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META-ANALYSIS

The Value of Pretend Play for Social Competence in Early Childhood: A Meta-analysis

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Abstract

According to Vygotsky's cultural-historical activity theory, pretend play can be an important context for the development of children's social competence. The aim of this meta-analysis was to synthesize the current evidence about the relation between pretend play and social competence in early childhood (age 3–8 years). A systematic literature search of PsycINFO, ERIC, and Web of Science identified a total of 34 relevant empirical studies. The included studies were systematically coded and categorized for pretend play and social competence. Overall, the findings of this meta-analysis reveal a positive relation between pretend play and social competence, irrespective of how the latter was measured. The relation between pretend play and social competence was slightly negatively impacted by children's age, suggesting that the relation weakens as children get older. Studies measuring the amount of pretend play found lower correlations between pretend play and social competence than studies measuring the quality of pretend play. Most included studies adopted a cross-sectional design, so claims about causal effects could not be supported. Future research is required to determine the direction of causality and potential mechanisms that may explain the relation between pretend play and social competence.

Keywords Pretend play · Social competence · Early childhood education · Meta-analysis

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The Importance of Social Competence

Social competence is often considered of great importance for young children's development (Caprara et al., 2000; Denham, et al., 2014). Research has shown that children who lack social competence are more likely to engage in aggressive behavior, experience higher levels of anxiety and depression, have lower academic skills, and are more likely to be rejected by peers (Caprara et al., 2000; Domitrovich, et al., 2017; Flook et al., 2005; Trentacosta & Fine, 2010; van der Wilt et al., 2019; Warden & Mackinnon, 2003). It is therefore important to obtain insight into factors that relate to social competence from an early age. Within cultural-historical activity theory, it is suggested that engagement in pretend play, in which children re-enact the surrounding socio-cultural world, is an essential aspect of social development (El'konin, 2005; Vygotsky, 1978). However, empirical support for this conjecture is limited (Lillard et al., 2013). The current meta-analysis therefore aims to provide a review of studies into the relation between pretend play and social competence in early childhood (children aged 3–8 years).

Defining Pretend Play

Pretend play is commonly defined as an activity in which children play "as if" and use their imagination to manipulate objects, actions, roles, or ideas (Lillard et al., 2013). According to Vygotsky, children make sense of the world by creating imaginary situations (Vygotsky, 1978). For example, pretend play can involve social role-taking, manipulation of objects, or other play actions associated with the imaginary play theme (Lillard et al., 2013; Thompson & Goldstein, 2019; Vygotsky, 1978; Wynberg et al., 2022). Although a considerable body of research exists on the subject, there is no consensus on a definition of pretend play (Van Oers, 2013). Therefore, the current meta-analysis follows the comprehensive definition proposed in the extensive literature review of Thompson and Goldstein (2019) that examined 199 studies focused on measuring pretend play. According to them, the construct of pretend play consists of the following five elements: (1) object substitutions (substituting an object for another imaginary or real object), (2) attribution of pretend properties (attributing new qualities to an object), (3) social interaction within pretend play (back-and-forth pretense-related interaction), (4) role enactment (embodiment of a role or character), and (5) pretense-related meta-communication (clarifying or directing the pretense). These pretend play elements can occur in the context of both solitary pretend play and social pretend play (Thompson & Goldstein, 2022).

Defining Social Competence

Social competence is a complex and multifaceted concept and refers to the ability to engage in meaningful interactions with peers and adults (Junge et al., 2020; Rose-Krasnor, 1997). In defining social competence, we follow the prism model of social

competence developed by Rose-Krasnor (1997). This model is recently elaborated by Junge et al. (2020) and consists of three layers to capture the complexity of social competence. The top layer is the theoretical layer; it defines social competence as the ability to successfully participate in interactions with others. The middle layer is the indexical layer, which refers to the behavioral manifestation or indexical layer of social competence such as sociometric status (i.e., a child's social position within the peer group) and prosocial behavior. The bottom layer is the skills layer, which refers to a set of underlying skills required to successfully engage in social interactions. Junge et al. (2020) identified five underlying skills: (1) social encoding (the ability to attend to the social interaction partner and interpret meaningful cues from one's social interaction partner, such as emotions), (2) social problem solving (the ability to respond in such a way that social goals are achieved), (3) emotion regulation (the ability to exert control over one's own emotions, behaviors, and arousals), (4) communicative competence (the ability to use language effectively and appropriately in a variety of social situations), and (5) empathy (the ability to take others' perspective and share the emotions of others). This prism model with three layers indicates that social competence is a complex construct that consists of a variety of sub-constructs.

Relation Between Pretend Play and Social Competence: Theory

The view that pretend play is crucial for the development of social competence originates in Vygotsky's cultural-historical activity theory (CHAT; Vygotsky, 1978; also see Van Oers, 2013). According to this theory, children develop higher mental functions, such as social competence, through collaborative participation in socio-cultural practices. In the context of early childhood education and care, these socio-cultural practices, such as a restaurant, supermarket, bookshop, or museum, are often imitated within pretend play. Participating in these imaginary practices during pretend play might support the development of children's social competence (Bodrova & Leong, 2015; El'konin, 2005; van Oers, 2013). In fact, by imitating socio-cultural practices in pretend play, children often imitate adults who engage in socially desirable behavior (e.g., father, mother, teacher, doctor, store owner, customer; El'konin, 2005). In addition, during pretend play, children practice negotiating play themes, social roles, and rules (Howes & Matheson, 1992; Van Oers, 2013). One aspect of this process of negotiation is to learn to negotiate in a social manner and solve peer conflicts successfully to prevent disruption of the play activity. According to CHAT, such participation in pretend play has the potential to support the development of children's social competence (Bodrova & Leong, 2015; Colliver & Veraksa, 2021; El'konin, 2005; Kalkusch et al., 2022; van Oers, 2013).

