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The role of the Home Literacy Environment for children's linguistic and socioemotional competencies development in the early years

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Abstract

Both linguistic and socioemotional competencies develop in early childhood in the context of children's learning environments at home and during interactions with their parents. To support linguistic competencies, the Home Literacy Environment (HLE) and shared reading routines play a crucial role. In turn, research also indicates associations between the HLE and children's socioemotional development. Based on a sample of $N = 132$ children with an average age of $M = 37$ months ($SD = 4.00$) at t1, this longitudinal study aimed at investigating the role of the HLE for the development of children's linguistic and socioemotional competencies in the early years. Children's receptive and expressive linguistic abilities were assessed with standardized tests and educators and parents reported on the HLE and shared reading routines, as well as children's socioemotional competencies and problem behavior three times across 1 year. In a structural equation model, children's HLE was a significant predictor of children's socioemotional competencies and problem behavior via linguistic abilities. Consequently, children's HLE and parental shared reading habits may be a good target for interventions to support young children's socioemotional learning by contributing to their linguistic development.

KEYWORDS
early childhood, Home Literacy Environment (HLE), linguistic abilities, problem behavior, socioemotional competencies

1 | INTRODUCTION

The Home Literacy Environment (HLE), comprising shared reading routines in families as well as different indicators of a literacy-orientated learning environment such as the number of books in a household and parental attitudes toward reading, has been shown to support children's linguistic development from an early age onwards (Niklas & Schneider, 2017a). Moreover, some studies indicate that the HLE may influence children's development in further areas, especially with regard to children's social and emotional competencies (Rose et al., 2018). As the HLE and shared book reading, in particular, create opportunities to talk with children about socioemotional experiences of book characters, single studies suggest that shared reading contributes directly to children's socioemotional learning (Kozak & Recchia, 2019). On the other hand, there is evidence for indirect associations between the HLE and children's socioemotional competencies via linguistic learning, as shared reading routines contribute to children's ability to talk about their emotions and thereby facilitate social connections (Rose et al., 2018).

However, we still know little about the importance of the HLE for the development of children's competencies in early childhood, and potential mediation effects for the relation between the HLE and children's social and emotional skills and problematic behavior. Therefore, the present study aimed to investigate the role of the HLE for the development of children's linguistic and socioemotional competencies using a longitudinal research design with a sample of children who were 3 years and younger at t1. Moreover, we investigated children's socioemotional competencies across time and their relations with children's gender, intelligence and family SES.

2 | DEVELOPMENT OF SOCIOEMOTIONAL AND LINGUISTIC COMPETENCIES IN EARLY CHILDHOOD

Early childhood is a sensitive period in children's linguistic and socioemotional development (Petermann & Wiedebusch, 2008). Around 2 years of age, children gain knowledge of emotions for the first time, providing the basis for the development of additional socioemotional skills between 24 and 36 months of age (Giménez-Dasí et al., 2015). Although emotional competencies include skills like expressing, regulating and decoding emotions (Halberstadt et al., 2001), social skills include the ability to create sensible and meaningful interactions with others, characterized by constructive cooperation and self-regulation (Rose-Krasnor, 1997). Emotional and social competencies are closely intertwined, as all interactions with others are driven by emotional exchange (Petermann & Wiedebusch, 2008). This phenomenon can already be observed in samples of 2- to 3-year olds, as children's emotion understanding predicts interactive peer play competencies (Mathieson & Banerjee, 2010).

Whereas children's behavioral problems in early childhood seem to be stable and predictive of social maladjustment and problematic behavior in later life (Bongers et al., 2003; Gagnon et al., 1995), there are fewer findings that indicate a stability in emotional competencies from early childhood onwards (Hyson & Cone, 1989).

Children's early linguistic abilities can be divided into receptive and productive language skills: Receptive language skills include the ability to understand spoken language (e.g., receptive vocabulary), whereas productive language skills include children's own spoken language abilities (e.g., expressive vocabulary). Both, receptive and productive linguistic abilities, are related closely and fairly constant from an early age onward (Debaryshe, 1993; Niklas et al., 2016; Whitehurst & Lonigan et al., 1998).

In recent years, a growing body of research has shown close associations between children's early linguistic skills and their social and emotional functioning, arguing that linguistic abilities form the basis upon which socioemotional competencies emerge (Milligan et al., 2007; Rose et al., 2016; Seidenfeld. et al., 2014). Rose and colleagues (2016) have demonstrated that children's linguistic abilities at age three are predictive of children's self-regulation, cooperation and aggressiveness at age 7. Moreover, children between 11 and 41 months develop receptive and productive linguistic skills within social interactions (Cochet & Byrne, 2016). Both, linguistic and socioemotional competencies develop in early childhood in the context of children's learning environments at home and during interactions with their parents (Cochet & Byrne, 2016; Mathis & Bierman, 2015; Sénéchal & LeFevre, 2002).

