Original Articles and Reviews

# Language Competence and Social Preference in Childhood

## A Meta-Analysis

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**Abstract:** Language competence facilitates making contact with others, interpreting others' behavior, and communicating one's own needs. However, evidence on the relation between language competence and social preference, that is, the degree to which someone is accepted or rejected by the peer group, is mixed. The scope of the current study was to examine this relation by conducting a meta-analysis. We included studies published in English, without any restrictions on the form or year of publication. Results of 42 studies and 49 independent samples of 7,077 children (mean age = 6.0 years, *SD* = 1.9; range: 3.0–11.0 years) revealed a significant relation between oral language competence and social preference, with an effect size of $r$ = .25. Gender, language modality, and methodological characteristics were tested as possible moderators but did not explain variation between studies. Age was a significant moderator, with language competence more important for younger than for older children in gaining social acceptance.

**Keywords:** language competence, meta-analysis, peer acceptance, social preference



Building social relationships is an important developmental milestone starting in early childhood (Hay, Payne, & Chadwick, 2004). Children who are unable to build successful social relationships with their peers during preschool age are at risk of developing internalizing and externalizing problem behavior and lowered achievement at school (see Hay et al., 2004; Rubin, Coplan, Chen, Buskirk, & Wojslawowicz, 2005, for reviews). Whether a child is able to develop positive relationships with his or her peers depends on various factors. One of the most important factors is his or her own behavior. For example, studies have shown that shy or aggressive children, or children lacking socio-emotional competence, are often rejected by their peers (Hay et al., 2004). Cognitive factors related to the quality of peer relationships include social understanding and executive functioning (for an overview, see Hay et al., 2004). Factors influencing the quality of peer relationships can also vary with respect to gender (Rubin et al., 2005) and culture (Chen, Wang, & DeSouza, 2006).

The present meta-analysis examines language competence as a means for successful relationships with peers. Oral language competence forms an important basis for building successful relationships with peers, allowing children to initiate contact with peers, take part in interactions, and communicate their own needs. Children with restricted language proficiency who are limited in using their language skills flexibly run the risk of not being accepted by their peers or even being excluded from interactions (Gallagher, 1993; Hay et al., 2004; Rice, 1993). Therefore, it is hypothesized that language competence is a correlate of peer relationship development.

Despite some findings clearly supporting this link, the body of research on the relation between language proficiency and social relationships during childhood as a whole appears to yield somewhat mixed results, with overall effects across studies still unknown. The majority of studies report a positive relation between language skills and the quality of peer relationships. Specifically, across several studies, significant links exist between language skills and peer acceptance (Gertner, Rice, & Hadley, 1994; Von Grünigen, Perren, Nägele, & Alsaker, 2010), quality of friendships (Durkin & Conti-Ramsden, 2007), rejection by peers, and victimization (Gulay, 2011; Von Grünigen et al., 2010). Nevertheless, other studies did not support links between language skills and peer acceptance (Banerjee, Watling, & Caputi, 2011) or rejection by peers (Gertner et al., 1994).

In general, the current state of research suggests a significant relation between language competence and the quality of peer relationships. However, the mixed findings raise questions concerning the strength of this relation.

A systematic and meta-analytic examination of existing evidence in this domain should illuminate the scope and magnitude of the relation between language competence and peer relationships further, while also allowing an examination of moderating variables.

## Constructs of Language Competence and Social Preference

Language competence and social preference are two broad concepts which are crucial to the present meta-analysis.

### Language Competence

Oral language competence includes the understanding and production of linguistic utterances and is regarded as a complex system of rules consisting of semantic, syntactic, morphologic, and pragmatic facets of language competence (Saxton, 2010). Developmental psychology often focuses on the difference between receptive and expressive language competence (e.g., Barre, Morgan, Doyle, & Anderson, 2011). This distinction stems from the fact that in communication, there is always a sender and a receiver (McLaughlin, 2006). Whereas the sender encodes, expresses, and produces language, the listener recodes, receives, and comprehends language. In the present meta-analysis we took up this distinction, dividing oral language competence into receptive and expressive language competences.

There are various methods of assessing language competence. In psychological research, language competence is often assessed by language inventories and language tests. Parent and teacher reports, as well as standardized analyses of conversation sequences in natural settings, were used particularly in earlier research on language acquisition and when studying younger children. In the present meta-analysis the whole range of measures (e.g., tests, inventories, mean length of utterances) was included in order to cover as broad a spectrum of oral language competence as possible.

### Social Preference

In the present study we focused on the single dimension of social preference, which is part of the multidimensional and broader construct peer relationships. Social preference refers to social status, or the extent to which someone is accepted or not accepted by his or her peers (Coie, Dodge, & Coppotelli, 1982). This differs from competencies through which a child may have acquired this status.