Relation Between Pretend Play and Social Competence: Reviews and Meta-analysis

Reasoning from Vygotsky's cultural-historical activity theory that pretend play is crucial for children's social development, one would expect a causal link from pretend play activities to children's social competence. But what does empirical research

show? Several reviews and one meta-analysis have already provided an overview of empirical studies into the relation between pretend play and social competence. First, the literature review of Fein (1981) suggested that pretend play is related to indices of positive social behavior (e.g., friendliness, peer popularity, cooperation). However, Fein's review included mostly small-scale studies and samples focused on special educational needs or low-SES children. Christie and Johnsen (1983) reviewed five experimental studies on the effect of pretend play on social knowledge (i.e., social perspective taking). According to this review, pretend play activities were usually accompanied with positive changes in children's social perspective taking. However, a causal role for pretend play could not be determined because there was a small amount of included studies and these studies also suffered from several limitations, such as questionable validity of the perspective taking tasks or suggested confounding variables such as adult guidance, social interaction, and social conflict during pretense. Third, Lillard et al. (2013) conducted a comprehensive review on the impact of pretend play on children's development, including theory of mind (i.e., social perspective taking), social skills, and emotion regulation. They concluded that there is insufficient evidence to support the crucial and causal role of pretend play for children's social development. It was suggested that pretend play might provide a setting that facilitates other important underlying factors of pretend play that could, in turn, affect social development (e.g., adult interaction), but the current evidence cannot suggest a crucial causal role of pretending. In addition to these narrative reviews, Fisher (1992) conducted a meta-analysis showing a positive relation between pretend play and social development. Although this meta-analysis is often cited to support the claim that pretend play supports social development (e.g., Allee-Herndon et al., 2022; Leung, 2014; Moore & Russ, 2008), its statistical approach and subsequent findings have been seriously criticized for methodological problems (Lillard et al., 2013).

Taken together, so far the evidence for a causal role of pretend play in the development of social competence is weak. The reviews and meta-analysis did provide more evidence for a relation between the two constructs. However, a correlation is no evidence for causation. It is, for example, also possible that stronger social competence allows children to engage more in pretend play, or in pretend play of a higher quality, reversing the arrow of causation. Moreover, even evidence for a correlation between pretend play and social competence is incomplete due to serious constraints of the included studies or meta-analytical statistics used. Therefore, it remains unclear if these constructs are related. In the last 10 years, many studies have been conducted into the relation between pretend play and social competence that were not included in the existing reviews the youngest of which is 11 years old. To address this, the current study aimed to provide an updated review of studies into the relation between pretend play and social competence through a meta-analysis.

Age

There are subtle differences in the existing literature about the exact age period that is considered most prominent for pretend play. For example, in El'konin's view pretend play is considered important around the age of 3 until 6 years while

others state this age period ends at the age of five (El'konin, 2005; Singer & Singer, 1990). Piaget (1962) claimed that pretend play declines around the age of seven when children enter the concrete operational stage. Despite these theoretical claims, there is no strong empirical evidence that children' pretend play ceases around these ages. Moreover, the study of Smith and Lillard (2012) suggests that pretend play continues beyond the age of 6 years and declines until the end of middle childhood (age 11–12). To ensure that the selected age range for the purpose of this meta-analysis encompasses the age period in which pretend play commonly occurs, we selected the age period from 3 years (i.e., the age most children enter early childhood institutions) until the age of 8 years (i.e., the age early childhood ends and middle childhood starts).

The Present Study

The aim of the present study was to identify studies into the relation between pretend play and social competence in children aged 3 to 8 years old and to provide a review of the main outcomes of these studies. An additional aim was to evaluate methodological characteristics of studies (e.g., operationalization of variables and research design) that have previously been conducted into the relation between pretend play and social competence. It is important to gather information of this sort to explain inconsistencies in research outcomes, to identify possible gaps in this field of research, and to provide implications for future research. In summary, the research question of the present meta-analysis was: *To what extent and how is pretend play related to children's social competence in early childhood?*

Method

Information Sources and Search Strategy

In our systematic literature search, we followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009; Page et al., 2021). Databases PsycINFO, ERIC, and Web of Science were searched for relevant studies. The following keywords were used for pretend play*:* role play, play-based, sociodramatic play, social play, as-if play, imaginative play, imaginative situation, fantasy play, play world, playfulness, and pretend play. For social competence, keywords were social competence, emotional control, social skills, social communication, theory of mind, emotion regulation, social and emotional learning, emotional understanding, social acceptance, peer relations, peer competence, social learning, emotional learning, and social and emotional skills. The results were filtered by the search restriction of peer-reviewed articles only. Boolean operators were used to ensure that each possible combination of keywords was included (see Appendix 2 for search strategy).

Eligibility Criteria

Eligible studies were included if they met the following inclusion criteria: (1) The study was peer-reviewed, written in English, and published between January 1, 1990, and July 25, 2022; (2) The study reported empirical data; (3) The study examined the association between pretend play and social competence as defined within this meta-analysis; (4) Participants were aged between 3 and 8 years (36–96 months); (5) The study was conducted in the context of early childhood education and care (ECEC); (6) The study reported results for participants who did not have special needs or developmental disabilities. Based on the third criterion, we did not include studies with focus on imaginary companions (e.g., having a pretend friend) or fantasy orientation (e.g., tending to enjoy fantasy games). These studies only used questionnaires or interviews to measure play, not actual play observations, and were therefore excluded (e.g., Brown et al., 2017; Gilpin et al., 2015; Taylor et al., 2004). Based on the fourth criterion, we did not include longitudinal studies that examined children's pretend play before the age of three in relation despite social competence which was measured within the selected age range (e.g., Howes & Matheson, 1992).

