



Toddlers' peer engagement in Swiss childcare: contribution of individual and contextual characteristics

Tatiana Diebold^{1,2}  · Sonja Perren^{1,3}

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Abstract

The present study observed 86 three-year-old children ($M = 43.7$, $SD = 6.4$) from 15 Swiss childcare groups, to investigate multiple individual and contextual contributions to toddlers' positive engagement with peers. The children's individual characteristics (age, sex and social skills) and childcare-related predictors (emotional and behavioural support from caregivers, and structural group features) were assessed. We employed the child-by-environment perspective and tested the hypothesis that high-quality behavioural and emotional support provided by caregivers benefits children with deficits in social abilities. Results of the multilevel structural equation modelling indicated that toddlers rated by caregivers as sociable and assertive showed more positive situation-specific peer engagement, especially with a concomitant higher quality of caregiver emotional and behavioural support. By contrast, being prosocial-cooperative was negatively associated with observed peer engagement. Thus, children's social skills were found to be the most important factor for peer engagement in childcare settings. Important suggestions for future research are made, and practical implications are discussed.

Keywords Teacher–child interactions · Social skills · Peer engagement · Peer interaction · Child-by-environment perspective · Childcare quality

Peer-related experiences in different social contexts are an essential component of children's development (Hartup 1976; Rubin et al. 2007), becoming an increasingly large part of their social environment during early childhood. Research has suggested that children show great interest in their peers at a very young age, and in some settings, young children prefer to interact with peers rather than with the adults (Sanefuji et al. 2006; Seehagen and Herbert

✉ Tatiana Diebold
tatiana.diebold@fermuni.ch

¹ Thurgau University of Teacher Education, Kreuzlingen, Switzerland

² Swiss Distance University, Brig, Switzerland

³ University of Konstanz, Konstanz, Germany

2011; Zmyj et al. 2012). Young children develop their interaction and communication skills through early peer experiences, and learn to maintain reciprocal and stable peer relationships. Peers are therefore an important source of socialisation and provide a ‘natural’ learning context in which children acquire and elaborate their essential developmental abilities, such as social, language and cognitive competencies (Ahnert 2011; Fabes et al. 2003a, 2003b; Ladd and Sechler 2012; Newcomb et al. 1993; Rubin et al. 2007).

Infants and toddlers encounter their first peer group in the context of childcare, where they spend much more time with children their own age than they typically do within their families. Simoni et al. (2015) have shown that 50% of eight-month-old children’s social interactions in Swiss childcare involve peers. The older the child, the more frequent and the more important peer interactions become. Thus, young children’s competence in interactions with peers has been identified as one of the most valid indicators for successful functioning in childcare settings, and an important mechanism through which childcare affects child developmental outcomes (Downer et al. 2011).

Although there is a global trend towards increased attendance of toddlers in formal early childhood setting environments, little research has been done on the effects of these environments on early childhood education. However, there is a large body of research supporting the relevance of early peer experiences and relationships in other contexts and at older ages. For one thing, being able to form positive peer relationships is critical for a child’s healthy development, social competencies and academic-related outcomes (Denham 2007; Perren et al. 2015; Williford et al. 2013). For example, the quality of peer interactions at 15 months predicted children’s aggressive behaviour and their well-being in childcare at 23 months (Deynoot Schaub and Riksen Walraven 2006). For another thing, children who lack successful relationships with peers may be at risk of later maladjustment. Studies in Swiss and international contexts have consistently shown that being rejected or victimised by peers is associated with long-term mental health problems and low emotional well-being (Ladd and Troop Gordon 2003; Perren and Alsaker 2009; Perren et al. 2015).

The present study was designed to examine potential influences on children’s engagement with peers in the context of early childhood education and care. Leading researchers of early childhood argue that gathering data on individual competencies by observing behaviour-related indicators is the most valid method, and is preferable to less direct methods (e.g. informant reports), as observationally based information relates to the contextual conditions in which children’s behaviours occur (Downer et al. 2011). In accordance with Downer et al. (2011), we conceive of child engagement as children’s competence in interactions with peers; we have focused on toddlers’ observable social behaviour in childcare settings, such as initiating conversations and playing with other children, expressing positive emotions towards peers, cooperation and popularity (peer acceptance vs. rejection).

The investigation was based on the child-by-environment perspective, guided by the assumption that children’s development is a complex process influenced by multiple factors. These factors are both within the child and within the child’s social context, and they interact in predicting children’s adjustment (Fabes et al. 2008; Kail 2003).

Children’s individual characteristics related to peer engagement

Social skills

A range of studies in children of elementary school age (i.e. 5–12 years) has provided evidence that social skills are associated with peer-related experiences (for a meta-analytic review, see

Newcomb et al. 1993). Research suggests that antisocial behaviour (e.g. aggression, noncooperative behaviour) predicts peer rejection and victimisation (Perren and Alsaker, 2009; Perren et al. 2015) and is negatively associated with peer acceptance and friendships (Ladd et al. 2012). Children who have difficulty initiating peer interactions and who withdraw socially also seem to be at risk of developing poor or problematic peer relationships (Hart et al. 2000). By contrast, prosocial behaviour appears to decrease the probability of peer rejection (Ladd et al. 2012), and leads to positive relational outcomes such as peer acceptance and friendship (Coie et al. 1990; Henricsson and Rydell 2006). Sociability is also positively linked to popularity among peers (Newcomb et al. 1993). It is a challenge to find recent studies that focus specifically on toddlers and preschool children. However, our research group has demonstrated that toddlers' aggressive behaviour is associated with peer rejection and victimisation (Perren and Diebold, 2017). Conversely, a high level of leadership, sociability and prosocial behaviour is related to positive peer-related experiences, including popularity and friendship. All of this allows us to conclude that social skills are associated with the quality of children's peer relationships, and that the examination of social competence requires a differentiated view. In accordance to Perren (2007), social competence consists of two distinct components: (a) the ability to fulfil one's own needs by using social interactions (*self-oriented social skills*, i.e. assertiveness, social initiative and social withdrawal (reversed), while (b) promoting the welfare of others and maintaining positive social relationships (*other-oriented social skills*, i.e. prosocial behaviour, cooperation, low aggressive behaviour).