There are various ways to assess social preference. These can include peer nominations, sociometric ratings, number of friends, and evaluations of social acceptance, social rejection, and popularity as rated by peers, teachers, parents, the research assistant, or the respective child, all of which were included in the present analysis. In accordance with the meta-analysis by Dougherty (2006), we were interested in the child's general popularity within the group and less on classifications of social status (e.g., popular, rejected, controversial, neglected).

## Potential Moderating Factors

Based on the inconsistent research findings on the relation between language competence and social preference, the strength of this relation may likely vary depending on moderating factors such as individual characteristics and the operationalization of language competence used in the studies. Specifically, important moderators may include age, gender, or language modality. They may also include methodological characteristics of the study, which may influence the magnitude of the relation between language competence and social preference.

### Age of Participants

Throughout childhood, peer interactions change dramatically with development. The question thus arises of whether the relation between language competence and social preference is moderated by the child's age. In preschool, interactions between children are highly physical in nature (Alink et al., 2006). This is evident in situations of conflict, for example, where younger children resort to physical aggression more quickly, whereas older children tend to use verbal means to assert themselves. Accordingly, language competence might become more relevant in social interaction with increasing age.

However, Hay et al. (2004) posit that language competences are highly relevant for peer interactions in early childhood, whereas with increasing age other factors such as shyness, aggressive behavior, or prosocial skills are important for gaining acceptance by peers. Moreover, among older children, oral language competence shows less interindividual variation and should be sufficiently developed in most children to enable effective communication in everyday life (McLaughlin, 2006). There is much

 

more variability in the oral language competence of younger children, which makes it more likely to be predictive for social preference in younger children than in older children. Therefore, we posited that with increasing age, the interrelations between language competence and social preference decrease.

In the present meta-analysis, we concentrated on children between 2 and 11 years. This age range was selected because peer preferences only become visible from toddlerhood upwards (Howes & Phillipsen, 1992) and we wanted to restrict the study to childhood.

### Gender of Participants

It is also possible that the relation between language competence and social preference differs depending on gender. For example, Stowe, Arnold, and Ortiz (1999) showed that the relation between language competence and difficulties with peers was more pronounced for boys than for girls. Stowe et al. also demonstrated that compared to girls, boys with low language competences react more frequently with externalizing problem behavior in learning situations. Externalizing problem behavior is visible and thus is more likely to manifest itself in problems in social interactions. However, Von Grünigen and colleagues' (2010) study yield different results: Although gender was also a moderator of the relation between language competence and peer acceptance, importantly, this relation was stronger for girls than for boys.

Overall, findings on the influence of gender on the relation between language competence and peer interactions are contradictory. Accordingly, we did not posit a specific direction of the impact of gender, but still examined it as a possible moderator of the relation between language competence and social preference.

### Language Modality

As detailed above, language competence is a complex construct. It is not entirely understood how receptive and expressive language competences relate to each other (McLaughlin, 2006). For example, in the large cross-national study by Bornstein and Hendricks (2012) correlations between receptive and expressive language competence were positive and significant, similar for different age groups, but varied in size across countries. On average, receptive and expressive language competences were correlated, but with only small to medium effects. Also, receptive and expressive language development involve different processes (McLaughlin, 2006). Therefore, we were interested in whether expressive language competence and receptive language competence are related to gaining acceptance by peers to a similar extent, that is, whether language modality moderates the relation between language competence and social preference.

### Methodological Characteristics

Finally, methodological characteristics of a given study, such as the use of age-norms for language and the dimension of social preference used, may also serve as moderators of the relation between language competence and social preference.

First, age-normed values of language competence may influence the strength of the relation between language competence and social preference. The use of age-normed values instead of raw scores is considered to be a quality feature of a study. However, in some study designs (e.g., observations) or in some samples (e.g., bilingual children), age-normed values are nonexistent or the transformation of raw scores creates further difficulties. Nevertheless, it is possible that the strength of the relation between language competence and social preference varies with regard to the use of age-norms, therefore we tested the use of age-norms of language competence scores as a moderator.

Second, it is possible that the assessed social preference dimension moderates the relation between language competence and social preference. As mentioned above, there are several ways to assess social preference, leading to related, yet different aspects or dimensions of peer relationships (e.g., social acceptance, social rejection; Coie et al., 1982).

## The Present Study

The authors of the present meta-analysis had two main goals. The first aim was to calculate the mean effect size across studies investigating the association between language competence and social preference. As most studies report positive correlations between language competence and social preference, a significant, positive overall correlation between language competence and social preference was expected.

The second aim was to examine explanations for the variation among studies, by identifying potential moderators of the association between social preference and language competence. Specifically, we focused on age, gender, and language modality as well as methodological characteristics (i.e., age-norms and dimension of social preference) to explain variability in effect sizes between studies. We hypothesized that the magnitude of the relation would decrease with age, but made no specific assumption on the direction of the effects of gender, language modality,

and the methodological characteristics on the relation between language competence and social preference.