3 | CHILDREN'S DEVELOPMENT OF COMPETENCIES IN THE FAMILY LEARNING CONTEXT

Home learning environments and the HLE in particular, are related closely to children's linguistic competencies (Niklas & Schneider, 2017a; Sénéchal & LeFevre, 2002). The HLE is a multifaceted and complex construct, comprising all literacy resources and shared literacy interactions in a family (Rodriguez & Tamis-LeMonda, 2011). The pivotal component of the HLE are shared reading habits in the family, which can be further divided into onset, frequency and quality of shared reading (Fletcher & Reese, 2005). Additional important facets of the global HLE concern the frequency of parents' own reading, the number of books and children's books in a household and parents' attitudes toward reading and shared reading (Niklas et al., 2016b). Children's literacy activities at home are associated closely with their language production competencies, e.g. expressive vocabulary, as well as with language comprehension competencies and their precursors, e.g. receptive vocabulary and phonological awareness (Frijters et al., 2000; Niklas & Schneider, 2013).

An early onset of reading to a child and the frequency of shared reading are particularly favorable for children's linguistic development (Dunst et al., 2012). Moreover, current research confirms the important role that the global HLE and parents' own reading frequency and their attitudes towards reading play in children's early language acquisition (Niklas, Cohrssen et al., 2016a). Further, the number of books in a household and the frequency of library visits are associated with children's early literacy competencies (Griffin & Morrison, 1997; McElvany et al., 2009), and parents' own reading behavior predicted children's reading interest in a sample of pre-school children (Hume et al., 2015).

Although the association between the HLE and children's linguistic development has been well established in previous literature, research on the HLE's contribution to children's socioemotional learning is still scarce. Liew et al. (2020) state that parent-child literacy interactions involve reciprocal emotional processes and thereby contribute to children's emotion regulation skills. Here, the goodness of fit between children's emotionality or self-regulation processes and the qualities of parent-child literacy contexts might be an interacting factor in children's socioemotional and behavioural development (Liew et al., 2020). Moreover, shared book reading provides opportunities to discuss characters' emotions and behavior in social situations and thereby might contribute to children's socioemotional understanding (Kohm et al., 2016; Kozak & Recchia, 2019), shared book reading is also associated negatively with child problem behavior (Schmiedeler et al., 2014). On the other hand, the early HLE has been shown to influence young children's socioemotional competencies via their linguistic abilities (Rose et al., 2018). In a cross-sectional study, children's global HLE, as well as single aspects of shared reading routines, e.g. onset and frequency of shared reading, showed similar indirect associations with socioemotional competencies and problematic behavior, mediated by children's linguistic abilities (Wirth et al., 2019).

However, although the HLE seems to influence children's development most profoundly in the early years (e.g. Dunst et al., 2012), the majority of current studies investigated these associations in samples of preschool-age children (Aram & Aviram, 2009; Kohm et al., 2016). Other studies analyzed single facets of shared reading routines or socioemotional competencies (Grazzani et al., 2016; Kumschick et al., 2014) or used cross-sectional study designs only (Wirth et al., 2019).

4 | ASSOCIATIONS WITH FURTHER CHILD AND FAMILY CHARACTERISTICS

When investigating the relations between the HLE and the development of children's competencies, additional child and family characteristics should be considered. In most cases, children growing up in families with a higher socioeconomic status (SES) experience a higher quality literacy environment (Niklas & Schneider, 2013). Moreover, the linguistic abilities of 3- to 5-year-old children vary depending on their parental SES (Weinert & Ebert et al., 2013). In addition, early gender differences can be found with girls outperforming boys in their productive vocabulary use already at the young age of 3 years (Eriksson et al., 2012). Further studies report differences in children's linguistic abilities depending on their level of nonverbal intelligence (Niklas & Schneider, 2017a).

Similarly, children's level of socioemotional competencies is associated with gender and intelligence: Girls outperform boys in tasks assessing socioemotional functioning already at the age of 3 years (Prior et al., 1994). In addition, children with greater nonverbal intelligence show better self-regulation and cooperation skills (Rose et al., 2018).

5 | CURRENT STUDY

Relations between the HLE and children's development of linguistic abilities are well established (e.g. Niklas & Schneider, 2013; Sénéchal & LeFevre, 2002). However, we know less about potential associations between the HLE and children's socioemotional development in early childhood, especially with regard to potential mediation effects via children's linguistic abilities (e.g. Rose et al., 2018).

Therefore, the present study investigated the role of the HLE for the development of children's linguistic and socioemotional competencies in a longitudinal research design over the course of 1 year. Here, data from a sample of children ages 3 years and younger at t1 were assessed and analyzed, possible associations with child and family background characteristics were taken into account. We also tested whether children's socioemotional competencies were stable across a 1-year time period in early childhood.