Study Identification

The literature search resulted in a selection of 4785 studies. After removing 250 duplicates, the remaining 4535 studies were manually screened on title and abstract. Next, a selection of 146 studies was subjected to full-text screening. Studies for which it was unclear whether they met the eligibility criteria were discussed with the second author until an agreement was reached. The final selection consisted of 38 studies. From four studies, the required effect sizes could not be determined, after which we contacted the authors of these studies. As we did not receive any response, we decided to exclude these four studies from the meta-analysis. As a result, 34 studies were included in the current meta-analysis. The flow diagram of the identification of studies in this meta-analysis is shown in Fig. 1.

Data Extraction and Analysis

Most of the 34 studies reported multiple associations between pretend play and social competence. In total, 188 associations were examined in this meta-analysis. The effect sizes were correlations for correlational and longitudinal studies, or Hedges' g computed from means on a post-test for intervention studies with an experimental and control group. If multiple effect sizes were reported in a single study, the sample size was corrected to account for the number of effect sizes (as recommended by Morris, 2008). If outcomes of sociometric status (i.e., index of social competence) were measured for boys and girls separately, we extracted the associations between pretend play and same-sex peer ratings of sociometric status. This was done because same-sex peer play was assessed

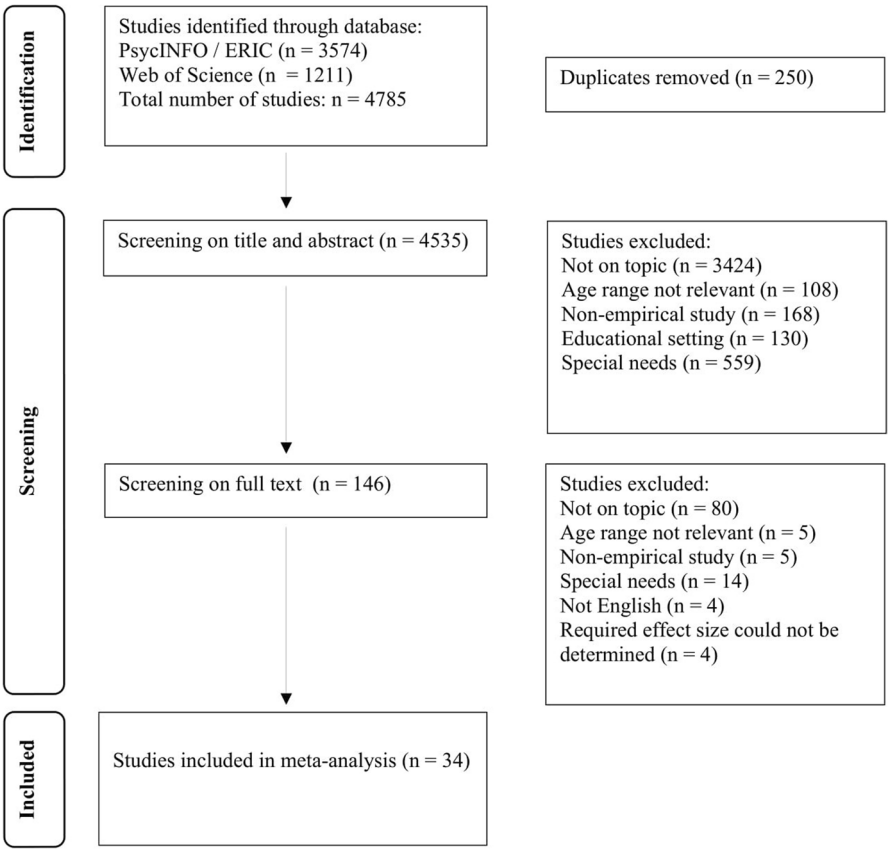


Fig. 1 PRISMA flow diagram of the study selection process (Page et al., 2021)

most frequently in studies compared to opposite-sex play. Studies were coded and analyzed using the following categories: (1) study characteristics, (2) operationalization of pretend play, (3) operationalization of social competence, and (4) main outcomes regarding the associations between pretend play and social competence. Table 2 provides an overview of the 34 studies, specified according to these four categories (see Appendix 1).

The meta-analysis was performed using the statistical analysis software JASP (Version 0.16.3) using random effects models. Because restricted maximum likelihood did not converge, the DerSimonian-Laird method was selected for the analysis. We performed a meta-regression that added four reference conditions to the model (i.e., solitary pretend play, quality of pretend play, non-intervention, and emotion regulation). This combination of reference conditions serves as the baseline (i.e., intercept) against which other levels are compared. In addition, age was added to the model as a covariate to control for its potential influence on the relation between pretend play and social competence. The mean age of each study sample served as

the age predictor value. To improve the interpretability of the coefficients, we centered the age predictor. The level of effect size heterogeneity was calculated (with 95% confidence intervals) using the residual heterogeneity test. Funnel plots were inspected to detect potential publication bias.

Study Risk of Bias Assessment

The Risk of Bias in Non-randomized Studies of Interventions (ROBINS-I) was used to assess the quality of the intervention studies ($n = 10$; Sterne et al., 2016). This is a tool to evaluate non-randomized intervention studies. Following the protocol of ROBINS-I, each intervention study was scored on seven bias domains: (1) bias due to confounding, (2) bias in selection of participants, (3) bias in classification of interventions, (4) bias due to deviations from intended intervention, (5) bias due to missing data, (6) bias in measurement of outcomes, and (7) bias in selection of the reported result. The intervention studies were coded by the first author and four studies (randomly selected) were then double-coded by the third author, which resulted in a good consensus (81%).

Results

Study Characteristics

The total sample consisted of $N = 34$ studies (listed in Table 2 in the Appendix 1), with an overall sample size of $N = 2952$ participants. The sample sizes of the selected studies ranged from 20 to 357 ($M = 86.82$; $SD = 127.41$). The study of Blair et al. (2018), with a sample of 715 children, was an outlier. Overall, 29 of the 34 studies included fewer than 100 participants. Most of the studies were conducted in North America ($n = 21$) and Europe ($n = 9$). Only four studies were conducted in other areas: Asia ($n = 3$) and Africa ($n = 1$). Most studies adopted a cross-sectional design ($n = 22$). These cross-sectional studies conducted either correlational or group (e.g., ANOVA) analyses. Of the 12 remaining studies, 10 studies could be categorized as experimental studies and two as longitudinal studies.

