impairment (Gertner, Rice, & Hadley, 1994; McCabe & Meller, 2004; Rescorla, Ross, & McClure, 2007).

However, the question of whether the linkage between linguistic and social abilities varies by child gender has been examined in a relatively limited number of studies, and these have shown mixed results. Positive findings have been reported by Stowe, Arnold, and Ortiz (1999) and Braza et al. (2009). Stowe et al. (1999), in particular, examined a sample of 185 children between 4 and 5 years of age selected from day-care centers serving low-income families. Regression analyses indicated that the frequency of children's disruptive behaviors and the teachers' ratings of the quality of peer relationships were more strongly associated with language skills for boys than for girls. In contrast, other studies involving younger children have reported little or no evidence for a moderating role of gender in the association between language and social competence (Barnett et al., 2012 Barnett, Gustafsson, Deng, Mills-Koonce, & Cox, 2012). Kaiser, Hancock, Cai, Foster, and Hester (2000), for instance, collected measures of behavioral problems, social skills and language abilities in 259 3-year-old children enrolled in the Head Start program. The results showed that both boys and girls were more likely to have low language skills when they had low social competence.

In summary, consideration of the whole pattern of data suggests the provisional conclusion that, in children older than 4 years, the relation between language ability and social competence tends to be stronger for boys than for girls; on the other hand, there is limited evidence to support a gender-based moderation in children younger than 3 years. Although the present study was exploratory in nature, we hypothesized that we would find stronger links between language and social ability for boys than girls, consistent with findings for older children (Braza et al., 2009; Stowe et al., 1999).

The sample was composed of 268 typically-developing children (150 boys; 140 firstborns) between 18 and 35 months of age. Participants were monolingual Italian-speaking children recruited from 12 public day-care centers located in Rome (Central Italy: 8) or Potenza (South Italy: 4). Socioeconomic status (SES) was scored using Hollingshead's nine-step scale for parental occupation converted to two digits (Rescorla, Frigerio, Sali, Spataro, & Longobardi, 2014). Scores ranging from

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**Table 1**
Descriptive statistics for the measures included in the present study, in the whole sample and in the subgroups of girls and boys.

| Measures | Total sample ($N=268$) | | | Girls ($N=118$) | | | Boys ($N=150$) | | |
|---|---|---|---|---|---|---|---|---|---|
| | M | SD | Range | M | SD | Range | M | SD | Range |
| Age (months) | 26.94 | 5.35 | 18–35 | 26.74 | 5.22 | 18–36 | 27.11 | 5.47 | 18–36 |
| SES | 53.73 | 21.31 | 0–90 | 54.61 | 21.03 | 0–90 | 53.03 | 21.58 | 0–90 |
| LDS (VCB) | 165.14 | 96.52 | 0–310 | 192.19 | 89.92 | 0–310 | 143.87 | 96.49 | 1–306 |
| LDS (MLU) | 3.15 | 2.18 | 0–10 | 3.81 | 2.09 | 0–10 | 2.63 | 2.12 | 0–8 |
| QPI | 34.92 | 10.56 | 3–62 | 36.15 | 10.53 | 3–62 | 33.97 | 10.52 | 8–55 |

*Note*: VCB: vocabulary size.

10–35, 40–65 and 70–90 corresponded to lower (22%), middle (46%) and upper SES (32%), respectively. SES could not be scored for 8 children (3%), either because no information was provided or because the information could not be scored for occupation (e.g., housewives, self-employed people with no other information, retired).

Information about children's expressive language skills were obtained from mothers, who compiled the Italian adaptation of the Language Development Survey (LDS; Rescorla et al., 2014). This questionnaire includes 310 words arranged in 14 semantic categories, plus a section on the child's five longest sentences. Mothers were instructed to mark all the words currently uttered by their children (Longobardi et al., 2015). For the present purposes, two measures were computed: (a) vocabulary size (i.e., the total number of words attributed to children); and (b) the mean length of the five longest utterances (MLU).