In the present study,

1.) we expected that children's socioemotional competencies and problematic behavior would be associated closely and that these competencies would be relatively stable during the 1-year period of investigation (Bongers et al., 2003; Hyson & Cone, 1989).
2.) we further expected that children's linguistic skills would be associated closely with their socioemotional competencies and problematic behavior (Milligan et al., 2007; Rose et al., 2016).
3.) we investigated whether children's HLE was associated with children's socioemotional competencies and problematic behavior (Rose et al., 2018). Here, we also tested whether such an association was mediated by the level of children's linguistic abilities while controlling for children's age, gender, intelligence, and parental SES.

6 | METHOD

6.1 | Participants

In this longitudinal research design study, $N = 132$ children in 21 German kindergartens were assessed three times over the course of 12 months (t1 to t3; with 6 months in-between each measurement). Power analysis with G*Power (Faul et al., 2007) indicated a sample size of $N = 129$ children to be sufficient to identify a medium effect size for the planned analyses. At the beginning of the study, the participating children were between 26 and 45 months ($M = 36.6$, $SD = 4.1$); at t3, children were between 39 and 58 months ($M = 49.6$, $SD = 4.0$). Children's gender was almost equally distributed with 54% boys ($N = 71$).

6.2 | Data collection

The present research design was approved ethically by the University of Würzburg, Germany. The study was carried out with formal consent from all participating educators and parents. A sample of randomly chosen German kindergartens was called and invited to take part in our study, resulting in $N = 21$ participating kindergartens. In these kindergartens, consent forms were handed out to the parents, and between $N = 4$ and $N = 13$ children and their families per kindergarten agreed to take part in our study, resulting in a total sample size of $N = 132$ families. For every measuring time, trained psychologists assessed the linguistic abilities of participating children in their kindergartens, and parents and educators were asked to complete written questionnaires. Daily kindergarten attendance was 7 h on average for each participating child ($M = 6.8$, $SD = 1.4$, *Min.* = 4, *Max.* = 10). The educators of each kindergarten knew the participating children for about 1 year at the beginning of the study ($M = 12.0$ months, $SD = 7.0$, *Min.* = 2 months, *Max.* = 32 months). At each measurement point, parents were asked to fill-in written surveys, with response rates between 84.1% and 75.8% ($N = 100$ to $N = 111$). All kindergarten educators ($N = 21$) returned their surveys. Between 9.1% and 15.9% ($N = 12$ to $N = 21$) of all participating children were absent or refused to be tested on one measurement point at least.

6.3 | Measures

6.3.1 | Shared reading and the HLE

Participating parents filled-in written surveys on their family's Home Literacy Environment at each measurement point, with an adapted 10-item measure used by Niklas et al., and Tayler (2016a). All items had to be answered on a 5-point Likert scales. The surveys included one question about the onset of reading to the study child (in months of child age, individual answers were transformed into quintile scores). Further items assessed the current frequency of reading, ranging from 0 (never) to 4 (daily), the number of books and children's books in the household, the frequency of both parents' own reading, and the frequency of library visits with the child. In addition, three items assessed parental attitudes toward reading at home (e.g., "Reading is regarded as an important activity at home"). Cronbach's α for the total score of the HLE scale was good with .83 to .86 at all measurement points, indicating a reliable measurement of the HLE. Retest-reliability was also good with $r_{12} = .80$, $r_{13} = .80$, and $r_{23} = .88$.

6.3.2 | Linguistic abilities

The standardized test instrument SETK 3–5 (Grimm et al., 2010), comprising subtests for language comprehension and language production skills, was used to assess children's level of linguistic abilities three times. Sample items introduced every new subtest, giving children the opportunity to learn the different approach of each subtest.

At the first two measurement points (t1-t2), children's language comprehension skills were assessed with three subtests. In the first subtest, a sentence was read out loud, requiring the children to select the matching picture out of four resembling pictures (9 items, maximum sum score of 9). The second and third subtests required children to listen to short statements and act accordingly, e.g., "Show me the blue button" (5 items, maximum sum score of 5, respectively). At the third measurement point (t3), when the children were a year older compared to t1, the first subtest was omitted according to the test instructions. Five new items were added instead, requiring children to listen to more complex statements and act accordingly, e.g., "Put the buttons in the box and put the box on the floor".

Children's language production skills were assessed with two subtests at the first two measurement points (t1-t2). The first subtest required children to describe 11 pictures, evoking the use of prepositions, e.g., "An elephant jumps through the hoop". There was no maximum achievable score, as the number of words used to describe the pictures was counted for every child. The second subtest required children to pronounce plural forms of 10 German nouns,

e.g., "Apfel – Äpfel", in English "apple – apples". For this subtest, a maximum score of 20 was achievable at t1 and t2. At t3, the first subtest was omitted according to the test instructions and a maximum score of 36 was achievable for the second subtest, due to eight additional items. For t1 and t2, we z-transformed both subtests to create a language production sum scale. For the t3, the only subtest was also z-transformed in order to be more comparable.