# Method

## Literature Search

We used multiple search strategies to identify relevant studies published up to December 31, 2012. First, we scanned the databases PsycINFO, ERIC, PSYNDEX, PsycCRITIQUES, PsycTESTS, Ovid Medline, ISI Web of Science, and LLBA using the following keywords: *peer relationship, social preference, social status, sociometric, social interaction, social inclusion, popularity, likability, rejection, rejected, peer acceptance, adjustment, adaption, social problem, and peer problem* for the concept social preference. The following keywords were used to search for the topic of language competence: *language, communication, verbal ability, verbal test, linguistic, cognition, cognitive test, cognitive ability, intelligence, IQ, mental age, cognitive development, achievement, academic ability, educational status, speech, proficiency, emotion knowledge, false belief,* and *theory of mind* for the concept language competence. The keywords *emotion knowledge*, *false belief*, and *theory of mind* were included because language competence is often used as a covariate in studies investigating these concepts. Second, we sifted through the reference lists of all studies previously identified. Third, we used the above-mentioned databases to identify studies citing the previously identified studies. In cases where relevant information about study design or sample characteristics was missing, authors were contacted and asked for additional information.

## Inclusion and Exclusion Criteria

A study had to meet the following standards for inclusion in the meta-analysis: (a) the study had to investigate the relation between language competence and social preference, (b) only studies reported in English were included, (c) the average age of the participants studied had to be between 2 and 11 years, (d) the study had to contain sufficient information to calculate an effect size for the relation between language competence and social preference (see Lipsey & Wilson, 2001), (e) given the small number of longitudinal studies examining the relation between language competence and social preference, we included only studies reporting effect sizes based on the concurrent association between the two variables (maximum time frame of 6 months between the assessments). Studies were included regardless of publication form and year of publication.

Meeting the following criteria led to exclusion from the meta-analysis: Interventional studies were excluded when the effects of the relation between language competence and social preference before intervention were missing. Moreover, we excluded studies with participants who were retrieved from a clinical or a special population such as children with language impairment.

Forty-five studies met inclusion criteria and were not excluded due to the exclusion criteria. In some cases, the results were published in more than one article. To avoid duplication, in cases where articles published data from the same population with the same measures, the more recently published article was included (two studies). In cases where articles were published with the same measures by the same research group, but with different subsamples, the article with the larger sample was included (one study). The remaining 42 studies were included in the meta-analysis. If a same sample was used in a longitudinal study, correlations from wave 1 were included, but not from the other waves. In studies that reported data on different measures of language competence or social preference but from the same sample, effect sizes were averaged across studies to compute a single mean effect size.

## Coding

All studies were coded with regard to the following features:

- Form of publication (i.e., journal article: peer-reviewed; journal article: not peer-reviewed; book; book chapter; dissertation; technical report; conference paper; unpublished manuscript);
- Year of publication;
- Country of publication;
- Sample size;
- Mean age of participants in years;
- Proportion of females in the sample;
- Social preference dimension: social acceptance (e.g., most liked, popular, number of friends)/social rejection, (e.g., least liked)/composite of social acceptance and social rejection;
- Source of information for social preference (peers/child/teacher/parents/research assistant);
- Instrument to assess social preference;
- Language modality: receptive language competence (decoding, reception, comprehension)/expressive language competence (encoding, expression, production)/mixed);
- Source of information for language competence (peers/child/teacher/parents/observation);
- Instrument to assess language competence;

 

- Use of age-normed values to transform raw scores of language competence test results;
- Concurrent correlation coefficient for the relation between language competence and social preference.

All studies that met inclusion criteria were coded for the above study features by the first and the second authors of this meta-analysis. The interrater agreement was $\kappa \geq .88$ for categorical variables (Cohen, 1960) and ICC $\geq .997$ for continuous variables (two-way mixed, absolute, average-measures ICC; Hallgren, 2012) indicating a high level of agreement between coders. All diverging assessments were discussed and consensus was reached.

For meta-analyses that examine the strength of the relation between two continuous variables, Pearson product-moment correlation coefficients ($r$) are usually used as effect size (Field & Gillett, 2010). Thus, in the present meta-analysis, $r$ was used to assess the strength of the relation between the two continuous variables, language competence and social preference. Most studies (84%) reported direct estimates of $r$. If the correlation coefficient was not reported, we transformed the given effect size using an effect size calculator (see Lipsey & Wilson, 2001). In one case, the study published raw scores (Gertner et al., 1994), which were entered and computed as correlation coefficients.