Sex and age differences

Research has demonstrated sex and age differences in social behaviour and peer relationships from a very early age. Both teacher and observational ratings indicate that girls are more socially competent than boys (Fabes et al. 1999; LaFreniere and Dumas 1996). For instance, girls tend to be more prosocial and empathetic than their male peers (Fabes and Eisenberg 1998; Olweus and Endresen 1998; Strayer and Roberts 2004). Girls are also more likely than boys to engage in complex peer play (Kontos et al. 2002) and spend more time in social conversation (Moller et al. 1992). Males generally are considered to be more frequently involved in aggressive interactions and disruptive behaviour (Baillargeon et al. 2007; Card et al. 2008; Moller et al. 1992; Olweus 1979; Strayer and Roberts 2004; Walker 2004, 2005). At the same time, boys engage in more group interactions than girls do (Benenson 1993; Benenson et al. 1997; Fabes et al. 2003a, 2003b; Moller et al. 1992) and build significantly larger social networks (Benenson 1993). It should be emphasised here that most research on sex differences has focused on middle childhood and adolescence. The results of studies in early childhood are mixed and suggest that some aspects of sex differences are present during early childhood, while a number of these differences appear to strengthen and become more consistent with age (for a review, see Rose and Rudolph 2006).

With increasing age, peer interactions become more frequent and more important (Simoni et al. 2015). There is also clear evidence of increasing social competence with age for children aged three to six years (LaFreniere and Dumas 1996). Older girls and boys both show more prosocial behaviour than younger children (Walker 2005). In general, the frequency of positive behaviours increases and the frequency of negative behaviours decreases during the preschool years (Vandell et al. 2008). A study assessing children's engagement in the context of childcare showed associations between child age and positive engagement with peers (Vitiello et al. 2012).

Childcare characteristics related to children's peer engagement

Quality of caregiver–child interactions

There is a large research field investigating the impact of childcare on children's cognitive and language outcomes, social–emotional development and psychosocial adjustment. Findings have suggested that high-quality social interactions between caregivers and children seem to be the most crucial quality feature of early childhood education and care (Burchinal et al. 2010; Curby et al. 2013; Curby et al. 2009; Gialamas et al. 2014; Howes et al. 2008; Peisner-Feinberg et al. 2001; Wilson et al. 2007). Sensitive and responsive caregiving was consistently found to predict children's positive developmental outcomes (Anderson 2006; Araujo et al. 2019; Burchinal et al. 2008; Curby et al. 2013; Gialamas et al. 2014; NICHD Early Child Care Research Network 2002; Vandell et al. 2010). Caregiving quality also appears to influence children's competence in social interactions with peers (Howes 2000; Pianta 1999). When children receive positive caregiving, responsiveness and sensitivity from the caregivers, they learn how to regulate their own emotions and behaviours, spend more time actively engaged (Coelho et al. 2019; Pinto et al. 2019), and interact more positively with peers (Wilson et al. 2007). In particular, young children whose communication and social skills are still fragile rely on caregivers' support and regulation in exchanging with peers. As reported by the NICHD Early Child Care Research Network (2001), sensitive and responsive caregiver behaviour was found to predict both observed and caregiver-rated quality of children's peer play, even after controlling for multiple child and family characteristics. Curby et al. (2014) investigated behavioural exchanges between teachers and children in preschools, and showed that teachers' emotional support predicted a child's later positive engagement with teachers, peers and tasks.

Specific group characteristics in Swiss childcare

Childcare in Switzerland is characterised by great flexibility in terms of children's attendance schedules, and uses mixed-age grouping, which allows an extended age range from 4 months (end of maternity leave) up to 5 years (start of obligatory kindergarten, part of primary school) within a group. This way of organising childcare not only provides opportunities for children of different ages to interact and play together, but also offers advantages for childcare providers (e.g. fewer staff, classrooms, schedules), and helps parents to reconcile work and parenthood. According to the Swiss Federal Statistical Office (ed.) (2017), 64% of employed mothers, and 81% of mothers living with their partners, work part-time. It is also important to note that the high childcare costs constitute an enormous financial burden: for example, a family with two preschool children in Zurich spends 19% of its total income on childcare if both children attend for 3.5 days per week (Jacobs Foundation 2017). Parents choose the days of attendance according to individual job-related needs, which may vary from week to week and from month to month. However, organising childcare in this way means children in the group fluctuate considerably. Some childcare providers ensure a degree of stability by requiring a minimum of two days' attendance a week. Other childcare centres offer more flexibility, with no requirements regarding attendance schedules. Thus, it is possible for individual children to attend childcare on single days (1 to 5 days a week), in the morning or afternoon, or for the whole day. Generally speaking, childcare in Switzerland is used frequently but the amount of childcare for each child is relatively small. The majority of