A combined linguistic abilities scale was created, using an index score of both z-transformed language comprehension and language production scales (Cronbach's $\alpha = .81$ to .85 for all measurement points). Retest-reliability was high with $r_{12} = .85$, $r_{13} = .76$, and $r_{23} = .88$.

6.3.3 | Socioemotional competencies

At each measurement point, children's socioemotional competencies were assessed by their kindergarten educators with two questionnaires: First, educators assessed milestones in typically developed children between 30 and 60 months according to the German *development observation and documentation manual* (Entwicklungsbeobachtung und –dokumentation; EBD 3–48; Petermann et al., 2015), in regard to emotional development (e.g., "He or she shows feelings of shame or pride"), and social development ("He or she can play alone for at least 15 minutes"). Educators rated children's social and emotional competencies on 3-point scales, from 0 = not true, 0.5 = partly true, to 1 = true. Both milestone scales included 4 items for every milestone in 6-months increments. For t1 and t2, milestones for 30- to 54-months old children were included in both scales. For t3, we adapted the EBD to children's age and included milestones for 36- to 60-month old children in the survey. The Strengths and Difficulties Questionnaire (SDQ; Goodman, 2005) was used for educators to indicate their views on children's behavioral problems and social and emotional developmental delays (item example, "Rather solitary, tends to play alone"). The SDQ consists of four subscales focusing on different aspects of children's behavior: conduct problems, emotional problems, peer problems, and hyperactivity. All items were measured on 3-point response scales (0 = not true, 1 = partly true, 2 = true) and summed up into a total difficulties score. Here, the retest-reliability for socioemotional competencies measured with the EBD was moderate with $r_{12} = .45$, $r_{13} = .42$, and $r_{23} = .49$ for the emotional subscale, and $r_{12} = .48$, $r_{13} = .79$, and $r_{23} = .49$ for the social subscale, as well as for behavioral problems measured with the SDQ with $r_{12} = .46$, $r_{13} = .31$, and $r_{23} = .60$. Cronbach's α indicated a reliable measurement of socioemotional competencies with $\alpha = .77$ to .85 for the emotional scale, and $\alpha = .82$ to .86 for the social scale of the EBD, as well as $\alpha = .81$ to .85 for the SDQ total difficulties scale.

6.3.4 | Control variables

An index score of family SES was formed using three indicators (highest household education, highest occupational prestige score of a household, and the adjusted household income), each being z-transformed and equally weighted. Hence, parents were asked in the written surveys about the highest educational qualification of the household, their occupations, and their monthly net household income. The majority of participating parents (56.8 %, $N = 67$) had a university degree or a general qualification for university entrance. According to the prestige scale by Wegener (1988; cf. Christoph, 2005), we assigned prestige values to parents' occupations. In our sample, prestige scores ranged from 20 (for an unskilled worker) to 186.8 (for a surgeon), with a mean of $M = 86.86$ ($SD = 40.53$). Parents' monthly net household income was adjusted according to the equivalence scale by the OECD (2008), dividing monthly income by the square root of the household size. For example, the monthly income of two parents with three children was divided by 2.3.

Further, the Columbia Mental Maturity Scale (CMM; Burgemeister et al., 1954) was used to assess children's nonverbal intelligence at two measurement points (t1 and t3). The CMM measures logical reasoning and abstraction capability in children from the age of 3 years and above. Here, children were required to point out the extraneous picture in

an array of three to five pictures (e.g., one spoon and four forks). Recent German studies with samples of preschool children report split-half reliabilities for the CMM ranging from .92 to .96, indicating a reliable measurement of children's nonverbal intelligence (e.g. Esser, 2002; Niklas & Schneider, 2017b).

6.3.5 | Statistical approach

For descriptive and correlative data analyses we used SPSS 24 (IBM, 2016), for structural equation modeling (SEM) we used Mplus7 (Muthén & Muthén, 2012). Several data records were incomplete due to missing test scores from children or missing answers in the parental questionnaires. After analyzing the missing data for patterns, the full information maximum likelihood option (MLR) was used to estimate these missing values in Mplus7.

At first, we present descriptive data and bivariate correlations (Pearson's *r*) of all study variables for t1 to t3. In this step, we analyzed the associations between children's HLE, their linguistic and socioemotional competencies and problematic behavior.

Further, univariate variance analyses with repeated measurement (rm ANOVA) were calculated to test the stability of children's socioemotional competencies and problematic behavior during the period of investigation.