# Results

## Meta-Analytic Procedure

We transformed each $r$ into a Fisher's $z$ score using study weights with $\omega = n - 3$ (see Lipsey & Wilson, 2001). Effect sizes were analyzed using the random effects model, which is appropriate when effect sizes are heterogeneous (Borenstein, Hedges, Higgins, & Rothstein, 2009). SPSS and SPSS macros by Lipsey and Wilson (2001) were used for computation of effect sizes.

Several preliminary analyses were conducted. First, we tested for outliers on the effect size variable. Secondly, we addressed the issue of publication bias in meta-analytic studies. We hypothesized that publication bias was not an issue in the present meta-analysis because the relation between language competence and social preference was not the main focus of most studies, but rather reported interrelations among all study variables. Moreover, we did not apply any restrictions to publication form. Nevertheless, we tested for publication bias assuming that large studies have a higher probability of getting published. On the other hand, studies with low effect sizes should have a lower probability of being published if the sample size is small. The relation between study size and effect size was examined using a funnel graph (Sutton, 2009).

Homogeneity statistic ($Q$) of effect sizes was examined to assess the variation of the true effect size. The $Q$ statistic is based on a chi-square distribution. Significant heterogeneity indicates that effect sizes vary across studies, which may be explained by study characteristics. As a consequence, moderator analyses are conducted to investigate differences between sample sizes. In the present meta-analysis we focused on age, gender, and language modality as potential moderators. Moreover, we examined whether further methodological characteristics explained variation between studies.

## Descriptive Statistics of the Studies Used in the Meta-Analysis

Forty-two studies, with a combined sample of 7,077 children, met the inclusion criteria. Sample sizes varied between $N$ = 19 and 1,090 ($M$ = 144.43, $SD$ = 209.05). The resulting total sample consisted of 49 independent samples ($k$) yielding 90 effect sizes indicating the magnitude of the relation between language skills and social preference (see Table 1).

### Sample Description

The average age across all independent samples was 6.0 years ($SD$ = 1.9; range: 3.0–11.0 years). In six studies, the exact age was not reported. The average proportion of female participants was 48.76% (range: 0%–100%). In three samples the female/male ratio was not reported.

### Study Description

Forty studies were categorized as peer-reviewed journal articles, one study as a dissertation, and one study as an unpublished manuscript. The year of publication ranged from 1957 to 2012 ($M$ = 1997, $SD$ = 14.69). Twenty-six studies were conducted in the USA (59%), five in the UK (14%), three in Canada (8%), two in Australia and in Spain (4%), and one each originated from Italy, Norway, Switzerland, and Turkey (2%).

### Social Preference

As listed in Table 1, in 20 independent samples (41%) a composite score of the social preference measure was used, 14 samples (29%) measured social preference by social acceptance, and 9 samples (18%) by social acceptance as well as social rejection. Two samples (4%) used solely social rejection, two samples used a composite score and social acceptance, and two samples used social acceptance, social rejection as well as a composite score to assess social preference. In 41 samples (84%), peers were the source of

