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Exploring teacher-child interactions and engagement as learning opportunities

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General Introduction

June and Kevin both just entered kindergarten, each of them with a different multilingual background. June is a 4-year-old girl. She was born in South-Korea and attended a daycare where both Korean and English were spoken. One-and-a-half year ago she moved with her parents and three sisters to the Netherlands. Because her parents were born in Brazil, they speak a combination of Portuguese, English and Dutch at home, with Dutch being the least prominent. Kevin is five years old and from a Turkish family. He was born in the Netherlands and went to a Dutch-speaking preschool when he was two years old. At home, his parents and Kevin use a combination of Turkish and Dutch. When they read a book together they will use Dutch, but when they watch television or tell stories they use both Dutch and Turkish. When Kevin plays a game on the computer or smartphone he sometimes uses English. June and Kevin are no exception in the Dutch educational context, since many children in the Netherlands grow up multilingual. As a result, kindergarten teachers are continuously challenged to consider these diverse multilingual backgrounds in their teaching.

Multilingual children are those children that habitually interact at home in a different language than the majority language. These children simultaneously develop two or more languages, and often also grow up in diverse social and cultural settings (García, 2011). There are large individual differences between multilingual children, regarding, amongst others, their exposure to and proficiency in the majority language, but also their home language(s) (Prevoo, Malda, Mesman, & van Ijzendoorn, 2016; Struys, Mohades, Bosch, & van den Noort, 2015), their socioeconomic status (SES), and their home literacy environment (Cummins, 1979). Multilingualism – in combination with aforementioned factors – could (partly) explain how multilingual children develop in academic, social and cognitive areas (Cummins, 1979; van den Noort et al., 2019). Supporting multilingual children in their development might therefore ask teachers for a different approach than when supporting monolingual children.

It is widely acknowledged that early childhood education plays an important role in supporting children in their development towards school readiness and academic performance. High quality early childhood education is related to better outcomes in academic, social, and cognitive skills (Mashburn et al., 2008; Slot, Broekhuizen, Leseman, & Veen, 2015). Previous research on the learning opportunities – i.e., all the classroom experiences children have – of multilingual children in early childhood education has shown that, like monolingual children, multilingual children benefit from emotional and instructional supportive teachers with good classroom organization (Vitiello, Downer, & Williford, 2011). These positive effects of emotional and instructional support could reduce the gap in language development between multilingual and monolingual children (Leseman & Slot, 2014). Also, instruction in the home language can be beneficial for the acquisition of the majority language and later performance (Genesee, Paradis, & Crago, 2004).

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However, from those studies, it remains unclear to what extent teachers adapt learning opportunities for multilingual and monolingual children within the same classroom. Furthermore, the existing studies on learning opportunities of multilingual children have primarily been conducted in early childhood education in the United States of America (USA), typically with Spanish-English speaking multilingual children. Moreover, the classroom context in kindergarten (4 to 6 years old) in the Netherlands is different from the classrooms in the USA: whereas kindergarten in the USA is much more situated around school-like learning, the kindergarten curriculum in the Netherlands revolves around learning through child-initiated play and other child-managed activities, and preparing for academic learning through teacher-managed activities (de Haan, 2015). Therefore, the current dissertation aims to examine (a) the learning opportunities that multilingual and monolingual children in the Netherlands are exposed to and engaged in, and (b) how these relate to their cognitive and language development. In the remainder of this chapter we will discuss the main concepts – multilingualism and learning opportunities and their impact on cognitive and language development – and the structure of this dissertation.

MULTILINGUAL CHILDREN IN EARLY CHILDHOOD EDUCATION

Defining multilingualism

Multilingualism is a complex concept and definitions vary widely across studies and fields (García, 2011; Wei, 2000). Everyone is, to some extent, exposed to multiple languages, for example, via TV shows, foreign language education, and music and therefore has some passive or active language skills in multiple languages. Multilingualism does not only involve the use of multiple languages, but also often implies being raised in diverse social and cultural contexts that do not reflect the majority norms and traditions (García, 2011). In this dissertation, multilingualism refers to children that habitually interact in one or more different languages than the majority language of the country in which they reside. We deliberately chose to use the term multilingualism, instead of bilingualism. Whereas bilingualism only refers to children speaking two languages, multilingualism is a much broader term that includes everyone speaking more than one language. Naturally, multilingualism includes bilingualism, but also speaking more than two languages, such as trilingualism. Currently more than half of the world's population is multilingual (Grosjean, 1994), and with growing globalization and internationalization, the group of children that speaks more than two languages expands; this is also the case in the Netherlands (KNAW, 2018).

Multilingual (dis)advantages

Being multilingual can have benefits in a wide range of areas, including economic, societal, health, and cognitive outcomes. For example, multilingual people can use their

knowledge of different languages and cultures in their work with international partners (KNAW, 2018). They have also been found to show more empathy and open-mindedness (Dewaele & Wei, 2012), and to stay mentally fit until an older age (Mehisto & Marsh, 2011; Pot, Keijzer, & de Bot, 2018). Furthermore, multilingual people have been found to outperform monolinguals on executive functioning (Barac, Bialystok, Castro, & Sanchez, 2014). More specifically, since multilingual people are continuously practicing their executive functioning skills – i.e., their higher order thinking skills – by switching between languages and inhibiting the one language to speak the other, they might become more proficient in those skills (Barac et al., 2014).