Finally, we conducted SEM to predict children's socioemotional competencies by the HLE via children's linguistic abilities, while controlling for children's age, gender, intelligence, and their parental SES. The model included multilevel analyses for the $N = 21$ different kindergartens attended by the children, including all variance explained by kindergarten level. We used latent modeling for all constructs under investigation (HLE, linguistic abilities, socioemotional competencies) based on theoretical assumptions and previous research results, showing strong associations between the different facets of the HLE (e.g., Niklas, Cohrssen et al., 2016a), language production and language comprehension skills (e.g., Cutting & Dunn, 1999), as well as different facets of socioemotional competencies (emotional competencies, social competencies, and problematic behavior; e.g., Rose et al., 2018). Moreover, previous research showed comparable direct associations between single facets of the constructs under investigation (Wirth et al., 2019). Model fit criteria according to Hu and Bentler (2009) were used to verify the proposed SEM, including a non-significant $\chi 2$ test, a RMSEA test with values less than 0.05, a SRMR test with values less than 0.08, and CFI/TLI tests with values above 0.90 to 0.95.

7 | RESULTS

7.1 | Descriptive data and correlational analyses

All descriptive statistics are shown in Table 1, including sample sizes, means, standard deviations, observed and scale ranges, number of items and Cronbach's α for all variables and measurement points. The cross-sectional results for the correlational analyses are shown in Table 2, Table 3, and Table 4 for each measurement point, respectively. As expected, children's HLE and their linguistic abilities were linked significantly at t1, t2, and t3 ($r = .43$-$.65$). Further, children's linguistic abilities were linked significantly with all socioemotional outcomes (SDQ for problem behavior and EBD social and emotional scales) at t1, t2, and t3 ($r = .30$-$.48$). All socioemotional outcomes were related highly across all measurements with Pearson's *r* between -.57 and .82. On the other hand, significant correlations between the HLE and socioemotional outcomes were found for the third measurement point only ($r \leq .22$).

7.2 | Stability of children's socioemotional competencies

Mauchly's test of sphericity was conducted to verify the conditions for univariate variance analyses with repeated measurement (rm ANOVA). The results indicated a violation of the assumption of sphericity for children's

TABLE 1 Descriptive statistics for the study variables at t1, t2, and t3 (sample sizes, means, standard deviations, observed & scale ranges, number of items, Cronbach's α)

	N			*M (SD)*			Observed Range			Scale Range	Number of Items	*Cronbach's α*
	t1	*t2*	*t3*	*t1*	*t2*	*t3*	*t1*	*t2*	*t3*			
Intelligence[1]	120	–	111	27.8 (13.5)	–	38.2 (10.7)	0.0-50.0	–	0.0-54.0	0.0-57.0	57	.92 - .96
Parental SES[2]	108	–	–	0.0 (2.5)			−6.5-4.6					.79
HLE	107	101	95	28.9 (6.5)	29.4 (5.9)	29.3 (5.8)	8.0-38.0	12.0-38.0	13.0-38.0	0.0-40.0	10	.83 - .86
Linguistic Abilities[3]	114	112	111	0.1 (1.8)	0.0 (1.8)	−0.0 (1.9)	−3.2-3.8	−4.0-2.8	−3.9-3.0			.81 - .85
SDQ - Behavioral Problems	117	105	116	11.2 (6.3)	10.4 (6.6)	9.6 (6.2)	0.0-32.0	0.0-31.0	0.0-31.0	0.0-40.0	20	.81 - .85
EBD - Emotional Scale	90	106	93	13.1 (3.3)	13.3 (2.7)	13.1 (2.7)	6.0-19.5	8.0-19.0	5.5-19.5	0.0-20.0	20	.76 - .82
EBD - Social Scale	119	112	108	13.0 (3.7)	14.5 (3.2)	14.8 (2.8)	2.5-20.0	6.0-20.0	6.5-20.0	0.0-20.0	20	.82 - .86

Note. [1]children's nonverbal intelligence (CMM); [2]Combinded index of three z-transformed indicators (highest family education, family occupation with the highest prestige score, adjusted household income); [3]Combined index of the z-transformed language comprehension and language production scales of the SETK; SES = Socioeconomic status; HLE = Home Literacy Environment, SDQ = Strengths and Difficulties Questionnaire, EBD = Observation and documentation of children's development.

TABLE 2 Cross-sectional correlational analyses for all study variables at t1

	2	3	4	5	6	7	8	9
Age (1)	**.22**	−.13	−.09	−.09	**.38**	−.15	.15	.14
Intelligence (2)		.00	.06	.07	**.39**	**−.20**	−.05	.15
Sex[1] (3)			−.10	−.09	**−.28**	.14	**−.32**	**−.32**
SES[2] (4)				**.58**	**.42**	**−.26**	.21	**.25**
HLE (5)					**.43**	−.07	.18	.19
Linguistic Abilities[3] (6)						**−.35**	**.31**	**.37**
SDQ - Behavioral Problems (7)							**−.68**	**−.73**
EBD – Emotional Scale (8)								**.82**
EBD – Social Scale (9)								

Note. Pearson's *r* correlation coefficients; $p < .05$ in bold characters. [1]female = 0, male = 1; [2]Combinded index of three z-transformed indicators (highest family education, family occupation with the highest prestige score, adjusted household income); [3]Combined index of the z-transformed language comprehension and language production scales.