children who attend childcare do so part-time, typically 2 to 3 days a week (Machmutow et al. 2013). Nearly the half of 0–3 year old children attend childcare 1–9 h a week, 41% 10–29 h, and only about 10% of infants and toddlers spend 30 h or more in childcare (Swiss Federal Statistical Office (ed.) 2020). The average group size is about 12 children, but a significant number of available childcare places are shared by two or more children (e.g. one child uses a childcare place on Monday morning, the other on Monday afternoon). Depending on a child's individual attendance schedule, he/she may come into contact with up to 40 other children in a week. The possible frequent changes in group composition – in terms of age or group size, and therefore also in peer group behaviour patterns – may represent a high level of instability, which is viewed in the literature as a possible obstacle to the development of longer-term peer relationships and competent, cooperative play with peers. A few studies on this topic have suggested that instability of the peer group in childcare contributes negatively to children's competence in engagement with peers. Children who spent time in unstable peer groups had more dominance-related fights and aggression (Pellegrini et al. 2007). Field et al. (1984) showed that infants, toddlers and preschoolers who changed to new classes and schools experienced increases in negative affect, physical aggression, activity level and sleep disturbances. By contrast, when children experienced group stability, they became familiar play partners and showed more skilled interactions with peers (Doyle et al. 1980). However, the type of scheduled group instability (recurrent composition from one week to the other) in Swiss childcare is different from the erratic instability studied earlier, and is also different from a switch to a new context. Therefore, it may not necessarily induce the same kind of negative effects.

The majority of professional caregivers in Swiss childcare have completed an apprenticeship of 3 years, which combines 2 days in the classroom with 3-days in-service training per week. Caregivers only rarely hold a college or university degree. A high percentage of trainees (i.e. young persons who attend a first year-long internship after completion of mandatory schooling) and apprentices work alongside qualified professional caregivers (Perren et al. 2017; Stamm 2009).

Interactive contribution of individual characteristics and relational environment

Guided by the idea that children identified as being at higher risk of poor or difficult social behaviour are likely to benefit from sensitive and supportive teacher behaviour, some researchers have investigated the moderating effect of teachers' behaviour on the outcomes of at-risk children. Evidence suggests that socially bold children whose kindergarten teacher was more sensitive showed fewer negative interactions with peers and teachers than children with less sensitive teachers (Rimm-Kaufman et al. 2002). Hamre and Pianta (2005) reported that children identified in kindergarten as being at risk of academic failure showed significantly fewer conflicts with teachers and higher achievement in first-grade classrooms characterised by high-quality instructional and emotional support than those in low-quality classrooms. Classroom emotional climate was also found to moderate the risk that children with early childhood anxious solitude would experience peer rejection in the first grade (Gazelle 2006). Children with multiple risks demonstrated more positive behaviours with peers in classrooms that had higher levels of positive emotional climate and instructional support (Wilson et al. 2007). Although limited, the evidence suggests that positive experience with caregivers may

reduce the likelihood of behavioural and social problems of at-risk children, supporting the moderating role of teacher behaviour in the association between children's behavioural dispositions and social adjustment.

The present study

As stated above, there is a large body of evidence suggesting that various individual and contextual characteristics affect a child's social behaviour and adjustment. While most studies have investigated individual or contextual factors as independent determinants, the child-by-environment perspective integrates multiple contributing factors that are both internal and external to the child and that interact in predicting child outcomes. The predictive power of moderated or mediated contributions was found to be greater than that of single factors (see Ladd 2003). In addition, Williford et al. (2013) emphasised the need for studies integrating both the perspective of what caregivers provide through their interactions with children (group level), and the perspective of individual children and their engagement and interactions with the environment provided (child level).

Accordingly, the current study investigated observed, behaviour-related aspects of toddlers' peer engagement in naturally occurring childcare settings and aimed to: (1) examine the contribution of different individual and childcare-related characteristics to toddlers' engagement with peers; (2) investigate whether the experience of emotional and behavioural support by caregivers moderates the association between toddlers' social skills and their peer engagement quality. We assume that high quality of caregiver-child interactions is more beneficial for children who have deficits in social competencies in terms of their engagement with other children in childcare.

Research questions and hypotheses

Firstly, we examined the role of a child's individual characteristics, such as caregiver-reported self- and other-oriented social skills, sex and age in the quality of observed, situation-specific peer engagement. More specifically, we hypothesised that both sociable-assertive and prosocial-cooperative social skills, female sex and child age would be positively associated with peer engagement. Secondly, we investigated the relationships between childcare characteristics and children's engagement with peers. Based on previous research findings, we expected emotional and behavioural support provided by caregivers to be positively associated with the quality of peer engagement. Thirdly, as childcare in Switzerland is highly flexible and children are usually cared for in mixed-age groupings, we explored, whether specific structural group features, including the level of experienced group stability and the median age of the peer group are associated with toddlers' peer engagement. Finally, based on the child-by-environment model, behavioural and emotional support was hypothesised to moderate the association between children's social skills and peer engagement. As young children showing deficits in social skills are at higher risk of poorer and lower quality peer engagement, they would probably benefit from positive and supportive teacher behaviour in their engagement with other children more than socially skilled children.

Method

Study sample and recruiting

Initially, a total of 18 typical childcare centres from the German-speaking part of Switzerland were contacted by email and follow-up telephone calls to provide information about the primary goals of the study and the study procedure. Seven childcare centres including 15 groups expressed their interest and eventually participated in the study. After obtaining active agreement for study participation from childcare directors and caregivers, all parents were informed in writing about the study's goals, procedure and assessment timing. Parents of children aged 30 months and older were asked for active consent for their child to participate in individual observations. In each group, up to six 3-year-olds who attend childcare for at least 2 days a week were selected for observations of their individual engagement in the classroom ($N = 86$, 45% females, age in months: $M = 43.7$, $SD = 6.4$).