However, often a deficit perspective is taken on multilingualism (Agirdag, 2014; de Araujo, Roberts, Willey, & Zahner, 2018; KNAW, 2018), that is, a perspective that focuses on what multilingual children *cannot* do rather than what they *can* do. Multilingual children have consistently been found to show lower vocabulary levels in the majority language (Bialystok & Feng, 2011; Leseman, 2000; Verhoeven, 2000), as well as in their home language (Bialystok & Feng, 2011). This could be (partly) explained by possible confounders, such as low(er) SES and the quality of the home literacy environment. Children from multilingual families often come from low SES backgrounds (Calvo & Bialystok, 2014), and might therefore have less resources to create a stimulating and rich home literacy environment (van Steensel, 2006). This deficit perspective maintains a narrow view on multilingualism and does not allow for nuances. For example, the vocabulary gap does not imply that multilingual children are incompetent communicators. The lower vocabulary levels do not transfer to other, related, language skills, such as phonological awareness (Bialystok & Feng, 2011; Bialystok, Majumder, & Martin, 2003; Bruck & Genesee, 1995).

In education, including early childhood education, multilingual children often experience teacher bias, as teachers might have lower expectations of children from ethnic minorities (Agirdag, Avermaet, & Van Houtte, 2013; Rubie-Davies, Peterson, Sibley, & Rosenthal, 2015; van den Bergh, Denessen, Hornstra, Voeten, & Holland, 2010; Wang, Rubie-Davies, & Meissel, 2018). The group of children from ethnic minorities, in Europe, often shows significant overlap with the group of multilingual children. Teachers that have more negative attitudes towards ethnic minorities, tend to hold lower expectations of ethnic minority students in their classroom. As a result, teachers might behave differently towards those students. Consequently, in line with the teacher expectations, the ethnic minority students achieve lower than the majority students (Agirdag et al., 2013; van den Bergh et al., 2010).

Being multilingual in the Netherlands: at home and at school

Since the Netherlands does not register the home language(s) of its citizens, there are no exact numbers of multilingualism in the Netherlands. However, we know that the number of immigrants (i.e., the person him- or herself or one of their parents was born abroad) has steadily increased over the past decades. Nowadays 4 million people with an immigrant

background live in the Netherlands (about 22% of the whole population; Huijnk & Andriessen, 2016). Furthermore, in 2019, about 34% of the children in the Netherlands had at least one of their parents born abroad (CBS, 2019). Of course, not all those people are multilingual. For example, some will be Dutch-speaking people who were born abroad, others will be from Dutch-speaking regions, such as Flanders. Likewise, some people have lived in the Netherlands for multiple generations, and therefore will not be considered as immigrants according to official national definitions, although they might still identify (or be identified) with multiple cultures and speak different home languages than Dutch only. All in all, the available statistics provide an indication of the prevalence of multilingualism in the Netherlands, but it is far from exact. This prevalence varies widely across regions and cities, with more multilingual people living in the larger cities (Huijnk & Andriessen, 2016).

In the present dissertation we will focus on kindergarten. In the Dutch education system, kindergarten consists of two years and is officially part of primary education. Children in kindergarten are between 4 and 6 years old. Multilingual children in the Netherlands generally attend regular primary education. The primary language in schools in the Netherlands is Dutch (with the exception for the province of Friesland, where Frisian is also an official language of schooling). Moreover, because of political aims of being an international competitive trade nation, the Dutch government allows schools to add English, German, and French as official languages of schooling (Jenniskens et al., 2017). The more common home languages of multilingual children, such as Turkish, Arab, and Papiamento, are not recognized as official languages of schooling. Furthermore, many teachers do not allow home languages to be spoken in the classroom (Agirdag et al., 2013; Jaspers, 2015), with the argument that constantly switching to their home language limits children's acquisition of Dutch (Agirdag et al., 2013).

LEARNING OPPORTUNITIES: LEARNING THROUGH INTERACTION

In this dissertation, we will focus on how the learning opportunities of multilingual and monolingual children in kindergarten are shaped. Learning opportunities can be defined as all the classroom experiences that children have. We will examine learning opportunities through the lens of interaction, as this is the core mechanism by which these learning opportunities come to be and are enacted. According to the bioecological model of human development, children develop through interactions with their immediate environment – the so-called proximal processes. Proximal processes are all interactions with a child's close environment, including caregivers, siblings, peers, and teachers, that impact the development of a child. These proximal processes function as learning opportunities that have the potential to affect a child's cognitions, behaviors and feelings, but do not necessarily need to be capitalized in learning gains to be an opportunity. Their

direct impact is positive, negative or neutral, as the opportunity is determined by the interaction, not by its immediate effect. The most relevant learning opportunities in the classroom are shaped through the interaction of the child with peers and with the teacher (Hamre & Pianta, 2007). Teacher-child interaction is of special interest for educationalists because of the intentionality of the teacher, who has the curriculum content and the child's developmental trajectory in mind. As interactions are inherently reciprocal, children have an active role in creating their own learning opportunities, and learning opportunities should therefore be considered a joint construction between teacher and child, and not a unidirectional input of the teacher to the child. Learning opportunities can vary in quality, high quality opportunities having a good match between the content and the linguistic features of the interaction, a child's characteristics (Bronfenbrenner & Morris, 2007), as well as the embeddedness of the interaction in the child's activity and focus at that moment, making the interaction authentic and meaningful for the child. This implies that the extent to which teacher-child interactions are adjusted to the individual needs of the child and his or her perspective of the environment determines the extent to which learning opportunities can be capitalized in learning gains (Connor et al., 2009; Hamre & Pianta, 2007; Vandenbroucke, Spilt, Verschueren, Piccinin, & Baeyens, 2018). Studies on the quality of learning opportunities have primarily been conducted in monolingual populations separately, and comparison studies between monolingual and multilingual children are lacking.

Components of learning opportunities

Teacher-child interactions have been studied extensively, primarily focusing on characterizing teacher-child interactions rather than exploring which interactions are most beneficial (see Howe & Abedin, 2013 for a systematic review). Studies on this topic find that a rich language environment with a high amount of interaction is important for a child's literacy development (Hoff & Naigles, 2002). Moreover, interactions containing complex talk – beyond the here-and-now – stimulate children to use academic language, such as making predictions, explaining their thinking, and providing definitions (Schleppegrell, 2012; van Kleeck, Vander Woude, & Hammett, 2006). Increasing the complexity of the interaction can be achieved by increasing the dialogic nature of the interaction in which the children are stimulated to take an active role within the interactional sequence (Michaels & O'Connor, 2015). These dialogues create opportunities for reasoning and discussion and result in more extended discourse, which is beneficial for a child's literacy development (De Temple, 2001; O'Connor, Michaels, & Chapin, 2015; Snow, 2014; van der Veen, de Mey, van Kruistum, & van Oers, 2017; Wasik, Bond, & Hindman, 2006).