Operationalization of Pretend Play

Overall, studies examined social pretend play ($n = 22$), solitary pretend play ($n = 10$), or both solitary and social pretend play ($n = 2$). The experimental studies ($n = 10$) operationalized pretend play through social pretend play interventions. Studies implemented interventions with pretense training in which children participated in play sessions guided or supervised by a trained experimenter or teacher ($n = 6$, Fung & Cheng, 2017; Goldstein & Lerner, 2018;

Kalkusch et al., 2022; Perren et al., 2019; Qu, et al., 2015; Richard et al., 2021), a storytelling story acting intervention where children generated and reenacted stories under the guidance of a teacher ($n = 2$, Goodman & Dent, 2019; Nicolopoulou et al., 2015), or implemented a 2-year experimental curriculum "Tools of the Mind" in which teachers were trained to actively support children's role enactment during daily play sessions ($n = 2$, Barnett et al., 2008; Blair et al., 2018). Although all experimental studies used some form of pretend play guidance, the extent of adult guidance provided to children's pretend play varied across studies. In some studies, play interventions were highly structured. For example, children participated in predetermined guided dramatic pretend play games (Goldstein & Lerner, 2018) or in pretend play sessions in which the teacher modeled various pretend play situations before the class would act them out (Qu et al., 2015; Richard et al., 2021). In other studies, only the thematic focus (e.g., firefighters) was predetermined and adult guidance was focused on supporting and elaborating children's play scenarios. The play tutor or teacher was then trained to build on these play scenarios and discuss play planning and relevant social rules or roles (Barnett et al., 2008; Blair et al., 2018; Kalkusch et al., 2022).

For the non-experimental studies ($n = 24$), we found an extensive variety in measurements used to assess pretend play. To address this variety, the non-experimental studies were categorized based on the type of pretend play measurement. First, studies could examine the *amount* of time children spend in pretend play. This refers to the naturally occurring amount of time children spend in solitary or social pretend play within the naturalistic setting of their playground or classroom (e.g., Choi & Ohm, 2018). Second, studies examined the *quality* of pretend play by coding the complexity of the play narrative, role-taking, or fantasy displayed during solitary or social pretend play (e.g., Jaggy et al., 2020b; McAloney & Stagnitti, 2009). Table 2 in the Appendix 1 provides an overview of the 34 studies, specified according to the operationalization of pretend play (i.e., solitary pretend play quality, solitary pretend play amount, social pretend play quality, and social pretend play intervention).

Operationalization of Social Competence

In operationalizing social competence, 21 of the included studies focused on underlying skills of social competence (i.e., social encoding, emotion regulation, theory of mind or empathy; the third layer of Rose-Krasnor's prism model), and 23 studies focused on indices of social competence (i.e., social behavior or sociometric status; the second layer of Rose-Krasnor's prism model). Studies relied on ratings by teachers or parents, observational methods, or individual tasks to measure social competence. Table 2 in the Appendix 1 specifies the operationalization of social competence for the included studies.

Underlying Skills of Social Competence

Social encoding was primarily evaluated by means of individual tasks conducted by an experimenter (e.g., Richard et al., 2021). For example, children were asked to identify emotions from pictures or were asked more in-depth questions about their own and others' emotional states (e.g., "How do you know when you or others feel sad?"). Emotion regulation was assessed using questionnaires rated by teachers or parents, with the Emotion Regulation Checklist being the most frequently used (e.g., Hoffmann & Russ, 2012). Only Slot et al. (2017) used observational methods to observe children's emotion regulation and social encoding. All theory of mind studies used a subset of well-known theory of mind tasks, such as diverse desires, diverse beliefs, knowledge access, or false belief (Lillard & Kavanaugh, 2014). Finally, empathy was assessed by teacher-rated measures or peer-nomination procedures in which children were asked to nominate classmates who were kind when other children got upset (e.g., Goldstein & Lerner, 2018).

Indices of Social Competence

Social behavior was examined using observational methods or an individual task, but primarily by using questionnaires completed by teachers. The Problem Behaviors Scale of the Social Skills Rating System (SSRS) and the Penn Interactive Peer Play Scale (PIPPS) were two commonly used questionnaires. Observational measures were also used in studies to assess social behavior. This included behavioral coding of emotional expressiveness, positive social interactions, and the degree of aggression displayed in naturally occurring classroom or playground settings. Only Richard et al. (2021) used an individual task to assess social behavior, presenting children with several social situations and asking them to choose one of three illustrated behavioral responses (i.e., prosocial, aggressive, or avoiding). Finally, studies focusing on children's sociometric status all used a standard nomination procedure in which children were asked to nominate peers they liked and disliked playing with (e.g., Colwell & Lindsey, 2005).

The Association between Pretend Play and Social Competence

This meta-analysis included $k = 188$ associations between pretend play and social competence ($N = 34$ studies). Detailed information on the associations is provided in the supplementary materials as well as separate forest plots for the different outcomes of social competence (i.e., emotion regulation, empathy, social behavior, social encoding, sociometric status, and theory of mind). We conducted a meta-regression entering age (centered), pretend play measure, whether there was an intervention, and social competence measure as predictors. Solitary pretend play, quality of pretend play, non-intervention, and emotion regulation were entered as reference

conditions. Together, these reference conditions determined the intercept against which other pretend play and social competence measures are compared. The heterogeneity of the studies was assessed as very low ($Q = 126.03$, $p = 1.00$, $I^2 = 0\%$), indicating considerable homogeneity (Higgins et al., 2003). A visual inspection of the funnel plot revealed no evidence of publication bias (see Fig. 2). This was confirmed by the Rank correlation test ($p = 0.218$) and Egger's test ($p = 0.735$), revealing no publication bias for funnel plot asymmetry of the intercept.