Procedure

Data collection consisted of live observations and a caregiver survey. The observations were performed by two certified observers, who visited each childcare group over four mornings (from 08:00 to 12:00). The assessment comprised observations at the group level (the quality of emotional and behavioural support) and individual child observations. Each child's engagement was rated multiple times on two different days. Non-participating children were part of group observations, but no individual data were collected for them. Group and individual observations were optimally synchronised in time so that group-related scores were obtained relevant to individual child observations on both days. During the visits, the caregivers were asked to go about their normal daily routine so that the data collectors could observe and rate nearly all the group activities that would normally take place during a day. After the observation period, primary caregivers received a questionnaire for each participating child. Caregivers completed the questionnaire online (LimeSurvey) or received a printed version.

Assessment of child characteristics

Peer engagement

To assess the quality of child engagement with peers, the Individualized Classroom Assessment Scoring System (inCLASS: Pre-K; Downer et al. 2011) was used. The inCLASS is an observation tool developed to measure the quality of classroom interactions at the level of the individual child, assessing a child's engagement with adults, peers and tasks in preschool and kindergarten classrooms at a specific moment, i.e. related to situational context and interaction partner.

In the present study, we focused on children's interactions with peers, using the domain Positive Engagement with Peers. This domain comprises three specific dimensions: Sociability, Communication and Assertiveness (Downer et al. 2010; Vitiello et al. 2012). The first dimension, Peer Sociability, refers to the degree to which the child seeks interactions and cooperative play with other children through conversations or eye contact, and shares positive emotions in interactions with peers (e.g. smiling, laughter or physical affection). Social awareness towards peers and cooperative behaviour (e.g. sharing materials) are also important

to this rating. The second dimension, Peer Communication, reflects child's ability to initiate and maintain communication with peers, using language to make emotions, needs and thoughts known (e.g. asking questions, requesting, commenting, sharing ideas). The third and last dimension, Peer Assertiveness, focuses on positive strategies the child uses to initiate interactions and play with peers. Children's leadership skills, such as organising joint activities, coaching peers and positively defending their ideas are also key points of this rating.

One of two observers assigns a code for each dimension on a seven-point scale: low (1, 2), medium (3, 4, 5) and high (6, 7). Higher ratings indicate more frequent and positive peer engagement. The instrument is administered across a series of 15-min observation cycles, with 10 min to observe and 5 min to score. In accordance with the manual recommendations, each child was observed for 4×10 min (i.e. 8 observation cycles or 80 min total observation time per child) on 2 days. We computed summary scores for each dimension by averaging codes across four observation cycles and then built domain mean scores per observation day, reflecting the child's peer engagement on each of the two days. Interrater reliability was verified in two steps. All observers initially passed a reliability test by coding 5 video clips at the end of 2 days of intensive training. Interrater reliability was then investigated using double-coded live observations in the field across 11% of all classroom visits (87 cycles in total) and reached an average of 0.87, ranging from 0.71 to 0.94. The domain showed excellent internal consistency: $\alpha = .93$.

Social skills

To assess children's social skills, caregivers completed the SOCOMP questionnaire (Perren 2007). As distinguished from observed behavioural indicators of children's competence in social interactions, caregiver rating of children's social skills assesses individual traits, which are relatively stable over time and divorced from a specific situation (Groeben et al. 2011; Perren et al. 2012). This questionnaire assesses self- and other-oriented social skills. Self-oriented social skills are those aiming to satisfy one's own needs, and have three subscales: *leadership* (e.g. 'child organises, suggests play activities to peers'; $\alpha = .79$), *setting limits* (e.g. 'child refuses unreasonable requests from others'; $\alpha = .79$), and *social participation* (e.g. 'outgoing in peer group situations', $\alpha = .79$). Other-oriented social skills aim to satisfy the goals and needs of another person, and are composed of *prosocial* (e.g. 'child shares readily with other children (treats, toys, pencils etc.)'; $\alpha = .71$) and *cooperative* (e.g. 'child accepts peers' ideas for group activities'; $\alpha = .72$) behaviour. All items were rated on a 3-point scale (0 = not at all true, 1 = partly true, 2 = definitely true).

Data on children's sex and birth date were also obtained from the caregivers.

Assessment of childcare characteristics

Quality of emotional and behavioural support

To assess the quality of emotional and behavioural support, we applied the Classroom Assessment Scoring System (CLASS: Toddler), which is oriented to children aged 18 to 36 months (La Paro et al. 2012). CLASS assesses classroom process quality, and measures the quality of interactions between caregivers/teachers and children as the average experience of all children in group settings. The CLASS Toddler includes two domains of teacher-child interactions: (1) Emotional and Behavioural Support and (2) Engaged Support for Learning.

Positive emotional and behavioural support in toddler classrooms is crucial for children to feel secure and develop positive and effective relationships (La Paro et al. 2012). We therefore used the domain *Emotional and Behavioural Support*, which comprises the dimensions Positive Climate, Negative Climate, Teacher Sensitivity, Regard for Child Perspectives and Behaviour Guidance. These dimensions reflect the overall level of positive and negative emotions expressed in classrooms, and teachers' efforts to give children a secure base and support them in exploring their environment, as well as to encourage children's autonomy and responsibility. Raters made observations in classrooms over a series of 20-min cycles and scored each CLASS dimension on a seven-point scale, contemporaneously with the individual child observations. Higher ratings indicated higher quality and more frequent positive caregiver-child interactions within each dimension (except the dimension of negative climate, for which higher ratings indicated a higher level of negative interactions between caregivers and children). All observers attended an intensive training workshop and passed a reliability test by reaching at least 80% agreement with a master coder. During the first assessment period (six childcare groups) only two 20-min cycles per day were observed (total 160 min observation time for each childcare group). For the subsequent assessment period, the study design was optimised so that, in line with the manual's recommendations, data from as many as four 20-min cycles across four consecutive days were gathered in each childcare group ($M = 4.90$; $SD = .85$; range = 4 to 6; total 320–480 min observation time for each childcare group). No differences in mean scores were found between the first and the second assessment periods. After averaging rating scores across observation cycles for each dimension, a mean score was computed for the four dimensions to obtain a total score of emotional and behavioural support for each observation day. Negative Climate was not included in the current analysis due to very low variance within this dimension: only 7% of all cycles were rated in the mid range (codes 3–5), whereas 93% of observations were assigned a code within the low range (codes 1–2), indicating a low degree of average negative experience in the observed groups (see also Diebold and Perren 2019; Pakarinen et al. 2010; Perren et al. 2016; Reyhing et al. 2019; Slot et al. 2015; van Schaik et al. 2017; von Suchodoletz et al. 2015). Cronbach's alpha for the domain score was $\alpha = .88$.