Information about children's social competence was provided by teachers, who completed the Questionnaire on Peer Interactions in the Kindergarten (QPI; D'Odorico, Cassibba, & Buono, 2000). This instrument comprises 22 items assessing the peer interaction abilities of preschool children. For each item, teachers were asked to report the frequency of the described behaviors in the day-care center using a four-choice rating scale. Fourteen items had a positive, prosocial content (e.g., "*If a classmate cries for some reason, the child gets close and tries to comfort him*") and were scored such that higher values indicated higher frequency (0 = rarely, 1 = sometimes, 2 = often, 3 = very often); in contrast, 8 items had a negative, antisocial content (e.g., "*He/She physically attacks other children: pushes, scratches, pulls hair etc.*") and were scored such that higher values indicated lower frequency (3 = rarely, 2 = sometimes, 1 = often, 0 = very often). Thus, the sum of all responses, ranging from 0 to 66, provided a global index of the child's social ability, where higher scores indicated greater social ability.

Table 1 reports descriptive statistics for the measures analyzed in the present study, both in the whole sample and separately for girls and boys. The assumption of normal univariate distribution was always met, as indicated by values of asymmetry and kurtosis between −1.5 and +1.5 (max:−1.38; Tabachnick & Fidell, 2013). Data were collapsed across the Rome and Potenza sites, because the two subsamples did not differ on the critical variables, $t(266) < 1.37$, $p > 0.17$, or on gender distribution, $\chi^2(1) = 1.64$, $p = 0.20$.

As a first step, a series of *t*-test analyses for independent samples were conducted to investigate gender differences. Girls showed a clear advantage over boys on language skills, $t(266) = 4.19$, $p < 0.001$ for LDS vocabulary and $t(266) = 4.54$, $p < 0.001$ for LDS MLU. In contrast, gender differences were negligible on the QPI global index of social ability, $t(266) = 1.68$, $p = 0.093$, and non-significant for age and SES, $t(266) = -0.55$, $p = 0.58$ and $t(266) = 0.59$, $p = 0.55$.

For the second step, we computed Pearson's correlations between linguistic and social measures, both in the whole sample and separately for boys and girls. As illustrated in Table 2, LDS vocabulary and MLU scores were significantly correlated with the QPI global index of social ability in the total sample and in the sub-group of boys (all $ps < 0.001$); in contrast, no significant correlations emerged in the sub-group of girls. Fisher's *z*-score tests confirmed that the correlations between the LDS and QPI measures were significantly greater for boys than for girls, $z = 2.34$, $p = 0.009$ for LDS vocabulary and $z = 3.15$, $p = 0.002$ for LDS MLU. Age and SES were uncorrelated with linguistic and social measures.

Finally, the third step was to test whether gender moderated the relation between language and social ability. To this purpose, two hierarchical regressions were computed. Age (in months) and SES were always entered at the first step, to control for their potential confounding effects. Then, we entered the single predictors (at the second step: gender and LDS vocabulary or gender and LDS MLU) and the interaction terms (at the third step: LDS vocabulary × gender or LDS MLU × gender), to evaluate their contribution to the prediction of the QPI global index of social ability (see Frazier, Tix, & Barron, 2004). The results, reported in Table 3, showed that the interaction terms were always significant: the negative signs of the β coefficients indicated that linguistic and social measures were more strongly correlated in boys (coded −1) than in girls (coded +1). These interactions are illustrated in Fig. 1, in which the predicted values of the QPI global index of social ability are plotted for boys and girls having low (−1 SD) and high (+1 SD) LDS Vocabulary or LDS MLU scores (see Frazier et al., 2004; p.124).

As discussed by Braza et al. (2009), one plausible explanation for the moderating role of gender proposes that verbal ability is necessary for the control and inhibition of aggressive behaviors, which in turn affect children's prosociality and peer acceptance. That is, boys with weaker language skills are more likely to be aggressive, which would make them less socially accepted. To further evaluate this possibility, we computed separate regression analyses for the QPI positive and negative items. The results showed that the interaction between gender and LDS Vocabulary approached the significance level for positive items, $\beta = -0.12$, $t = -1.92$, $p = 0.056$, while being non-significant for negative items, $\beta = -0.08$, $t = -1.43$, $p = 0.15$; on