Table 1 displays the meta-regression results. Overall, the meta-regression revealed a positive relation between measures of pretend play and social competence. The significant intercept indicates that higher levels of pretend play generally go together with higher social competence ($g = 0.166$, 95% CI [0.042, 0.290], $p < 0.01$, $k_{studies} = 34$, $k_{ES} = 188$). However, the effect size of the intercept was small,

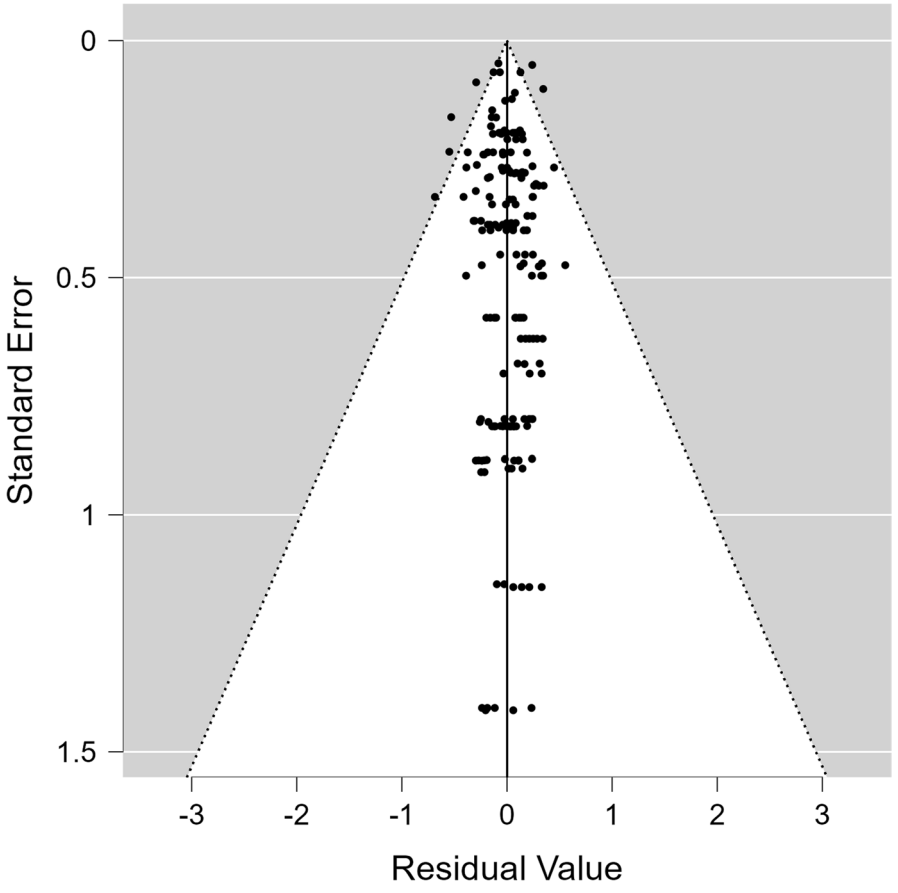


Fig. 2 Funnel plot ($k = 188$)

Table 1 Meta-regression of the correlation between pretend play and social competence (effect size or ES) as a function of pretend play measure and social competence measure

Variable	Level	Comparison	ES	SE	z	p	95% CI	$k_{studies}$	k_{ES}
Intercept			0.166	0.063	2.615	.009**	[0.042, 0.290]	34	188
Age (centered)			−0.004	0.002	−2.151	.031*	[−0.008, −0.000]	34	188
Pretend play	Social pretend play	Solitary pretend play	0.052	0.060	0.869	.385	[−0.065, 0.169]	24	120
	Amount of pretend play	Quality of pretend play	−0.181	0.063	−2.886	.004**	[−0.304, −0.058]	9	67
	Intervention	Non-intervention	−0.012	0.066	−0.188	.851	[−0.143, 0.118]	10	37
Social competence	Empathy	Emotion regulation	−0.167	0.187	−0.896	.370	[−0.533, 0.198]	3	5
	Social encoding	Emotion regulation	0.057	0.098	0.584	.559	[−0.135, 0.250]	8	16
	Social behavior	Emotion regulation	−0.027	0.061	−0.442	.659	[−0.147, 0.093]	23	113
	Sociometric status	Emotion regulation	0.079	0.147	0.537	.591	[−0.210, 0.368]	3	14
	Theory of mind	Emotion regulation	0.053	0.080	0.669	.503	[−0.103, 0.209]	11	23

Note. The variables solitary pretend play, quality of pretend play, non-intervention studies, and emotion regulation were used as reference condition—the intercept represents the estimated correlation (effect size) for this combination; z- and p-values of other conditions are relative to this reference condition. Effect size and confidence interval are given relative to the intercept/comparison variables. $K_{studies/ES:}$ refers to the number of studies and effect sizes for the level of pretend play or social competence only

ES effect size, *SE* standard error, *CI* confidence interval

*$p < .05$; **$p < .01$; ***$p < .001$

and large confidence intervals show that there is uncertainty regarding the true effect size for all measures. There were no significant differences between the types of social competence measures (i.e., empathy social encoding, social behavior, sociometric status, theory of mind, and emotion regulation). Also, the design of the studies (i.e., intervention studies versus non-intervention studies) did not affect the relation between pretend play and social competence. However, children's age was found to have a small negative effect on the relation between pretend play and social competence ($g = -0.004$, 95% CI [−0.008, −0.000], $p < 0.05$). The estimated effect implies that for 3-year-old children, the correlation between pretend-play measures and social competence can be expected to be 0.26 higher than it would be for 8-year-old children. Moreover, studies that focus on pretend play amount yielded lower correlations between pretend play and social competence than studies with quality of pretend play as a measure ($g = -0.181$, 95% CI [−0.304, −0.058], $p < 0.01$).