Assessment of group structural features

Childcare directors additionally provided information on the total number of children enrolled and the duration of their presence in the childcare during the observation week. Peer-group median age score covered all children enrolled in the group calculated in years. Group stability scores were calculated using the software *stability measurement, calculation tool* (Pennings and Meij 2012), which defines group stability as the proportion of days during the observation week in which children attend the group together more than once. In other words, group stability is the extent to which the children are familiar with each other. The groups' stability scores were the average stability score of all children-dyads in the group and could vary between 0 and 100%. The more days the children attend the group together during the week, the higher the scores and the higher the group stability.

Approach to data analysis

The data of the present study had a multilevel structure, with individual children sampled within childcare groups and repeated measures (i.e. observation days) nested within a person.

To account for the nested nature of the data, we ran multilevel structural equation modelling (MSEM) using Mplus 7.31 (Muthén and Muthén 2012). Because the sample was relatively small, the study questions were tested using manifest variables.

Referring to Aguinis et al. (2013), our analyses included three steps to evaluate our hypotheses and research questions. (1) As a first step, we computed variance components and intra-class correlations (ICCs) for positive peer engagement using a *null model*. The null model excludes predictors and only allows intercepts to vary across clusters. It provides information about the clustered nature of the data and indicates whether multilevel modelling is necessary. A three-level model was specified, with an individual child as level 2 cluster variable and a childcare group as level 3 cluster variable. Variance components and intra-class correlations (ICCs) are given in the first column of Table 2, and show that most of the variance in children's peer engagement originated from differences between two observation days and individual differences. The proportion of the total variance at group level was insignificant (< 10%; Aguinis et al. 2013). Furthermore, the values of the ICCs suggest the dependence of scores between assessment times in the same person. Taken together, the results provide evidence for a nested data structure that requires two-level modelling, with observation points ($N_{\text{Level1}} = 164$) nested within individuals ($N_{\text{Level2}} = 86$). (2) As a second step, we investigated independent effects of our predictor variables on individual peer engagement scores with manifest variables. At level 1, emotional and behavioural support was included as a predictor of positive peer engagement (level 1 direct effect). At level 2, we included self- and other-oriented skills, child sex, age, peer-group median age and stability as predictors of peer engagement (cross-level direct effects). All predictor variables were grand mean centred, except child sex (binary variable). We suggest that both the intercepts and the slopes of our predictors vary across individual children, and thus constructed a *random intercept and random slope* model. The covariance between intercepts and slopes was also specified in this model (Aguinis et al. 2013; Geiser 2011). (3) As a final step, we built a *cross-level interaction model*, in order to investigate whether emotional and behavioural support (level 1 predictor) moderates the association between children's social skills and positive peer engagement (cross-level direct effect).

Results

Preliminary results

Descriptive statistics and bivariate correlations among all study variables

Table 1 shows mean scores and correlations between all study variables. Low to mid level of peer engagement ($M = 2.53$) and relatively high ratings of emotional and behavioural support ($M = 4.74$) are comparable to those of previous international studies (Coelho et al. 2019; Curby et al. 2014; Perren et al. 2016; von Suchodoletz et al. 2014; Vitiello et al. 2012). The relatively low level of group stability in the present study ($M = 36.5$) reflects the typical situation of flexible childcare in Switzerland.

The results of the bivariate associations between study variables suggested that self-oriented social skills were significantly and positively associated with the quality of peer engagement ($r = .50, p < .01$), whereas other-oriented social skills correlated negatively with peer engagement at close to significance ($r = -.145, p = .06$). Child sex was positively associated with the

Table 1 Descriptive statistics and correlations among all study variables ($N = 86$)

Variable	<i>MW</i>	<i>SD</i>	2	3	4	5	6	7	8
1 Peer engagement	2.53	.99	.440***	-.145 [†]	.176*	.178*	.003	.145 [†]	-.199*
2 Self-oriented social skills	2.41	0.47		.086	.098	.192*	.053	.189*	.012
3 Other-oriented social skills	2.54	0.40			-.134 [†]	.300***	.031	.123 [†]	.174*
4 Child sex						-.052	-.224**	-.032	-.065
5 Child age	3.64	0.53					.107	-.081	-.053
6 Emotional and behavioural support	4.74	0.81						-.052	-.053
7 Peer-group median age	3.08	0.52							.011
8 Peer-group stability	36.5	12.06							

Note: Child sex was coded 0 for female and 1 for male

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$

quality of peer engagement ($p = .176$, $p < .05$), indicating that boys showed more positive peer engagement than girls. Finally, older children showed significantly more positive engagement with peers ($r = .178$, $p < .05$). For associations between childcare structural characteristics and peer engagement, the results are mixed: group stability was found to be negatively associated with peer engagement ($r = -.199$, $p < .01$), while peer group median age was marginally positively associated with the quality of peer engagement ($r = .145$, $p = .06$).