TABLE 3 Cross-sectional correlational analyses for all study variables at t2

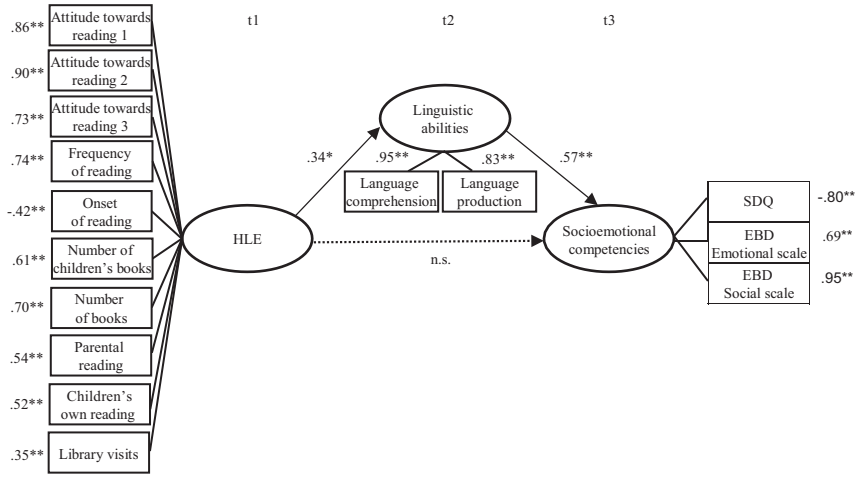
	2	3	4	5	6	7	8
Age (1)	−.14	−.08	−.14	**.31**	−.13	**.26**	.13
Sex[1] (2)		−.10	−.10	**−.21**	**.20**	**−.39**	**−.23**
SES[2] (3)			**.48**	**.47**	−.18	.21	**.23**
HLE (4)				**.50**	−.03	.07	.14
Linguistic Abilities[3] (5)					**−.30**	**.33**	**.48**
SDQ - Behavioral Problems (6)						**−.65**	**−.66**
EBD – Emotional Scale (7)							**.63**
EBD – Social Scale (8)							

Note. Pearson's *r* correlation coefficients; $p < .05$ in bold characters. [1]female = 0, male = 1; [2]Combinded index of three z-transformed indicators (highest family education, family occupation with the highest prestige score, adjusted household income); [3]Combined index of the z-transformed language comprehension and language production scales.

TABLE 4 Cross-sectional correlational analyses for all study variables at t3

	2	3	4	5	6	7	8	9
Age (1)	**.31**	**−.14**	−.08	−.18	.15	−.03	.14	.06
Intelligence (2)		−.13	.19	**.28**	**.50**	−.08	.12	.13
Sex[1] (3)			−.10	−.14	−.17	.15	**−.27**	**−.29**
SES[2] (4)				**.57**	**.48**	**−.28**	.21	**.23**
HLE (5)					**.65**	**−.22**	**.35**	**.24**
Linguistic Abilities[3] (6)						**−.32**	**.39**	**.43**
SDQ - Behavioral problems (7)							**−.57**	**−.76**
EBD – Emotional scale (8)								**.66**
EBD – Social scale (9)								

Note. Pearson's *r* correlation coefficients; $p < .05$ in bold characters. [1]female = 0, male = 1; [2]Combinded index of three z-transformed indicators (highest family education, family occupation with the highest prestige score, adjusted household income); [3]Combined index of the z-transformed language comprehension and language production scales.



Note. $N = 132$. Standardized beta coefficients with **= $p < .01$, *= $p < .05$.

FIGURE 1 The HLE and its association with children's socioemotional competencies via linguistic abilities

socioemotional outcomes with $\chi^2(2) = 7.99$, $p < .05$ for the EBD socioemotional competencies scale, with $\chi^2(2) = 9.99$, $p < .05$ for the EBD social competencies subscale, and with $\chi^2(2) = 6.23$, $p < .05$ for the SDQ problematic behavior. In these cases, a Huynh-Feldt correction was used. No significant effect of time on children's problematic behavior was found during the period of investigation, with F(1876, 172,59) = 0.94, $p = .39$, $\eta\check{s} = .01$. However, results indicated a small effect of time on socioemotional competencies, with F(1837, 116,35) = 3.08, $p = .05$, $\eta\check{s} = .05$. Consequently, we conducted further analyses for the social and emotional scales independently, indicating stable emotional competencies across our period of investigation, with F(2, 136) = .68, $p = .51$, $\eta\check{s} = .01$, and increasing social competencies, with F(1840, 185,78) = 11.93, $p = < .001$, $\eta\check{s} = .12$.