To further investigate the latter effect, we performed a follow-up meta-regression within the studies that focus on the amount of pretend play. We investigated whether it is specifically solitary pretend play or social pretend play amount that tends to have lower correlations with social competence. This follow-up analysis revealed that studies measuring solitary pretend play amount yield lower correlations between pretend play and social competence over studies that measured social pretend play amount ($g = -0.180$, SE = 0.079, 95% CI [−0.024, −0.335], $p < 0.05$, $k_{studies} = 8$, $k_{ES} = 67$).

Risk of Bias in Studies

Figure 3 shows the results of the ROBINS-I risk of bias tool for the ten intervention studies that were part of our meta-analysis. The overall risk of bias in intervention studies was classified as moderate for six studies (i.e., studies that cannot be fully considered comparable to a well-performed randomized trial)

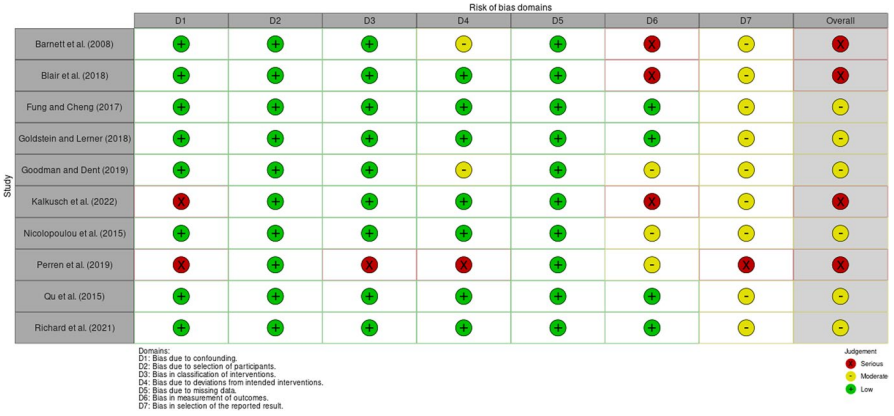


Fig. 3 Risk of bias graph of the ROBINS-I

and as serious for four studies (i.e., studies with important problems on at least one bias domain). The studies with overall moderate bias were scored with a low bias for the majority of the bias domains, but to have a moderate bias in the selection of the reported result (Bias domain 7) because there was no report of a pre-specified analysis plan. Most studies with overall serious bias were found to have problems with bias in measurements of outcomes (Bias domain 6). In these studies, children's social competence was rated by teachers who were aware of the intervention or performed the pretend play intervention themselves (Barnett et al., 2008; Blair et al., 2018; Kalkusch, et al., 2022), which creates serious risk of observer bias. The study of Perren et al. (2019) was exceptional as it was found to have serious bias on four domains.

Most intervention studies adopt a controlled intervention design and apply a control group with a business as usual practice (Barnett et al., 2008; Blair et al., 2018; Kalkusch et al., 2022; Nicolopoulou et al., 2015; Richard et al., 2021) or a control group with non-pretend play activities such as story time, drawing or block play (Fung & Cheng, 2017; Goldstein & Lerner, 2018; Goodman & Dent, 2019; Qu et al., 2015). The only study that did not adopt a controlled intervention design was Perren et al. (2019). It is important to note that the control settings do not completely preclude children from engaging in pretend play engagement because they could still do so in regular school settings or at home. Hence, the possibility remains that pretend play in the control groups impacted the effect sizes of the intervention studies because the effect sizes of these studies are simply a comparison between the intervention and the control group.

Next, we inspected the funnel plot and performed a separate Egger's test for the effect sizes of the intervention studies ($n = 10$). This revealed no evidence of publication bias among the included intervention studies ($p = 0.207$). We also performed a separate meta-regression while excluding the studies on empathy ($n = 3$, $k_{ES} = 5$) and sociometric status ($n = 3$, $k_{ES} = 14$) because these social competence outcomes were investigated in a few studies. The results of this separate meta-regression indicated that the exclusion of these studies did not change the conclusions of the current study. Finally, we performed another separate meta-regression of the intervention studies with risk of bias as predictor. No effect was found for risk of bias: Effect sizes were not significantly larger for studies with a low risk compared to studies with a medium or high risk (estimated effect 0.20; $p = 0.171$). This indicates that the risk of bias may have a limited impact on the results.

Discussion

The aim of this meta-analysis was to provide a review of empirical studies into the relation between pretend play and social competence in early childhood education (children aged 3–8 years). In doing so, we aimed to answer the question to what extent and how pretend play is associated with social competence in young children. Based on Vygotsky's cultural-historical activity theory (CHAT), the hypothesis was that pretend play would be positively related to children's social competence. Overall, the outcomes indeed point to a positive relation between

pretend play and social competence. This relation was found to be negatively affected by children's age. This suggests that the relation between pretend play and social competence slightly weakens as children age. In addition, the studies measuring the amount of pretend play found lower correlations with social competence than studies measuring the quality of pretend play. A follow-up meta-regression indicated that specifically studies that measured *solitary* pretend play amount tended to have lower correlations with social competence, as opposed to studies measuring *social* pretend play amount.