While it is clear what type of rich interactions teachers should engage in with their students, and some teachers are more capable in this respect than others, it is also important that teachers adapt their interactions with individual children based on the activity and a child's characteristics and needs (Bronfenbrenner & Morris, 2007). It

has been found that teachers establish differing interactions with individual children in their classroom and that children differentially benefit from those interactions. For example, children with low language proficiency benefit primarily from teacher-managed instruction, whereas children with high language proficiency benefit mainly from child-led interaction for their early literacy development (Morrison & McDonald Connor, 2002). Studies show that teachers use shorter sentences with less diverse vocabulary when interacting with multilingual children (Aarts, Demir-Vegter, Kurvers, & Henrichs, 2016; Sullivan, Hegde, Ballard, & Ticknor, 2015). Whereas the use of simpler language when children are still learning the language of interaction might be beneficial – as to engage children in the activity and establish a minimum level of understanding – this could also lead to impoverished learning opportunities of multilingual children (Piker & Rex, 2008).

To optimize learning it is important that participants in the teacher-child interaction show high engagement. Child engagement involves attention for the activity at hand in order to capitalize on the potential impact of the teacher-child interactions at both the classroom and individual level. Child engagement includes focusing on the activity, showing enthusiasm, motivation, and dedication, and the ability to self-regulate your behavior around the educational activity at hand (Fredricks, Blumenfeld, & Paris, 2004). In early childhood education, the wide range of activities demand different expressions of engaged behavior. For example, in child-managed, free-choice activities, children need to take the lead, make their own choices and show active involvement. In teacher-managed, whole-class activities, the teacher takes the lead and gives turns to children. In these teacher-managed situations, child engagement involves more following behavior. Previous studies indeed showed that children display different levels of engagement in diverse classroom settings (Booren, Downer, & Vitiello, 2012; Vitiello, Booren, Downer, & Williford, 2012), and that high engagement in teacher-managed activities is especially beneficial for a child's academic development (Chien et al., 2010).

Although a focus on a child's individual teacher-child interactions is important when considering their learning opportunities, it does not show the full picture, as a child will be passively involved in many more interactions. For example, when a teacher is talking to another child in the same small group, or when the teacher is giving a plenary instruction during circle time. Children learn from these overheard interactions, even though they are not actively participating in them (O'Connor, Michaels, Chapin, & Harbaugh, 2017). Therefore, we should also consider the quality of the general classroom interactions.

General classroom interaction entails an overview of all teacher-child interactions in a classroom, and its quality provides an indication of the teaching quality of the specific teacher. High quality classrooms are an important predictor of a child's school success, including a child's academic and cognitive development (Bratsch-Hines, Burchinal, Peisner-Feinberg, & Franco, 2019; Broekhuizen, van Aken, Dubas, Mulder, & Leseman, 2015; Carr, Mokrova, Vernon-Feagans, & Burchinal, 2019). Typically, three domains of classroom interaction can be distinguished: emotional support, classroom

organization, and instructional support (Hamre et al., 2013; La Paro, Pianta, & Stuhlman, 2004). Emotionally supportive teachers show warmth and enthusiasm. These teachers are sensitive to the academic and social needs of the children and, therefore, create a safe learning environment where children are able to take risks in their learning. In classrooms where the teacher has a good classroom organization, it is easier for children to stay engaged in activities and learn from them, because the teacher monitors child behavior and productivity and shows flexibility towards class schedules and child interest. In classrooms with instructionally supportive teachers, the teacher maximizes learning opportunities by stimulating higher order thinking, providing high quality feedback and having extended interactions with the children (La Paro et al., 2004). Studies across the world found that teachers in early childhood education classrooms generally show high emotional support, moderate levels of classroom organization, and low levels of instructional support (Cadima, Leal, & Burchinal, 2010; La Paro et al., 2009; Pakarinen et al., 2010).
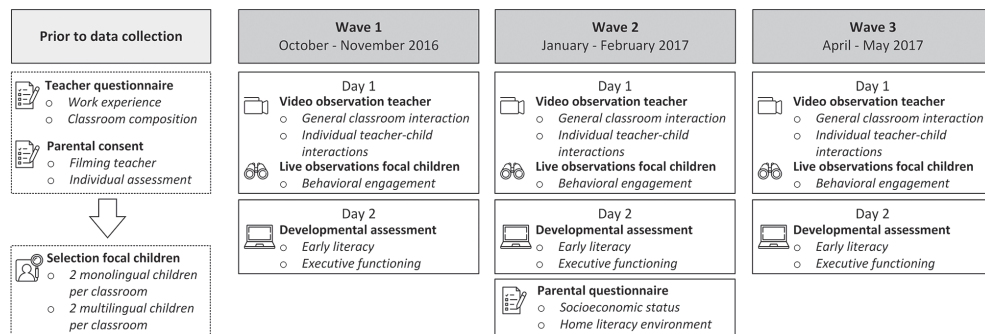
THIS DISSERTATION