7.3 | Predicting children's socioemotional competencies

We calculated a structural equation model to answer our main research question concerning the association between children's HLE and their socioemotional competencies via linguistic abilities. Here, latent variables were modeled for the HLE, children's level of linguistic abilities and socioemotional outcomes (see Figure 1). The latent variable of the HLE included all items of the global HLE scale at t1. The latent linguistic abilities variable included the language comprehension and language production scales of the SETK at t2, and latent socioemotional competencies comprised the SDQ and EBD's social and emotional scales at t3. Data fit of the proposed model was acceptable with $\chi\check{s}(131) = 210.22$, $p = .00$ (scaling correction factor for MLR: .99), CFI = .91 / TLI = .89, SRMR = .06, RMSEA = .07. All paths in the SEM were controlled for background variables (children's age, gender, intelligence and their parents' SES).

Preliminary linear regression analyses showed a direct effect of the HLE at t1 on socioemotional competencies at t3 with $ß = .28$, $p < .05$, indicating that the requirements for further mediation analyses had been met. In the SEM, when linguistic abilities and the control variables were taken into account, a significant direct path from the HLE to socioemotional competencies was no longer found. However, children's HLE at t1 was a significant predictor of children's socioemotional competencies at t3 via linguistic abilities at t2 with a standardized indirect effect of .19 ($p < .05$). Consequently, the effect of the HLE on socioemotional competencies seems to be fully mediated by linguistic abilities.

Additionally, the control variables were all predictive of linguistic abilities except for children's gender with standardized beta coefficients of .31 ($p < .001$) for intelligence, .24 ($p < .01$) for children's age, and .33 ($p < .001$) for family's

SES. Regarding the socioemotional competencies, only children's gender (-.23, $p < .01$) was a significant predictor, with girls showing higher levels of socioemotional competencies. Additionally, parents' SES significantly predicted the HLE with .63, $p < .001$. The model explained 55% of the variance in the linguistic abilities of children ($r = .55$, $p < .001$), 38% of the variance of the HLE ($r = .38$, $p < .001$), and 34% of the variance in socioemotional competencies ($r = .34$, $p < .001$).

8 | DISCUSSION

Children's socioemotional functioning, which is influenced by children's level of linguistic abilities, is an important predictor of school adjustment and academic outcomes (Denham et al., 2010). Further, the Home Literacy Environment has been shown to support children's linguistic development during infancy and toddlerhood with far-reaching consequences for children's academic achievement later in life (Frijters et al., 2000; Lehrl et al., 2020; Niklas & Schneider, 2017a). The present study showed that the HLE is a significant predictor of children's socioemotional competencies via linguistic abilities in a longitudinal research design. In particular for the age range of 2- to 4-year-olds, in which socioemotional competencies of children develop greatly (Giménez-Dasí et al., 2015; Rubio-Fernández & Geurts, 2013; Wellmann et al., 2001), the associations with linguistic abilities of children and their parents' reading habits rarely have been subject to research.

Our findings did not confirm the hypothesis that shared reading to children and the global HLE directly foster socioemotional competencies when controlling for children's level of linguistic abilities and further characteristics of children and their parents. In addition, the HLE and children's socioemotional outcomes were significantly correlated at the third measurement point only. This finding is in line with previous research: Here, direct associations between shared reading habits and socioemotional outcomes were found mainly in samples of older children (Kumschick et al., 2014), and were driven by the assumption that storybook reading allows the reader (or listener) to connect with characters of the story, share their views and thereby enhance their social understanding (Kozak & Recchia, 2019), all of which is more likely to be found in older compared to very young children who are still learning to adopt different perspectives and to understand another person's knowledge and beliefs, as summarized in the theoretical construct *theory of mind* (Wellmann et al., 2001). Children's *theory of mind* is related closely and bi-directionally to linguistic development, but also increases through social interaction (Weimer et al., 2021). In particular, joint attention activities are predictive of children's *theory of mind* development (Charman et al., 2000). However, t*heory of mind* begins to develop around the age of three, and increases in the following preschool years (Prior et al., 1994; Rubio-Fernández & Geurts, 2013). Consequently, taking perspectives from storybook characters may be a rather abstract and complex task for children at this age.

Studies confirming the direct influence of shared reading on socioemotional competencies in younger samples mostly used an interventional approach, focusing specifically on storybooks with emotional content or parental reading styles promoting socioemotional learning (Aram & Aviram, 2009). Also, the HLE thus might be able to improve children's socioemotional skills directly, by evoking emotional responses in children and through the learning of emotional vocabulary. Here, book choice and parental reading styles emphasizing emotional vocabulary seem to be crucial to support socioemotional learning.

Mediated effects of the HLE on socioemotional competencies via linguistic abilities were found in longitudinal samples with children up to 8 years of age (Aram & Aviram, 2009; Rose et al., 2018). In the present study, the HLE, assessed via the onset and frequency of reading habits and parental attitudes, predicted children's linguistic abilities 6 months later, which, in turn, predicted socioemotional skills another 6 months later.