**Table 1.** Articles included in meta-analysis

| Study | *N* | Age | % of females | Language modality | Social preference measure | Effect size (*r*) |
|---|---|---|---|---|---|---|
| Badenes, Estevan, and Bacete (2000) | 77 | 5.58 | 35.06 | Mixed | Composite | .30 |
| Banerjee, Rieffe, Terwogt, Gerlein, and Boutsina (2006), Study 2 | 60 | 9.50 | 41.67 | Receptive | Composite | .11 |
| Banerjee, Watling, and Caputi (2011), Older sample | 138 | 11.00 | 43.48 | Receptive | Acceptance, rejection | .05 |
| Banerjee, Watling, and Caputi (2011), Younger sample | 72 | 7.98 | 56.94 | Receptive | Acceptance, rejection | .13 |
| Braza et al. (2009) | 98 | 5.25 | 56.12 | Expressive | Composite | .27 |
| Burleson et al. (1986) | 59 | | 46.67 | Expressive | Composite | .25 |
| Caputi et al. (2012) | 70 | 7.02 | 44.29 | Receptive | Acceptance, rejection | .15 |
| Cassidy, Werner, Rourke, and Zubernis (2003) | 67 | 4.33 | 52.24 | Mixed | Acceptance, composite | .46 |
| Champion, Lowe, and Cavior (1981) | 96 | 9.04 | 50.00 | Receptive, expressive | Acceptance | .16 |
| Coughlin and Vuchinich (1996) | 194 | 9.70 | 0.00 | Receptive | Composite | .22 |
| Curby, Rudasill, Rimm-Kaufmann, and Konold (2008) | 347 | n.r. | 56.48 | Receptive | Acceptance | .28 |
| Deutsch (1974) | 60 | 4.00 | 100.00 | Expressive | Acceptance | .22 |
| Doyle, Rappard, and Connolly (1980), Sample 1 | 31 | 4.00 | | Receptive, expressive | Acceptance | .34 |
| Doyle, Rappard, and Connolly (1980), Sample 2 | 31 | 4.00 | n.r. | Receptive, expressive | Acceptance | .34 |
| Fabes, Eisenberg, Hanish, and Spinrad (2001) | 50 | 4.95 | 56.00 | Expressive | Composite | .41 |
| Flynn and Whiten (2012) | 88 | 3.50 | 57.95 | Receptive | Acceptance, rejection | .21 |
| Gertner et al (1994) | 19 | 4.68 | 47.37 | Receptive, expressive | Acceptance, rejection | .32 |
| Goldman, Corsini, and De Urioste (1980) | 38 | 4.50 | 42.11 | Expressive | Acceptance, rejection, composite | .30 |
| Gulay (2011) | 236 | 5.51 | 47.88 | Mixed | Rejection | .26 |
| Hoglund, Laloonde, and Leadbeater (2008) | 114 | n.r. | 50.00 | Expressive | Rejection | .00 |
| Krantz (1982) | 47 | n.r. | n.r. | Expressive | Acceptance | .01 |
| Ladd (1990) | 125 | 5.35 | 47.20 | Receptive | Acceptance, composite | .25 |
| Ladd, Birch, and Buhs (1999), Study 1 | 200 | 5.58 | 47.50 | Receptive | Composite | .26 |
| Ladd, Birch, and Buhs (1999), Study 2 | 199 | 5.47 | 51.76 | Receptive | Acceptance, rejection | .18 |
| Mathieson and Banerjee (2011), Boys | 31 | 5.08 | 0.00 | Receptive | Acceptance | .13 |
| Mathieson and Banerjee (2011), Girls | 27 | 5.08 | 100.00 | Receptive | Acceptance | .23 |
| Meece and Mize (2010), Boys | 64 | 4.78 | 0.00 | Receptive | Composite | .25 |
| Meece and Mize (2010), Girls | 64 | 4.78 | 100.00 | Receptive | Composite | .03 |
| Mostow, Izard, Fine, and Trentacosta (2002) | 201 | 7.47 | 46.77 | Expressive | Composite | .09 |
| Murphy and Faulker (2006), Boys | 24 | 6.00 | 0.00 | Expressive | Composite | .12 |
| Murphy and Faulker (2006), Girls | 24 | 6.00 | 100.00 | Expressive | Composite | .36 |
| Nearland (2011) | 64 | 3.00 | 62.50 | Expressive | Composite | .46 |
| Olson and Lifgren (1988) | 79 | 4.67 | 40.51 | Receptive | Acceptance, rejection, composite | .18 |
| Peterson and Siegal (2002) | 109 | 4.67 | 40.37 | Receptive | Acceptance, rejection | .17 |
| Roff and Sells (1965) | 862 | n.r. | 48.61 | Mixed | Composite | .51 |

(Continued on next page)

**Table 1.** (Continued)

| Study | *N* | Age | % of females | Language modality | Social preference measure | Effect size (*r*) |
|---|---|---|---|---|---|---|
| Rosenthal (1957) | 40 | 7.83 | 47.50 | Expressive | Acceptance | .29 |
| Rubin (1973) | 80 | 8.63 | 50.00 | Receptive, expressive | Acceptance | .08 |
| Rubin and Danielsbeirness (1983) | 72 | 5.42 | 50.00 | Receptive | Composite | .40 |
| Schneider (2008) | 52 | 6.07 | 46.15 | Receptive | Composite | .56 |
| Schultz, Izard, Stapleton, Buckingham-Howes, and Bear (2009) | 154 | 7.31 | 51.30 | Expressive | Acceptance, rejection | .13 |
| Slaughter, Dennis, and Pritchard (2002), Study 2 | 87 | 5.29 | 47.13 | Receptive | Composite | .19 |
| Snyder et al. (2008) | 267 | 5.30 | 49.81 | Receptive | Composite | .36 |
| Strayer and Mashal (1983) | 20 | 4.30 | 55.00 | Receptive, expressive | Acceptance | .19 |
| Von Grünigen et al. (2010) | 1,090 | 5.80 | 47.89 | Expressive | Acceptance | .33 |
| Von Grünigen and Kochenderfer-Ladd (2010), Anglo-Sample | 160 | 8.50 | 45.00 | Unclear | Acceptance | .13 |
| Von Grünigen and Kochenderfer-Ladd (2010), Latino-Sample | 159 | 8.50 | 47.80 | Unclear | Acceptance | .24 |
| Watson et al. (1999), Study 2 | 52 | 5.06 | 42.31 | Receptive | Composite | .39 |
| Yamamoto, Lembright, and Corrigan (1966) | 730 | n.r. | 52.60 | Mixed | Acceptance, rejection | .17 |
| Yeates, Schultz, and Selman (1991), Study 2 | 49 | 9.08 | 40.82 | Receptive | Composite | .23 |

*Note.* n.r. = Not reported.

information regarding social preference. In four samples (8%), social status of the children was reported by teachers. In one sample, social preference was assessed by observation (2%), peers as well as teachers (2%), peers as well as observation (2%), and peers as well as parents (2%).