Main analyses

Associations between child characteristics and peer engagement

The first aim of this study was to investigate the role of individual characteristics in the quality of toddlers' engagement with peers. We specifically focused on children's self- and other oriented social skills reported by caregivers, their sex and their age. As shown in Table 2, the results presented in the middle section (random intercept and random slope model) indicate that there is a strong association between child caregiver reported social skills and observed, situation-specific quality of peer engagement. As expected, self-oriented social skills were positively associated with peer engagement: children with higher sociable-assertive skills showed significantly more positive engagement with peers ($b = .82$, $p < .001$). Conversely, other-oriented social skills were negatively associated with children's peer engagement ($b = -.53$, $p < .01$), which means that toddlers rated by caregivers as being more prosocial and cooperative showed less positive engagement with other children in childcare. No significant age or sex differences were found.

Associations between childcare characteristics and peer engagement

A further aim of this study was to examine associations between childcare-related characteristics and children's engagement with peers. There was no significant independent effect of emotional and behavioural support on children's peer engagement. Furthermore, neither peer-group median age nor group stability was a significant predictor of a child's peer engagement. The results are also shown in the middle part of Table 2.

Table 2 Results of multilevel structural equation modelling analysis

Predictor variable	Model		
	Null model	Random intercept and random slope	Cross-level interaction
Level 1 (repeated measure)			
Intercept	2.534*** (0.093)	2.425*** (0.109)	2.429*** (0.108)
Emotional and behavioural support		-0.007 (0.073)	-0.029 (0.068)
Level 2 (person)			
Self-oriented social skills		0.816*** (0.193)	0.857*** (0.160)
Other-oriented social skills		-0.531** (0.207)	-0.492* (0.201)
Child sex		0.172 (0.185)	0.153 (0.177)
Child age		0.024 (0.016)	0.023 (0.015)
Peer group median age		0.210 (0.134)	0.183 (0.132)
Peer group stability		-0.010 (0.007)	-0.011(0.007)
Cross-level interactions			
EBS*Self-oriented social skills			0.248† (0.131)
EBS*Other-oriented social skills			0.113 (0.175)
Variance components			
Level 1 variance	0.532***	0.438***	0.422***
Intercept (level 2) variance	0.430***	0.205**	0.215**
Intercept (level 3) variance	0.005		
Slope (level 2) variance		0.018	0.017
Intercept-slope covariance		0.041	0.042
ICC (level 2)	0.432	0.514	0.514
ICC (level 3)	0.019		

Note. ICC: single-level variance divided by total variance (the sum variances on each nested level). $N_{\text{Level1}} = 164$ (observations within individual children), $N_{\text{Level2}} = 86$ (children), $N_{\text{Level3}} = 15$ (childcare groups). Child sex was coded 0 for female and 1 for male. Unstandardised coefficients are presented

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$

Moderation effect of child social skills and emotional and behavioural support

Finally, we examined the moderating role of emotional and behavioural support in the association between social skills and peer engagement. A marginally significant positive interaction between self-oriented social skills and emotional and behavioural support was found ($b = .25$, $p = .058$), suggesting that sociable-assertive children show more positive engagement with peers, particularly when they experience higher quality emotional and behavioural support. No interaction between other-oriented social skills and caregiver-child interactions was found. The third result section included in Table 2 presents the unstandardised parameters of the cross-level model.

Discussion

One main focus of the present study was to identify what individual child characteristics (social skills, sex, age) and childcare factors (emotional and behavioural support, as well as group structural features) contribute to the actual quality of young children's engagement with peers in the childcare setting. Guided by the child-by-environment perspective, we also expected to see benefits from emotional and behavioural support for children with deficits in social skills. In contrast to our buffering hypothesis, the findings indicate that a high level of

emotional and behavioural support from caregivers intensified the positive effect of being sociable-assertive. Moreover, being cooperative was negatively associated with peer engagement. The study again demonstrates the importance of distinguishing different components of social skills.

Associations between child characteristics and engagement with peers

As hypothesised, child social competence considered as a relatively stable individual characteristic reported by caregivers was significantly associated with the quality of observed, situation-related peer engagement. More precisely, self-oriented social skills were positively associated with a child's engagement with peers. This finding is in line with our expectations, and suggests that the ability to initiate and maintain social interactions is of particular importance for experiencing more frequent and positive peer engagement at the age of three. By contrast, there was a negative association between other-oriented social skills and peer engagement: prosocial and cooperative behaviour inhibited peer engagement in our sample. This finding is inconsistent with both our expectations and results of previous studies in older children, which showed that deficits in prosocial-cooperative behaviour increased the risk of victimisation and peer rejection (Perren et al. 2015). In our study, being cooperative and obedient and following group rules do not lead to more positive engagement, which instead requires some level of proactive social behaviour. The relevance of prosocial and cooperative behaviour for children's relationships with their peers seems thus to be low at the age of three and to increase over the preschool years. Certain developmental processes are also supported by the significant bivariate correlation between other-oriented social skills and children's age: the older the children, the more cooperative and prosocial behaviour they showed.

The results of the multivariate analyses showed that the impact of child sex and age on the quality of peer engagement did not reach significance. However, significant bivariate associations suggested that males showed more positive peer engagement. At first glance, this is somewhat surprising, since we know that females tend to be more socially competent than males, and might therefore assume that females are involved in more positive engagement with peers. However, as our assessment of peer engagement included both the quality and the frequency of children's engagement with others, this finding is consistent with the evidence that boys engage more frequently in group interactions than girls do (Benenson et al. 1997; Fabes et al. 2003a, 2003b). Further, positive correlation between child age and peer engagement is in line with our expectations and with the study by Vitiello et al. (2012), which also showed positive associations between toddlers' age and engagement with peers in childcare.