Already in this young sample, children's emotional competencies and problematic behavior were stable across 1 year, and measurements of problematic behavior, social and emotional skills were highly associated. This association has also been found in older German community samples (Klasen et al., 2000). In addition, social skills and behavioral problems can be interpreted as separate, but reciprocally related constructs within the global concept of social

functioning, and the negative correlation between both constructs has been shown independent of different measurement methods and children's age (Hukkelberg et al., 2019). Consequently, it may be concluded that interventions in the areas of problematic behavior and socioemotional competencies are indicated already at this early age as children's behavioral problems continue to stabilize as they grow older (Caspi et al., 1995). Children as young as 2 years old can benefit from planned interventions promoting emotion regulation and socioemotional learning (Grazzani et al., 2016).

Our results further indicate that frequent shared storybook reading and early literacy learning does not only foster children's cognitive competencies in the early years, but also supports their early socioemotional learning. Consequently, supporting children's home learning environment may improve children's socioemotional competencies through linguistic learning. To support linguistic competencies, the HLE and, in particular, frequent reading to children and an early onset of reading are crucial (Niklas, Cohrssen et al., 2016a).

Moreover, children's socioemotional competencies might not only be supported by their level of linguistic abilities, but they also may profit from the specific content of books and from specific parent-child interactions, in which parents teach their children emotional knowledge while reading to them (Kumschick et al., 2014). In addition, the compatibility of children's emotionality and the literacy environment provided by their parents may play a role in children's socioemotional development and needs further investigation (Liew et al., 2020). Supporting the early HLE might be particularly beneficial for boys as well as for children growing up in families with a comparatively lower SES, as the current study supports previous studies findings concerning significant associations between children's gender and parent's SES with children's linguistic and socioemotional competencies (Eriksson et al., 2012; Rose et al., 2016; Weinert & Ebert, 2013; Wirth et al., 2019).

8.1 | Limitations

In the present study, onset and frequency of parent-child reading, global HLE items and specifications on a family's SES were self-reported by parents and therefore susceptible to perceived social desirability. Nevertheless, a comparison to recent studies with similar samples indicated plausible answers and a reliable assessment of families' reading habits, as parents reported an earlier onset of reading to children and a similar average frequency of reading to their children in these studies (Niklas, Cohrssen et al., 2016a; Wirth et al., 2020).

Similarly, the socioemotional competencies were assessed via educator survey only. Here, direct observation and tests may have provided a more objective assessment of these competencies, but, particularly for children of this age group, socioemotional competencies are difficult to test directly. Further, research indicates that educators who interact with numerous young children are able to provide relatively objective and reliable ratings of child behavior (e.g. Schmiedeler & Schneider, 2014).

The sample of our study was not representative for German families, particularly as the majority of participating parents (56.8 %, $N = 67$) had a university degree or a general qualification for university entrance. However, the average highest household SES in this sample was comparable to the SES found in other German studies (Niklas & Schneider, 2017a; Niklas,Cohrssen et al., 2016a).

Due to the relatively small sample size of 132 children, the necessary conditions to conduct a cross-lagged panel model (CLPM), which would have allowed investigating associations between the variables at all measurement points in a more comprehensive way, were not met. Nevertheless, our structural equation model was based on theoretical assumptions and prior research indicating clear directions in the relationships between the HLE and children's linguistic abilities and socioemotional competencies (Cutting & Dunn, 1999; Rose et al., 2016).

9 | CONCLUSION

The family environment is strongly associated with the level of children's competencies (Mathis & Bierman, 2015; Sénéchal & LeFevre, 2002). Here, the HLE was able to predict children's socioemotional competencies 12 months

later in this sample of 2- to 4-year-olds, and this association was mediated by children's linguistic abilities. Studies with older children support the finding that children's linguistic abilities might act as a mediator between the HLE and socioemotional development (Rose et al., 2018). Already in the early years, children seem to train their socioemotional competencies during literacy activities at home. Consequently, children's socioemotional development can profit from a high-quality home environment from an early age.

DECLARATIONS

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CONFLICTS OF INTEREST

With the submission of this manuscript, we confirm that there are no known conflicts of interest associated with this publication.

AUTHOR CONTRIBUTIONS

All co-authors have been included in the planning, execution or analysis of this study and read and approved the final version.

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ETHICS APPROVAL

Ethics approval was obtained from the University of Würzburg, Germany. All the research meets the ethical guidelines, including adherence to the legal requirements of Germany and the ethical standards of the APA.

REPRODUCTION OF COPYRIGHT MATERIAL

We did not include excerpts from copyrighted works owned by third parties in our manuscript.

DATA AVAILABILITY STATEMENT

All data and material are available from the corresponding author, [A.W.], upon request.

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