### Language Modality

As listed in Table 1, receptive language competence was assessed in 22 samples (47%), 14 samples (30%) used an expressive language competence measure, and 6 samples (13%) combined receptive as well as expressive language competence. Five samples (11%) reported language competence with mixed modalities, that is, a measure including both receptive as well as expressive language competence. In two samples, the language modality assessed remained unclear. In 45 samples (92%), language tests were used to assess language competence. In four samples (8%), language competence was reported by teacher rating. Twenty-six samples (53%) used age-normed measures to assess language competence, 18 samples (37%) did not use normed measures, and 5 samples (10%) reported results of normed as well as nonnormed language measures.

## Preliminary Analyses

### Outlier Analyses

Outlier analyses revealed that there was no statistical outlier to the mean effect size variable (> 3 *SD*). Therefore, the complete data set was used for further analyses.

### Publication Bias

As illustrated in Figure 1, large studies were not biased toward small effect sizes. Moreover, the graph showed a symmetrical pattern. Therefore, the data showed evidence against publication bias.




**Figure 1.** Funnel graph of the effect sizes of the relation between language competence and social preference. The graphs represent the relation between mean effect size and sample size of the studies. The dashed line denotes the weighted mean effect size.

## Overall Effect Size

The overall effect size for the relation between language competence and social preference was .25 (CI = .20–.29; *SE* = .01), which, according to Cohen (1988), is small to moderate in strength, and is significantly greater than zero ($z = 23.50$, $p < .001$).

Cochran's chi-square test indicated that effect sizes significantly differed across studies ($Q = 153.14$, $df = 48$; $p < .001$). Therefore, we investigated whether moderator variables explained variation of effect sizes.

## Moderator Analyses

To examine the relation between study characteristics and effect size, we conducted analyses using SPSS macros (Lipsey & Wilson, 2001). For categorical moderators, the SPSS macro METAF with maximum likelihood estimation was used. For continuous moderators, for example, the proportion of females in the sample, the SPSS macro Metareg with maximum likelihood estimation was utilized.

### Age of Participants

The exact age was not reported in six independent samples. Therefore, these studies were excluded in the analysis of age as a potential moderator. The $Q_{between}$ statistic for the moderator age was significant ($\beta = -.52$, $df = 1$; $p < .001$; $k = 43$). As illustrated in Figure 2, the older the children, the less important language competence is for social preference.

### Gender

The moderator gender was tested in two ways. First, we analyzed the moderator only using studies that reported separate effect sizes for boys and girls ($k = 10$). Secondly, because most studies did not report effect sizes for each gender separately, we analyzed whether the proportion of females in the sample moderated the relation between language competence and social preference. In so doing, we were able to include a larger sample in the analysis ($k = 46$).

Three samples did not report information regarding age proportion in the sample and were therefore excluded from the following analyses. Five samples presented information for girls only and five samples reported information for boys only. With these 10 samples we calculated whether the relation between language competence and social preference differed by gender. The mean effect size for girls was .17 ($p < .05$, $k = 5$, $n = 184$) and .22 for boys ($p < .001$, $k = 5$, $n = 323$), showing a trend toward a stronger relation between language competence and social preference in boys than in girls. However, the $Q_{between}$ statistic for the gender was not significant ($Q = .23$, $df = 1$; $p = .63$) indicating that the effect size does not depend on gender. The effect of proportion of females in the sample was also not significant ($\beta = .03$, $p = .87$). Thus, it can be concluded that gender does not moderate the relation between language competence and social preference. A further analysis revealed that there is no significant interaction effect of age and proportion of females in the sample ($\beta = -.09$, $p = .57$) indicating that gender does not moderate the relation between language competence and social preference in specific developmental stages.

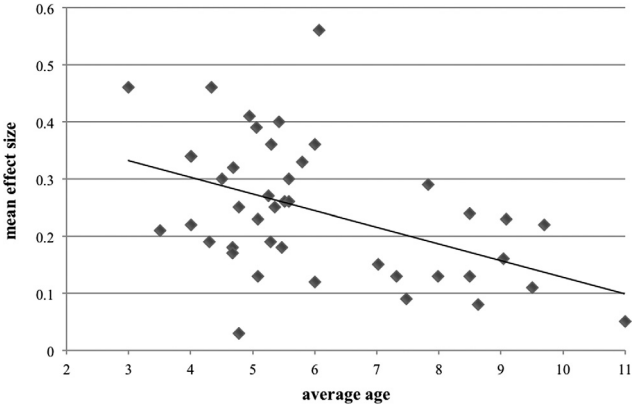


**Figure 2.** Scatter plot of the relation between the mean effect sizes and average age of the sample.

### Language Modality

To examine whether effect sizes differed with regard to language modality, only studies assessing language competence through an expressive ($k = 14$) or through a receptive language measure ($k = 22$) were included in the analysis. The $Q_{between}$ statistic for the language modality moderator was not significant ($Q = .001$, $df = 1$; $p = .92$) indicating that effect size magnitude does not depend on language modality.