What do the findings of this meta-analysis suggest? It is important to note that the outcomes should be cautiously interpreted as the effect sizes are small. Also, most included studies adopted a cross-sectional design, and intervention studies had mixed results. As a consequence, no causal conclusions can be drawn regarding the direction of the relation between pretend play and social competence. Although this meta-analysis suggests some evidence of a positive relation between pretend play and social competence, this current evidence cannot be taken as evidence for a crucial role of pretend play in the development of social competence. These conclusions are in line with the findings of previous narrative reviews (Christie & Johnsen, 1983; Fein, 1981; Lillard et al., 2013). Next, the fact that the current meta-analysis was able to demonstrate that the relation between pretend play and social competence was negatively affected by age may offer some confirmation to the tenet of CHAT that especially the age period of 3–6 years is crucial in children's social development. Yet again, no claims of causality can be drawn. In addition, the finding that the studies measuring *solitary* pretend play amount tended to yield lower correlations than studies measuring *social* pretend play amount could indicate that social pretend play may be more intimately related to social competence than solitary pretend play. It also provides some confirmation to the theory that children need a *competent other* to behave in a socially competent manner (Vygotsky, 1978). Alternatively, the finding could as well suggest that children with lower social competence are easier targets for exclusion from play by their peers and are thus relegated to solitary play (Nelson et al., 2008). Thus, again, correlation is no evidence for causation, and the direction of the relation between pretend play and social competence remains unclear.

The current meta-analysis reviews the state of the art of research in the field of pretend play and social competence. Compared to the latest review of Lillard et al. (2013), 24 additional studies were included in the current paper, which increased our knowledge on the relation between pretend play and children's social competence. However, several issues regarding the current body of research on pretend play and social competence need to be addressed. First, there is an extensive variety between studies regarding the conceptualization and operationalization of pretend play and social competence. Studies build on various theoretical frameworks and rely on various outcome measurements for both pretend play and social competence. This reflects the complexity of both constructs but it also results in difficulties in comparing studies and drawing conclusions on the roles of different pretend play behaviors in relation to social competence. We present this issue as an important finding of this meta-analysis and urge future studies to embrace the complexity of

pretend play and social competence in order to move forward in understanding the relation between these constructs.

Second, this meta-analysis demonstrates how little is known about the direction of the relation between pretend play and social competence. To our knowledge, only two studies have incorporated social competence as a predictor of pretend play (Jenkins & Astington, 2000; Perren et al., 2019). Perren et al. (2019) found that children who are more sociable, are more likely to engage in more advanced social pretend play (i.e., elaborate and complex pretend play narratives) and longitudinal findings of Jenkins and Astington (2000) suggested that early theory of mind can predict such advanced social pretend play. These findings could indicate that aspects of social competence are predictors or even prerequisites of pretend play and that complex forms of social pretend play might require a certain level of social competence (Bodrova & Leong, 2015; Kalkusch et al., 2022). Strong empirical support for this conjecture is still lacking. Future research is needed to investigate the direction of the relation of interest.

Third, studies on pretend play and social competence seldom focus on mechanisms that may underlie the association between pretend play and social competence. Because the findings of this meta-analysis do not indicate a strong and consistent relation between pretend play and social competence, it is possible that pretend play provides a setting in which effective factors help develop social competence. Pretend play possibly facilitates particular forms of social interaction, peer influence, play group constellation, active adult support, or metacognitive strategies. Only recently, studies have addressed or suggested such factors (Adam et al., 2022; Jaggy et al., 2020a, 2020b; Kalkusch et al., 2022; Perren et al., 2019). For example, Kalkusch et al. (2022) have found that the quality of children's social pretend play mediates the positive change in children's social skills, indicating that children need to engage in more advanced forms of pretend play in order to develop social competence. To support such hypothesis, more empirical evidence is required.

This meta-analysis, however, also has additional limitations. First, the possible influence of cultural norms has not been considered in this meta-analysis. That is, most studies included in this meta-analysis were conducted in countries that are western, educated, industrialized, rich, and democratic (i.e., WEIRD countries; Hendriks et al., 2019). Consequently, it is unclear whether conclusions can be generalized to other countries. Second, it is important to note that the operationalization of both pretend play and social competence have a normative dimension, which has not been explicitly considered in this meta-analysis. For example, what one considers a high quality of pretend play or well-developed social skills highly depends on social, cultural, and classroom norms. Therefore, it is possible that the method used to categorize different types of pretend play and social competence outcomes may be influenced by the norms and culture of the authors, which amplifies the effect of the bias toward WEIRD countries in the studies. Third, we included studies with a range of methodological quality and did not exclude experimental studies that suffered from serious risks of bias. In doing so, we have provided a review of the current body of research, but the potential for biases may have influenced the findings of this meta-analysis. Also, the operationalization of pretend play and the degree of adult guidance varied

greatly across the experimental studies, making it difficult to draw general conclusions about the effect of the play interventions. Fourth, the current meta-analysis only included peer-reviewed articles and excluded gray literature. Because published trials are found to have larger effects than gray literature, it is possible that publication bias occurred (Hopewell et al., 2007). Fifth, this meta-analysis did not include studies with focus on imaginary companions or fantasy orientation. Therefore, we cannot provide any statements about the relation between imaginary companions, fantasy orientation, and social competence.

The current meta-analysis has several implications for future research. Currently, there is considerable variety in measurement and operationalization of both pretend play and social competence. Future studies, therefore, should seize the opportunity to address the complexity that is inherent to pretend play and social competence and bring more unity into the operationalization of both concepts. Next, future studies need to investigate the direction or underlying factors of the relation between pretend play and social competence. To do this, more studies are needed that adopt either an experimental or a longitudinal research design that can unravel the possible interplay between both constructs and identify causal influences (Weisberg et al., 2013). So far, studies have only marginally or inadequately addressed this. In addition, future studies need to minimize bias of measurement regarding outcomes of social competence. The current meta-analysis showed that a large portion of the included experimental studies have serious methodological problems due to the use of teacher questionnaires with teachers who were not blind to the study's hypothesis. Although it might be more time-consuming, future studies should use naturalistic observations or other child measures in order to avoid such bias. Finally, future studies should consider the degree of control that is applied in the operationalization of pretend play. Although rigorously controlled research settings might seem appealing (e.g., to minimalize potential bias or lack of rigor), studies need to be aware that such settings can compromise the notion of meaningful playful learning. Future studies need to assist children's imagination in pretend play as well as provide a play setting in which children experience degrees of freedom and high involvement (Van Oers, 2013).