The current dissertation focuses on how learning opportunities for multilingual and monolingual children are shaped through interaction with the teacher, and how this relates to their cognitive and language development. Whereas many studies consider the interactions that teachers have with the children in their classroom to be a proxy of the learning opportunities of the individual children in that classroom (Bratsch-Hines et al., 2019; Mashburn et al., 2008), other studies have shown that there is considerable variation in the learning opportunities that children are exposed to within the same classroom (DaSilva Iddings, 2005; Pelatti, Piasta, Justice, & O'Connell, 2014; Weyns, Colpin, Engels, Doumen, & Verschueren, 2019). Furthermore, it remains unclear how learning opportunities of multilingual children are shaped and how these learning opportunities compare to those of monolingual children. Therefore, this dissertation combines both approaches, acknowledging both the classroom-level and individual teacher-child interactions and makes a comparison between the learning opportunities of monolingual and multilingual kindergarteners. We set up a longitudinal study to document the development of young children during one school year, and to generate a comprehensive description of the learning opportunities in kindergarten classrooms. By following focal children in each classroom (both multilingual and monolingual) for three mornings during the entire longitudinal study – including repeated developmental assessments and videotaped authentic interactions between the teacher and the focal children in each classroom – , we generated a comprehensive description of learning opportunities at a micro-level. As we were interested in both the nature of learning opportunities for children with diverse language backgrounds in different classrooms and in the relations between learning opportunities and child outcomes for both multilingual

and monolingual children, we adopted a mixed-method design, in which we combined quantitative and qualitative methods (Mercer, 2010). Furthermore, we took a person-oriented – rather than variable-oriented – approach, since a person-oriented approach offers a more comprehensive analysis of the diverse domains that play a role in the learning opportunities of individual children.

Data and design

The data used in the present dissertation originates from one longitudinal study of three time points in one academic year; the time points were each roughly three months apart (October 2016, January 2017, April 2017). An overview of the complete data collection is presented in Figure 1.1. Teachers and children from twenty kindergarten classrooms participated. In each classroom two multilingual and two monolingual children – matched on gender and socioeconomic status – were selected as the focal children. The parents of all children in the classroom gave consent for filming. In addition, the parents of the focal children additionally gave consent for individual observations of engagement and developmental assessments. Both the teacher and parents of the focal children completed a questionnaire. The teacher questionnaire collected information about the teacher's background (e.g., education, experience) and classroom composition (e.g., socioeconomic status and language background of students). The parent questionnaire focused on the socioeconomic status and the home literacy environment (e.g., language use by different family members and in diverse literacy activities).

Figure 1.1 Overview of data collected in this dissertation.

At each time point, two researchers came into the classroom for one morning to collect the data. One researcher filmed the teacher for the entire morning – excluding outdoor play – and one researcher conducted live observations of the focal children in the classroom in 5-minute intervals. The videos were used to assess the quality of the general classroom interaction and individual teacher-child interactions. During the live observations, the engagement with the classroom activity of the focal children was scored. On the next day, one of the researchers returned to the classroom to assess the focal children's early

literacy and executive functioning skills. These assessments were conducted individually outside of the classroom. Whenever possible the same researchers returned to a classroom at a later time point to limit the number of unfamiliar faces for the children. At each time point, the same data was gathered.

Outline of the dissertation

The present dissertation consists of four related studies that are all centered around the learning opportunities of multilingual young children, but differ in their focus on the diverse components of learning opportunities. An overview of all chapters is presented in Figure 1.2.
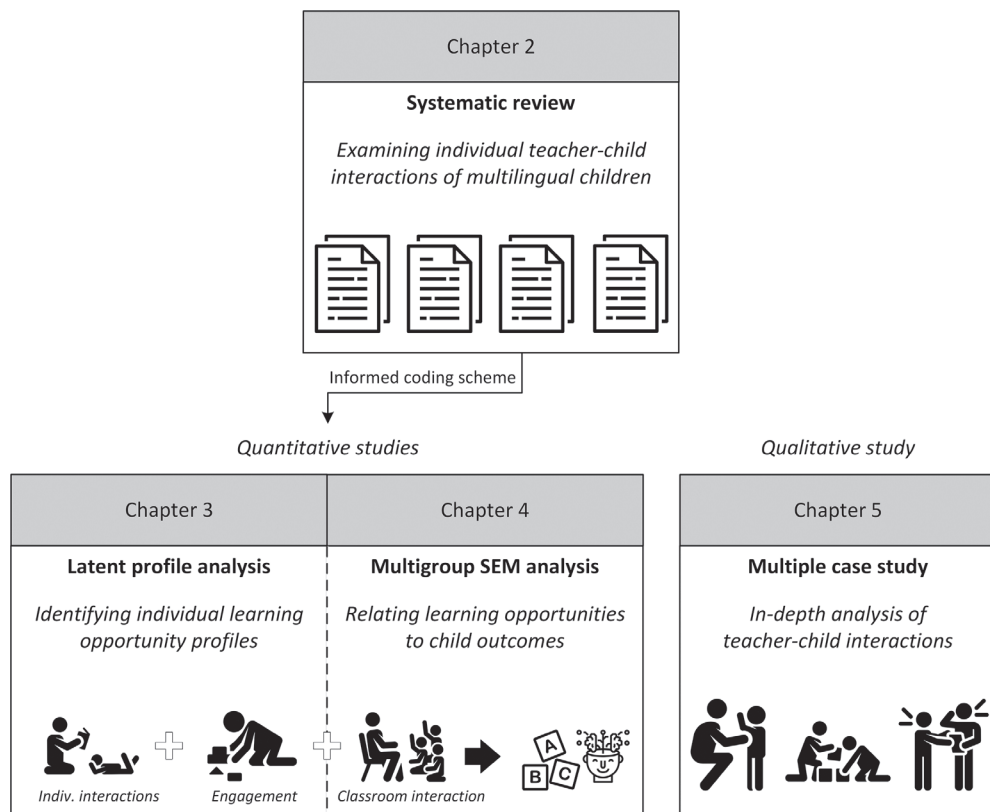
Figure 1.2 Overview of the studies in this dissertation.