### Methodological Characteristics

Twenty-six samples (53%) used age-normed measures to assess language competence, 18 samples (37%) did not use normed measures, and 5 samples (10%) reported results of age-normed instruments as well as measures without age-norms. The $Q_{between}$ statistic for the language norm moderator was not significant ($Q = .10$, $df = 1$; $p = .75$) indicating that effect size magnitude does not depend on language norms used.

To test whether effect size differed by aspect of social preference, we first compared studies that assessed social preference with either social acceptance ($k = 14$), social rejection ($k = 2$), or a composite score of social acceptance and social rejection ($k = 20$). The $Q_{between}$ statistic for the social preference instrument moderator was not significant

 

($Q = 4.22$, $df = 2$; $p = .12$) indicating that effect size magnitude does not depend on what social preference dimension was assessed.

## Discussion

The present meta-analysis addressed two main aims: the first was to examine the magnitude of the relation between language competence and social preference in children aged 2–11 years. The second was to test for important moderators, explaining variations in this relation in different studies.

Across 42 studies and 49 independent samples of over 7,000 children, results indicated that language competence is related to social preference. The relation had a mean effect size of $r = .25$ and therefore fell into the small to medium range (Cohen, 1988). Accordingly, the results indicate that language competence generally is a correlate of social preference.

Homogeneity statistics revealed that the studies differ significantly in the magnitude of the relation between language competence and social preference. We tested whether gender explained differences in the effect sizes between studies. Studies to date have produced contradictory results on the question of whether the relation between language competence and social preference differs in magnitude according to gender. The present meta-analysis showed that gender is not a significant moderator. Thus, contrary to the findings of Stowe et al. (1999) and Von Grünigen et al. (2010), the present meta-analysis indicated that the relation between language competence and social preference was similar in girls and boys. Although the relation between language and social preference was not influenced by gender across the ages studied presently, it is possible the magnitude of the relation does vary by gender during some developmental stages. For example, in early childhood, girls often have more pronounced language skills than boys (e.g., Bornstein, Hahn, & Haynes, 2004), which provide girls with more possibilities to react in social interactions than boys (Alink et al., 2006; Estrem, 2005). According to Coates (1993), the difference between boys and girls disappears in the first years of school and reappears around the age of 10. Thus the gender difference in the relation of language competence and peer relationships might be limited to certain developmental stages. However, the interaction effect of age and proportion of females in the sample was nonsignificant in the present meta-analysis.

Language modality did not explain the differences between studies. The effect size in the relation between language competence and social preference was similar in magnitude, independent of whether receptive or expressive language skills were examined. Although receptive and expressive language competences are only related to one another to a small to medium extent (Bornstein & Hendricks, 2012), both modalities are equally important in gaining acceptance by peers.

The only significant moderator of the relation between language competence and social preference detected was age. As hypothesized, language competence is more important for gaining social acceptance in younger than in older children. This result is consistent with Hay and colleagues (2004), who claim that language competence is already important for young children. Language development is one of the most visible achievements in early childhood. Because of their limited language competence, younger children face more difficulties in taking part in interactions and in expressing their needs than older children. Younger children with better language skills are more likely to succeed in initiating contact with peers and thus to be liked by their peers. However, among older children oral language competence is sufficiently developed for most children to communicate effectively in their everyday lives. That is, the variability among older children in language competence is smaller and no longer plays as important a role in later childhood as in earlier childhood. Moreover, the complexity of social relationships becomes greater with age, which may lower the impact of a single determinant on peer relationships. Thus it is not surprising that the correlates of social preference change in significance over the course of the child's development.

### Directions for Future Research

The present study provides several starting points for further research in this field. First, there are population groups that have received little attention in research to date. For example, research by Von Grünigen et al. (2010) and Von Grünigen, Kochenderfer-Ladd, Perren, and Alsaker (2012) showed that language competence has an important influence on peer acceptance, particularly for children from an immigrant background, functioning as a protective factor against prejudice and rejection by peers. However, based on the few studies on the relation between language skills and social preference, it was not possible to investigate immigrant background and bilingualism as moderators in the present meta-analysis. There is a need for further studies with children from socially disadvantaged backgrounds.