Associations between childcare characteristics and children's peer engagement

Although emotional and behavioural support was found to have some enhancing effect on the peer interaction quality of children with a higher level of social skills, there was no significant independent effect of emotional and behavioural support on toddlers' engagement with peers. This finding is not consistent with some research from the USA, which has shown significant impact of a teacher's emotional support on children's later classroom behaviour (Curby et al. 2014). However, our study supported other findings from the Netherlands, where emotional and behavioural support provided by caregivers was not related to child collaboration, prosocial behaviour, or mutual play regulation (van Schaik et al. 2017). Moreover, the effects reported by Curby et al. (2014) were stronger for children's engagement with their teacher and

within tasks than for peer engagement. The argument that teachers are not directly a part of children's interactions with peers, and have less control over child-to-child interaction, may also explain our results. All in all, the caregivers' role in peer engagement seems to be ambivalent, particularly in the occurrence and duration of peer interactions. Some studies showed that children are extremely sensitive to the presence of a caregiver in terms of their social orientation towards peers. Children spend significantly more time in peer interactions when no caregiver is in immediate proximity (Legendre and Munchenbach 2011). Other studies have found negative correlations between the time children spend interacting with adults and the time they spend interacting with peers (Harper and McCluskey 2002), which suggests that the presence of caregivers inhibits children's engagement with peers. Selected studies applying inCLASS provided evidence that children's engagement with peers varies according to activity settings (Booren et al. 2012; Vitiello et al. 2012). During free-choice activity time, children have more opportunities to engage with other children, and therefore show significantly more positive interactions with peers. In the current study, observers rated interactional quality across all group activities, including teacher-guided activities, free choice, meals, routines and transitions. Further research addressing interactional context within childcare should account for differences between activity settings and opportunities available for children to interact with each other.

The lack of association between caregiver-child interactions and peer engagement might be further explained by the country-specific organisation of childcare provision. Current research from Switzerland suggests that situational childcare characteristics in which social interactions evolve (e.g. situational age range, number of infants present, activity setting) are stronger predictors than general structural features that are stable over time (e.g. group size), and that they may have different impacts on the quality of caregiving and child engagement (Diebold & Perren 2019; Reyhing et al. 2019). This could also explain the finding that structural childcare characteristics were not associated with toddlers' peer engagement, as the present study assessed group stability and mean age at group level and considered all children enrolled in the group over the whole week. Furthermore, although most studies suggested that peer group stability is related to a child's social behaviour (Doyle et al. 1980; Field et al. 1984; Pellegrini et al. 2007), findings from the Netherlands, where the childcare system is similar to that in Switzerland in terms of part-time childcare attendance, also have shown that group stability does not contribute to the group functioning variable (Aarts et al. 2016). The authors suggested that the software stability measurement does not take children's interaction preferences into account. However, research has provided evidence that from the age of 2 years, children begin to show clear preferences for certain peers and establish first friendships (Howes 1983, 1987a), which emerge mainly through the opportunities to spend time together regularly (Vandell et al. 2008). It is also evident that young children behave differently depending on the social context and the skills of their interaction partners (Brownell 1990; Hay and Ross 1982) and show more positive social behaviour with friends than non-friends (Howes 1987a). Future research should therefore consider interaction possibilities between specific children and mutual preferences in peer interactions. Additionally, continuity of teachers (e.g. the degree to which young children remain with the same caregivers; Cryer et al. 2000) is a further dimension of childcare that should receive more attention in future research, *inter alia* in Switzerland, where young children typically have a series of different caregivers (Stamm 2009). Previous research has suggested that children are sensitive to caregiver instability in childcare settings regarding their social competence with peers (Cummings 1980; Howes and Hamilton 1993). Howes (1987b) conclude that infants and toddlers who experience caregiver instability are at risk of losing

motivation to engage in the social interactions and therefore risk poor and lower quality peer relationships. By contrast, when the teachers in childcare provide stability, infants and toddlers establish attachment relationships with their caregivers (Cryer et al. 2000) and are less negative and more positive with their peers (NICHD Early Child Care Research Network 2001).

Another possible explanation for the lack of an association between group stability and peer engagement is the age of children investigated in this study. We presume that the group becomes more important for older children, as developing more complex and stable peer relationships and friendships requires more opportunities for regular interaction.

Additionally, studies comparing the contribution of childcare quality and home characteristics to child outcomes clearly showed greater effect sizes for family characteristics than for childcare quality (Melhuish et al. 2015). This may be particularly relevant for the Swiss research due to the relatively small amount of childcare. Finally, our findings suggest that emotional and behavioural support might be beneficial for particular groups of children.

Interaction between children's social skills and emotional and behavioural support