Chapter 2 corresponds to a systematic review aimed at gaining a better understanding of (a) the nature of teacher-child interactions that multilingual children are exposed to, and (b) how these differ from teacher-child interactions of monolingual children, as this comparison is not often made. The outcomes were used to inform the focus and coding of the teacher-child interactions in the subsequent chapters. *Chapter 3* focuses on the

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individual learning opportunity components – individual teacher-child interactions and child engagement. In this chapter we examine how multilingualism relates to child engagement and individual teacher-child interactions. *Chapter 4* extends on Chapter 3 by examining the unique contribution of the three learning opportunity components – general classroom interaction, individual teacher-child interaction, and child engagement – on early literacy and executive functioning development of multilingual and monolingual children. Next, *Chapter 5* examines the teacher-child interactions in three classrooms with specific attention to teacher support. More specifically, we investigate how teachers supported multilingual and monolingual children after a child response they deemed unsatisfying. By conducting analyses in an authentic situation, we could explore in more detail the support sequences that took place during a morning in a kindergarten classroom, and whether these were different for multilingual children than for monolingual children. Finally, *Chapter 6* summarizes the findings of the four studies, and discusses their limitations and implications for future research and practice. Since Chapters 3, 4, and 5 are based on the same data from one longitudinal study, theoretical and methodological overlap between chapters is inevitable.

2

A systematic review on teacher-child interactions with multilingual young children

Teacher-child interactions are the most important factor that determines the quality of early childhood education. A systematic review was conducted to gain a better understanding of the nature of teacher-child interactions that multilingual children are exposed to, and of how they differ from teacher-child interactions of monolingual children. Thirty-one studies were included. The included studies (a) mainly focused on multilingual children with low language proficiency in the majority language and (b) hardly compared between monolingual and multilingual children. The review shows that teacher-child interactions of multilingual children are comparable to the interactions of monolingual children, although teachers do adopt different strategies to facilitate the development of multilingual children, such as the use of the home language and nonverbal communication to support understanding. Worryingly, several studies indicate that multilingual children are exposed to unequal learning opportunities compared to their monolingual peers.

Keywords: early childhood education; multilingualism; teacher-child interaction

INTRODUCTION

Contemporary changes in Western societies, like globalization and immigration, contributed to an increase in numbers of multilingual children in early childhood classrooms. We define multilingual children as those who predominantly speak at home a language that is different from the majority language of instruction, and who often start to learn the majority language systematically when they enter early childhood education. Multilingual children often enter and leave primary school with lower language levels in the majority language than their monolingual peers (Reardon & Galindo, 2009). Furthermore, multilingualism is often paired with ethnic or cultural diversity and with low socioeconomic status (Veenstra & Kuyper, 2004). Since multilingual children potentially bring different sources of diversity to the classroom, it is plausible that teachers establish different interactional practices with multilingual children – as compared to their practices with monolingual children. Because learning is a socio-cultural process and children develop through interaction with the environment (Bronfenbrenner & Morris, 2007), it is important to define learning opportunities in light of the interaction with their teacher. Earlier research has shown that high quality teacher-child interactions are positively related to a broad range of academic and social-emotional outcomes (Cadima et al., 2010; Curby, Rimm-Kaufman, & Ponitz, 2009; Luckner & Pianta, 2011). The present study therefore aims to gain a better understanding of the characteristics of teacher-child interactions that multilingual children are exposed to.

Teacher-child interactions

According to the bioecological model of human development (Bronfenbrenner & Morris, 2007), development occurs as a function of the continuous interaction between the child's characteristics and the close context – the so-called proximal processes of development. These proximal processes with the primary caregivers and teachers affect, in a positive or negative way, the development of a child. A child has a broad range of characteristics that both influence and are influenced by the interaction with the close environment (Bronfenbrenner & Morris, 2007). When we consider this model in an educational setting, the main proximal process is the interaction between teacher and child. The extent to which a teacher is able to adjust the learning opportunities to an individual child and his or her specific characteristics, is a crucial factor in promoting the child's development of academic, cognitive, as well as social skills (Connor et al., 2009; Hamre & Pianta, 2007; Vandenbroucke et al., 2018).

The quality of teacher-child interactions has been profusely studied from diverse research traditions. One of such traditions has focused mostly on classroom talk as the main tool for creating learning opportunities. This research shows that teacher-child interactions during more "traditional" educational activities often follow the initiation-response-feedback pattern (IRF, also known as IRE, initiation-response-evaluation;

Sinclair & Coulthard, 1975), in which the teacher initiates the interactional sequence, followed by a child response and closed by the teacher's follow-up (Howe & Abedin, 2013). There can be a large variation in how the IRF-sequence is established, such as the role of the student in the interaction, the complexity and goal of the teacher's follow-up and the place of the IRF-sequence in the classroom discourse (Howe & Abedin, 2013). More cognitively challenging conversations, making use of abstract, decontextualized talk, are considered to promote child language, cognitive and – depending on the topic – social-emotional development (De Temple & Snow, 2003; González et al., 2014; Mascareño, Snow, Deunk, & Bosker, 2016). Besides the IRF-sequence, teachers might thus encourage a more dialogic interaction in the classroom that moves beyond this hierarchical structure, offers a more active role to the children, and creates more space for reasoning and discussion (Michaels & O'Connor, 2015). The use of dialogic interactions in the classroom seems to be more beneficial for a child's language development compared to non-dialogical classroom interactions, because it creates more opportunities for extended discourse (O'Connor et al., 2015; Snow, 2014; van der Veen et al., 2017).