Second, the studies included in our meta-analysis originated almost exclusively from English-speaking countries (North America, UK, Australia) and from three European countries. All of the studies were from culturally Western countries. It may be that the relation between language

competence and social preference is different in non-Western cultures. Cross-cultural studies have shown that some behaviors that are highly esteemed in Western cultures are regarded as maladaptive in other cultures. For example, Chen and colleagues showed that shyness is a positive predictor for various adaptive behaviors among Chinese children, whereas in Canada shyness represents a risk factor (Chen et al., 2006). Whether the relation between language competence and social preference differs from culture to culture is a question that the present meta-analysis is unable to answer given the lack of studies, and thus would be an important starting point for future research.

Third, in the present meta-analysis we focused on social preference as a measure of peer relationships. It may be that the relation between language competence and peer relationships differs depending on which aspect of peer relationships is examined. As mentioned previously, there are studies investigating language competence and different aspects of peer relations. However, these different aspects are related to one another only to a moderate extent. For example, in the study by Von Grünigen et al. (2012), the correlation between peer acceptance, victimization, and social withdrawal was significant, but only small to medium in size. Another aspect of peer relationships are close friendships. However, the processes to form and maintain friendships differ from the processes that lead to a high social status within a group (see Rubin et al., 2005, as an overview). Accordingly, whether language competence is of equal relevance to different aspects of social interaction could form the subject of further meta-analyses and lead to a broader understanding of the correlates of peer relationship development.

Fourth, it is conceivable that additional variables such as executive functions or theory of mind mediate the relation between language competence and social preference. In the meta-analysis by Milligan, Astington, and Dack (2007), for example, language competence and theory of mind are significantly interrelated. Caputi, Lecce, Pagnin, and Banerjee (2012) showed that theory of mind is a significant predictor of peer acceptance. Thus, theory of mind might explain the relation between language competence and social preference. Additional variables explaining the relation between language competence and social preference might be further examined in future research.

## Strengths and Limitations

The present study had two primary limitations that we would like to address in the following sections. First, it included only studies that examined the cross-sectional relation between language competence and social preference. Accordingly, the results do not provide any conclusive evidence regarding the direction of this relation. Theoretically, we can imagine that a bidirectional relation exists between language competence and social preference. That is, it is possible that children's limited language skills impede their access to their peer group, and that less well-accepted children interact with other children less frequently and accordingly have fewer opportunities to develop their language skills. Longitudinal or experimental intervention studies are required to test directionality. However, to date, only a few studies have investigated the longitudinal relation between language and social status (e.g., Von Grünigen et al., 2012; Rubin & Danielsbeirness, 1983) and to the authors' knowledge no experimental intervention study has been conducted on this topic. Thus, the directionality of the relation between language competence and social preference could not be tested within the present meta-analysis.

Furthermore, we were limited in regard to the moderators we examined. As the meta-analysis of Newcomb, Bukowski, and Pattee (1993) demonstrated, correlates of social status differ depending on information source. In the present meta-analysis, most of the information on social preference came from the peers themselves. Thus it was not possible to investigate whether the source of the information captured has any influence on the relation between language competence and social preference. Although capturing peer acceptance through peers themselves is a valid source for the analysis of peer relationships, more varied methods of capturing data might provide further insights into the relation between language competence and social preference. For example, a child might be generally rejected by his or her peer group, yet still have some close friends and thus not feel rejected. In this type of case, the relation between language competence and social preference might correlate differently than when social preference was assessed by peer rating. Moreover, social preference is defined as the social status within a peer group (Coie et al., 1982). However, there are differences between peer groups. For example, in some groups only few children are very liked or disliked whereas in other groups the group cohesion is generally very high and all children are popular to some extent. Thus, it is conceivable that differences between groups might moderate the relation between language competence and social preference.

Despite these limitations, the present meta-analysis casts fresh light on the contradictory findings on the relation between language competence and social preference. The meta-analysis included 49 effect sizes. There were no restrictions as far as the included publication form and year of publication were concerned. Accordingly, this meta-analysis covers a broad range of studies on the relation between language competence and social preference, thus

 

making a valuable contribution to current research on the correlates of peer relations.

## Conclusion

Studies have shown that peer relationships are critical for children's healthy development (i.e., Rubin et al., 2005). Continuing research into the correlates of peer relationships is thus of great importance. The present meta-analysis examined the relation between social preference and language competence, shedding light on the inconsistent findings, and demonstrating that language competence is generally relevant to a child's acceptance by his or her peer group. This effect is stronger for younger than for older children, but it does not depend on gender or language modality.

Future research should further examine additional demographic groups, such as immigrant groups or other cultural groups. There is also a need for more longitudinal research to determine the extent to which language competence influences social preference and to which social preference is a predicator of language skills.

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