Our study investigated whether the level of emotional and behavioural support moderates the association between children's social skills and engagement with peers. Based on the limited evidence available, we hypothesised that high quality emotional and behavioural support provided by caregivers should have a compensatory effect, and might be more relevant and beneficial for children with deficits in social skills than for socially skilled children. Contrary to our expectations, children rated by caregivers as more sociable and assertive showed more positive social engagement with peers, especially when caregivers provided a higher quality of emotional and behavioural support. This differs from the findings of some previous studies, which suggest that sensitive and supportive teacher behaviour is more important for children with higher levels of early behavioural problems (Gazelle 2006; Hamre and Pianta 2005; Rimm-Kaufman et al. 2002; Wilson et al. 2007). However, it is consistent with the results reported by Perren et al. (2019), which have shown that the effect of active support provided by a play tutor through active play participation was stronger in sociable children than in less sociable ones. This result also indicates that adult interaction does not have a compensatory effect for children with lower social skills, but that children with a higher level of sociability benefit more from the intervention. Similarly, the impact of high-quality teacher-child relationships on the development of social skills in children from kindergarten to sixth grade was stronger for children with lower levels of preschool internalising problems than for those with higher levels (Berry and O'Connor 2010). The authors discuss the idea that highly internalising children may be less receptive or responsive to the social environment. This interpretation could also apply to children with deficits in sociable-assertive abilities, who tend to engage in solitary activities and generally initiate fewer interactions – not only with peers but also with their caregivers – and therefore have fewer opportunities to benefit from supportive caregiver behaviour and to gain positive experience in interacting with others. Considering that the interaction effect reached only marginal statistical significance, however, it should be interpreted with caution. The study's results do not allow us to conclude that caregiver emotional and behavioural support does not affect children with less social skills, even though the effect was greater in children with more social skills, and caregiver support was not found to compensate for deficits in social competence. Further research could deepen our knowledge by investigating what happens with children who are lacking in social skills in more and less supportive environments, and under consideration of child engagement with

caregivers and with the tasks, as possible mediating factors in relation to the quality of peer relationships. It should also be noted that research exploring the moderated contribution of child individual characteristics and childcare-related predictors is limited, and available studies have considered different outcomes. It is therefore challenging to compare our findings to previous research.

Study strengths and limitations

The study has some methodological strengths, and provides an important scientific contribution to the research. Firstly, our review has shown that it is a challenge to find studies on social interactions with a specific focus on toddlers. Our study investigated 3-year-olds in naturally occurring childcare settings. Secondly, to investigate our research questions, the data were collected using established and reliable observational instruments. The data therefore comprise observed, behaviour-related indicators of caregiver–child interactions and peer engagement, which are involved in a specific situation. The quality of emotional and behavioural support (group level) and individual child engagement (child level) were rated simultaneously by two observers, to ensure a perfect fit of group and child scores, and to reduce bias as a source of variance (see Curby et al. 2014). Thirdly, our study combined different individual and childcare-related predictors and investigated their interactive contributions to toddlers' interactional outcomes. Furthermore, the multilevel structure of the data was taken into account, applying multilevel structural equation modelling.

However, the study was limited by a small sample size and therefore a limited number of potential predictor variables and statistical power, especially for the interaction effects, as well as the inability to run a latent variable model. Other child, childcare and family characteristics (e.g. child temperament and parenting) found to be associated with early social behaviour, as well as possible interactions between variables, should be explored in further studies. Another limitation of the present study was its cross-sectional design, which does not allow any causal conclusions. This would require longitudinal studies that examine long-term associations between the quality of caregiving and children's social behaviour as well.

Conclusion and implications for childcare practice

Achieving sustained and effective relationships with peers is one of children's most important developmental tasks (Denham, 2009; Darling-Churchill and Lippman 2016; Downer et al. 2011) that have been often related to academic and social success (Denham 2007; Deynoot Schaub and Riksen Walraven 2006; Ladd and Troop Gordon 2003; Williford et al. 2013). Our findings suggest, however, that in everyday life, children do not have equal opportunities for positive experiences with peers. From the many individual and childcare characteristics investigated, social abilities seem to be the most relevant for children's engagement with peers in childcare settings. The present findings, including the unexpected effects, indicate the importance of considering social skills as a multidimensional construct, since self- and other-oriented social skills seem to develop and influence children's social behaviour and interactions in different ways. In our study, sociable-assertive skills supported peer engagement, whereas prosocial-cooperative social skills inhibited children's engagement with peers. We conclude therefore that 3-year-olds are attracted to peers who show a higher level of social

participation, leadership and assertiveness. Finally, our findings support the conclusion that behavioural and emotional support interacts with sociable-assertive skills in influencing the prediction of how children will engage in their social interactions with other children in the context of childcare. Socially skilled children show more positive peer engagement in groups with high-quality emotional and behavioural support than in low-quality settings.

Based on these results, we again want to emphasise the importance of high-quality early childhood education programmes, and the need for greater awareness of individual children's abilities and needs. The study's findings suggest that children with deficits in sociable-assertive skills require particular attention and sensitivity. These children probably remain unnoticed as they do not show disruptive behaviour and follow instructions from the caregivers. However, they are also only rarely involved in positive peer interactions and thus have limited opportunities to enhance their ability to initiate interactions successfully and to engage effectively with their peer-group. Socially withdrawn children also seem to be less susceptible to support provided by caregivers and are therefore at risk of developing long-term social problems and anxiety (Ladd 2006). We thus want to encourage childcare providers and professionals to pay particular attention to their role in the development of young children's social skills – not only other-oriented, such as cooperation and prosociality, but also self-oriented social skills, e.g. sociability, assertiveness and leadership. This would require more validated support programmes with a focus on the importance of different social abilities and on imparting knowledge about specific strategies and interventions for promoting social skills in young children.

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Tatiana Diebold. >Thurgau University of Teacher Education, Unterer Schulweg 3, CH-8280 Kreuzlingen, Switzerland. E-mail: tatiana.diebold@femuni.ch

Current themes of research:

Quality of childcare, young children socio-emotional development, mixed-age childcare, play tutoring, children's social pretend play.

Most relevant publications in the field of Psychology of Education:

- Diebold, T., & Perren, S. (2019). The impact of childcare-group situational age composition on caregiver-child interactions. *European Journal of Developmental Psychology, 1*–18.
- Perren, S., Herrmann, S., Iljuschin, I., Frei, D., Kömer, C., & Sticca, F. (2017). Child-centred educational practice in different early education settings: associations with professionals' attitudes, self-efficacy, and professional background. *Early Childhood Research Quarterly, 38*, 137–148.
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