Another research tradition focuses on the classroom interaction and activity at a more general classroom level. High quality teacher-child interactions are typically characterized by emotionally supportive expressions that stimulate concept and language development in well-organized classrooms (Hamre & Pianta, 2007; La Paro et al., 2009; Mashburn et al., 2008). These findings have been combined into the *Teaching through Interactions* framework, in which three domains of effective teacher-child interactions are distinguished (Hamre et al., 2013). First, emotional support includes the enthusiasm and emotional connection between the teacher and the children in the classroom, and the teacher's sensitivity to the academic and social needs of the children. In these classrooms children are able to take risks in their learning because of the safe environment that is created. Second, classroom organization entails the way a teacher monitors behavior and the productivity of a classroom. Teachers with high quality classroom organization promote positive behavior and prevent negative behavior. In addition, they spend minimal amount of time on basic management activities and transitions, and they actively engage children in instructional activities through interesting activities and materials. As a result, in well-organized classrooms children are aware of classroom behavioral expectations, they occupy their time efficiently and are engaged in the activity, and are therefore more likely to learn from it. Third, instructional support focuses on how a teacher stimulates higher-order thinking and problem solving, and provides high quality feedback and thus maximizes learning opportunities. A teacher provides high quality instructional support when he or she creates opportunities to children to understand, apply, evaluate and build knowledge. Other indicators of high quality instructional support are feedback on a child's learning process that goes beyond the correctness of a response, and the provision of interactions that stimulate the development of language skills (Hamre & Pianta, 2007; Hamre et al., 2013).

The *Teaching through Interactions* framework finds empirical support in a wide range of studies. Children in well-organized classrooms where the teacher is warm and supportive and provides behavioral and instructional support, show better language development (Cameron, McDonald Connor, Morrison, & Jewkes, 2008; Curby, Rimm-Kaufman, et al., 2009; Pianta, Belsky, Vandergrift, Houts, & Morrison, 2008), math development (Cadima et al., 2010; Curby, LoCasale-Crouch, et al., 2009) and behavioral development (Luckner & Pianta, 2011; Mashburn et al., 2008).

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Multilingualism

Multilingualism is a broad term that has been used in multiple situations that involve two or more languages, including children that speak two languages from birth, but also children learning a foreign language at school. For the purpose of this review we decided to focus only on children that are speaking a minority language at home and are learning the majority language in early childhood education. The developmental patterns of multilingual children appear to differ from that of monolingual children. They often have a smaller vocabulary in both their home language, as well as the majority language (Bialystok & Feng, 2011; Bialystok, Luk, Peets, & Yang, 2010) and lower math scores throughout the primary school years (Reardon & Galindo, 2009). There are suggestions that multilingualism also has positive effects, apart from the ability to speak multiple languages: multilingual children appear to have similar or even better phonological awareness (Bialystok et al., 2003; Bruck & Genesee, 1995) and better executive functioning skills (Adesope, Lavin, Thompson, & Ungerleider, 2010; Barac et al., 2014), as compared to monolingual children. Evidence for these positive effects is still under debate (Paap, Johnson, & Sawi, 2015).

Even though it has been often argued that multilingual children have lower language skills, there are large individual differences among multilingual children. When studying the academic development of multilingual children it is important to take into account a child's age of acquisition of the majority language (Luk, De Sa, & Bialystok, 2011; Struys et al., 2015), exposure to all languages (Barac & Bialystok, 2012), a child's language proficiency in all languages (Prevoo et al., 2016), immigrant status (Johnson De Feyter & Winsler, 2009) and the family's socioeconomic status (Calvo & Bialystok, 2014). Struys and colleagues (2015), for example, evidenced that children who were multilingual from birth outperformed children who became multilingual later in life on cognitive control, even though their proficiency in all their languages was equal. Barac and Bialystok (2012) showed that language of schooling impacts language development. Multilingual children had equal language skills as monolingual children when their language of schooling was the same as the language of testing. They did not match the language skills of monolingual children when their schooling was in another language. Furthermore, in a meta-analysis by Prevoo and colleagues (2016) it was found that the use of home language in education is important for the school success of multilingual children. Finally, children from families with low socioeconomic status often

have lower language skills (Calvo & Bialystok, 2014). Because many multilingual children are from families with a low socioeconomic migration background, it is important to take their socioeconomic status into account when considering school outcomes. Language delays could be explained by both their socioeconomic status and their language background. In sum, researchers should be careful in considering multilingual children as one homogenous group and should be clear about the background of their multilingual participants.

Multilingual children's teacher-child interactions

Although children can clearly benefit from high quality teacher-child interactions, most of this research on teacher-child interactions has been conducted on monolingual samples; hence, it is unclear what "high quality" entails for multilingual samples. As the effectiveness of interaction depends on the match between a child's characteristics and the environment (Bronfenbrenner & Morris, 2007), multilingual children might benefit from different teacher-child interactions. It may also be the case that they are involved in different types of interaction, regardless of whether this is more beneficial for them.

Recent research suggests that the interactions that teachers engage in with multilingual children might differ from the interactions established with monolingual children. The meta-analysis of Tenenbaum and Ruck (2007) showed that teachers addressed children from ethnic majorities with relatively more positive and neutral speech than children from ethnic minorities; the authors found no differences in negative speech (it should be noted that although ethnic minority students are often multilingual, they are not *necessarily* multilingual). The review of Howe and Abedin (2013) on classroom dialogue in primary and secondary classrooms indicated that ethnic minority students in general seem to participate less in classroom discourse and feel less comfortable when participating. Leseman and Slot (2014) found that high quality teacher-child interactions are especially effective for multilingual children, as they reduce the gap in language development between monolingual and multilingual children. Likewise, Morrison and Connor (2002) and Curby, Rimm-Kaufmann and colleagues (2009) found that children with lower language proficiency (i.e., decoding and vocabulary) - as is often the case for multilingual children - benefited mainly from teacher-directed, explicit instruction for their language development, whereas children with better language skills benefited more from child-led interaction. In addition, teachers might engage in interactions of lower complexity with multilingual children from families with lower socio-economic backgrounds, due to their actual or perceived lower language levels (Keels & Raver, 2009; Ready & Wright, 2011).