Conclusion

To conclude, the purpose of this meta-analysis was to provide a review of the empirical studies into the relation between pretend play and social competence. Outcomes of the reviewed studies were mixed, though many significant positive relations between different types of pretend play and children's social competence were found. Although more research is required to unravel the complex relation between pretend play and social competence, we can tentatively conclude that pretend play is positively related to children's social competence. The direction of this relation and whether or not the relation between pretend play and social competence is reciprocal remains unclear. Based on the results of the current meta-analysis, plenty of pathways remain open for future research to determine whether, and perhaps how, pretend play potentially supports children's social competence.

Appendix 1

Table 2 Summary of Findings, $N = 34$ (meta-analysis)

	Study	Study characteristics		Pretend play	Social competence (underlying skills)				Social competence (indices)	
	Author (year)	Design	Sample size	Type	Emotion regulation	Theory of mind	Social encoding	Empathy	Social behavior	Sociometric status[a]
1	Fehr and Russ (2013)	C	54	Solitary pretend play quality					+ ~	
2	Galyer and Evans (2001)	C	62		+					
3	Hoffmann and Russ (2012)	C	39		+					
4	Kaugars and Russ (2009)	C	33						+ ~	
5	Lillard and Kavanaugh (2014)	C	77			~				
6	McAloney and Stagnitti (2009)	C	53						+ ~	
7	Seja and Russ (1999)	C	66				+			
8	Uren and Stagnitti (2009)	C	41						+ ~	
9	Jaggy et al. (2020b)	C	64		+	~	+		+ ~	
10	Petersen and Holodynski (2020)	C	52		~					
11	Nelson et al. (2008)	C	357	Solitary pretend play amount					− ~	−
12	Schwebel et al. (1999) experiment 1	C	31			~				
	Schwebel et al. (1999)[experiment 2]	C	54			~				

Table 2 (continued)

	Study	Study characteristics		Pretend play	Social competence (underlying skills)				Social competence (indices)	
	Author (year)	Design	Sample size	Type	Emotion regulation	Theory of mind	Social encoding	Empathy	Social behavior	Sociometric status[a]
13	Astington and Jenkins (1995)	C	30	Social pretend play amount		~		~		
14	Choi and Ohm (2018)	C	45[b]/42[c]						+ ~	+ ~
15	Colwell and Lindsey (2005)	C	60						+	+
16	Lindsey and Colwell (2003)	C	44	Social pretend play amount	+		+			+
17	Lindsey and Colwell (2013)	L	122		+ ~		+		+ ~	
	Schwebel et al. (1999)[experiment1]	C	31			+ ~				
	Schwebel et al. (1999)[experiment 2]	C	54			+ ~				
18	Veiga et al. (2017)	C	73						~ –	
	Choi and Ohm (2018)	C	45[b]/42[c]						~	~

Table 2 (continued)

	Study	Study characteristics		Pretend play	Social competence (underlying skills)				Social competence (indices)	
	Author (year)	Design	Sample size	Type	Emotion regulation	Theory of mind	Social encoding	Empathy	Social behavior	Sociometric status[a]
19	Li, Hestenes, and Wang (2014)	C	28	Social pretend play quality					+ ~	
20	Slot et al. (2017)	C	113		~		~		+ ~	
	Astington and Jenkins (1995)	C	30			+		~		
21	Hughes and Dunn (1997)	C	50			+				
22	Howes and Phillipsen (1998)	C	55						+ ~	
23	Jaggy et al. (2020a)	C	57			~	~		+ ~	
	Jaggy et al. (2020b)	C	64		~	~	~		+ ~	
24	Jenkins and Astington (2000)	L	20			+ ~				
	Slot et al. (2017)	C	113		+		~		+ ~	

Table 2 (continued)

	Study	Study characteristics		Pretend play	Social competence (underlying skills)				Social competence (indices)	
	Author (year)	Design	Sample size	Type	Emotion regulation	Theory of mind	Social encoding	Empathy	Social behavior	Sociometric status[a]
25	Barnett et al. (2008)	E	218	Social pretend play interventions					+	
26	Blair et al. (2018)	E (L)	715		+				+ ~	
27	Fung and Cheng (2017)	E	60						+ ~	
28	Goldstein and Lerner (2018)	E	97			~	~	~	~	
29	Goodman and Dent (2019)	E	121			~				
30	Kalkusch et al. (2022)	E	214					~	+ ~ −	
31	Nicolopoulou et al. (2015)	E	112						+ ~	
32	Perren et al. (2019)	E	50			~			+ ~	
33	Qu et al. (2015)	E	72			+				
34	Richard et al. (2021)	E	79		~		+ ~		+ ~	

Note. Type of study: *C* correlational, *E* experimental, *L* longitudinal. Type of associations: + positive, ~ null finding, − negative

[a]Only same gender peer evaluation was included

[b]*N* = social behavior

[c]*N* = sociometric status

Appendix 2. Search strategy

PRETEND PLAY—"Role NEXT/2 play*" OR play-based OR "sociodramatic play" OR "pretend play" OR "social play" OR "as-if play" OR imaginative play OR imaginative situation OR fantasy play OR playworld or Playfulness.

SOCIAL COMPETENCE—"Social competence" OR "emotional control" OR "social skills" OR "social communication" OR "theory of mind" OR "emotion regulation" OR "social and emotional learning" OR emotional understanding OR social acceptance OR peer relations OR peer competence OR social learning OR emotional learning OR social and emotional skills.

EBSCO—peer reviewed articles only/AB abstract.

WOC—TOPIC (Searches title, abstract, author keywords, and Keywords Plus).

Date of final search—July 25th 2022.

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Data Availability The data of the final search is available on OSF (https://osf.io/2d5ua/).

Declarations

Conflict of Interest The authors declare no competing interests.

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