The potential difference in teacher-child interactions of monolingual and multilingual children could be explained by the expectations of the teacher. Teachers tend to have more positive expectations of children from ethnic majorities than of children from ethnic minorities (Tenenbaum & Ruck, 2007). Other researchers reason that all children, regardless of individual differences, are in need for and benefit equally from rich and engaging teacher-child interactions. Ewing and Taylor (2009) showed that the relation between teacher-child

interactions and behavioral outcomes was the same for children from different language backgrounds. The same was shown for academic outcomes in a study of Downer and colleagues (2012), in which they compared Hispanic and non-Hispanic, white young children. It should be noted that the children from the studies of Tenenbaum and Ruck (2007) and Downer and colleagues (2012) were from an ethnic minority, but not necessarily multilingual. Furthermore, these potential differences in teacher-child interactions could be explained by cultural differences between home and school. Many multilingual children are not only learning multiple languages but are also growing up in two or more different cultures. These cultures can have different norms and expectations on child socialization and development (Bossong & Keller, 2018; Greenfield, Quiroz, & Raeff, 2000), which makes it complicated for a child to know what is expected of him or her in the classroom.

Present study

Teacher-child interactions are key to effective early childhood education. As multilingual children enter early childhood education with a different linguistic background and show different developmental patterns in diverse academic skills, there is a need for more insight into the nature of the interactions between multilingual children and their teachers. Previous research on this topic is scattered, using different research methodologies, in diverse multilingual populations, and focused on different aspects of teacher-child interactions. The present study involves a systematic review that aims to integrate the results of previous research to gain a better understanding of the nature of the teacher-child interactions that multilingual children are exposed to and how they differ from the teacher-child interactions of monolingual children.

METHOD

Inclusion and exclusion criteria

We formulated four inclusion criteria to determine which studies would be eligible for the systematic review. The studies had to be (1) empirical and had to focus on the (2) teacher-child interactions of (3) young (up to 7 years) (4) multilingual children. We were interested in studies that presented direct assessment of teacher-child interactions and thus had to include empirical interaction data. The review focuses on studies in early childhood education, but includes a rather wide age range. As school systems differ around the world in their age range in early childhood education and our aim to be as inclusive as possible, children in the studies could be up to 7 years. Furthermore, since the review focuses on the interactions that are specific for multilingual children, included studies should at least include interactions with multilingual children, or should distinguish between interactions aimed at monolingual and multilingual children. Furthermore, we only focused on children that speak a different home language and learn the majority language

at school. Our search included the entire scope of classroom activities, including both academic and play activities. Only studies published in the period between 1990 and 2016 were included. This scope was chosen as we aimed for a complete overview of previous research, but the results still needed to be applicable for present-day education.

Articles were excluded when (a) teacher-child interactions of multilingual children were not differentiated from those of monolingual children, (b) it focused on foreign language education, (c) it focused on sign language for deaf children as a form of multilingualism, (d) teacher-child interactions were not used as direct data in the study (e.g., interviews about interactions), (e) it was a position paper with no data, rather than an empirical paper, and (f) it was published in a different language than English or Dutch.

Search procedure

Search terms were defined to cover our three topics of interest: multilingualism, interaction, and school setting (Table 2.1). Databases that included research on linguistics, psychology or educational sciences were searched (Table 2.2) with all possible combinations of search terms from the three topics. This search resulted in 2,302 articles. The first 100 articles were split up in four partly-overlapping sets of 50 (1-50, 25-75, 50-100, 1-25/75-100) and each set was judged on the inclusion criteria by one of the first four authors. This way the inclusion criteria could be tested, evaluated, and ultimately discussed by the research group, thereby developing the final inclusion criteria as previously reported.

Table 2.1 Search Terms by Category

Category	Search terms
Multilingualism	bilingual*, multilingual*, heritage language*, English language learner, English as an additional language, French as a second language, English as a second language, immersion classroom*, non-native*, L2-learner*, second language learner*, dual language learner*, multicultural class*, Hispanic children, home language*
Interaction	classroom interaction, teacher-child interaction, verbal interaction, teacher-child relation*, talk*, conversation*, academic language*, discourse*
School setting	kindergarten, primary school, elementary school, preschool, early childhood education

Table 2.2 Included Databases

Search engine	Databases
Web of Science	Behavioral Sciences, Education & Educational Research, Language & Linguistics, Linguistics, Psychology, Psychology developmental/educational/multidisciplinary/social, Sociology
EBSCOhost	Academic Search Premier, Communication & Mass Media Complete, ERIC, Primary Search, PsycARTICLES, Psychology and Behavioural Science Collection, PsycINFO, SocINDEX
Linguistics and Language Behavior Abstracts	

Subsequently, the fourth author screened the title and abstract of each article. This resulted in the exclusion of 2,137 articles. Of the remaining 225 articles, 57 articles were identified as relevant, whereas for 108 articles it was still unclear whether they should be included. The first author therefore also judged the relevance of these 108 abstracts and titles. She used the same criteria as the fourth author, but also included all articles that seemed to address the research topic, but needed further examination to determine whether they adhered to the inclusion criteria. This resulted in the inclusion of an additional 55 articles. In total 112 articles were identified as relevant. The full text of these articles were retrieved for further examination. Full text of six articles could not be retrieved (also not after contacting the authors) and were therefore excluded. The full text of the remaining 106 articles was scanned and inclusion criteria were checked in a standard order: age, empirical data, multilingual, teacher-child interactions. As soon as one of the criteria was not met, the article was excluded from the analyses. This resulted in the exclusion of in total 71 articles, due to a different age group (N = 31; e.g., Anderson & Loughlin, 2014), lack of empirical data (N = 2; e.g., Watts-Taffe & Truscott, 2000), not focusing on multilingual children (N = 23; e.g., Dorner & Layton, 2014), or not focusing on teacher-child interactions (N = 9; e.g. Aarts, Demir, & Vallen, 2011). Six articles were excluded for other reasons. Five of these were not published in Dutch or English (e.g., Gajo, 1997). The sixth article appeared to be published twice in two different journals but with the same content, and therefore it was decided to only include the article that was published first (i.e., Jule, 2002). During the coding of the articles an additional four articles were excluded, as they did not focus on teacher-child interactions of multilingual children (e.g., Aukrust, 2008). The final sample therefore consisted of 31 studies. A complete overview of the search and inclusion process is shown in Figure 2.1.

Informational value assessment

Detailed reading of the articles that met the inclusion criteria revealed that some articles were not completely transparent about their data collection and analysis methods. For example, some articles referred to teacher-child interactions with multilingual children, but did not mention how the classroom observations took place or how the segments of interactions were selected for analysis. Furthermore, some articles, although adhering to all inclusion criteria, only marginally related to the focus of this review, i.e., the nature of teacher-child interactions of multilingual children. This includes articles based on teacher interviews that mention classroom interaction generally, and articles that study a monolingual sample, but also briefly address the interactions with multilingual children. It was therefore decided to do an assessment of the transparency and focus (i.e., relation to the aims of this review) of all included articles. First, to assess the transparency of the included studies the CASP Qualitative Checklist (Critical Appraisal Skills Program, 2018) was adapted so that it could be used for both quantitative and qualitative studies (see Appendix A). This resulted in five yes/no-questions on the clarity of the aims, methods

(i.e., participants, data collection, and analysis) and results of the study. When three or more questions were answered with *yes*, a study was judged transparent. Second, the focus was judged by comparing the aims of the study to the aims of the current review. Studies that had more overlap with the aims of the review (i.e., focusing primarily on teacher-child interactions of multilingual children) were judged as having a major focus on the aims of the review. Studies that had less in common were judged as having a minor focus on the aims of the review. This includes studies that only addressed the teacher-child interactions of multilingual children in one paragraph, or studies that mainly focused on other data sources than interactions.
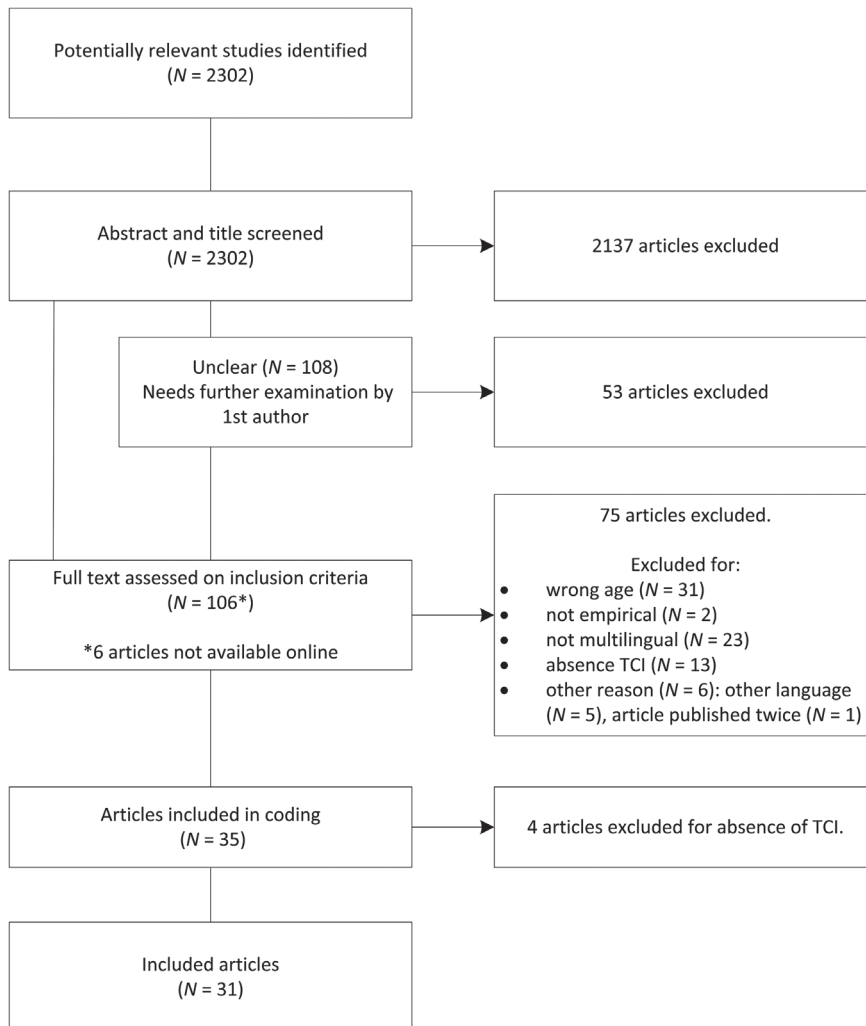
Figure 2.1 Flow diagram of study selection process.

As a result of the informational value assessment, all included articles were divided over four categories (Table 2.3). Articles in category A are both transparent and have a major focus on the aims of the review. Nineteen of the 31 studies are in category A. In category B are studies that do have a major focus on the aims of the review, but are less transparent. Two studies belong to this category. Eight studies are in category C, which are studies that are transparent, but only have a minor focus on the aims of the review. Finally, two studies are in category D, these studies are less transparent and have a minor focus on the aims of the review.

Analysis

Coding

All included articles were coded by the first author on five aspects: characteristics of the article (i.e., authors, title, journal, year of publication, aim and/or research question and design), participant characteristics (i.e., number of participants, number of multilingual participants, age, language background, operationalization of multilingualism, and comparison between monolingual and multilingual children), study context (i.e., country, early childhood context, classroom type and activity studied), collected data (i.e., type of data, instruments, studied dimensions of teacher-child interactions), and results. When it was unclear how to code certain aspects of an article, the second and third author were consulted to discuss the ambiguity, leading to a joint decision.

Key sentences

With this review we aim to synthesize the results of both qualitative, as well as quantitative studies. Therefore, key sentences were extracted (i.e., direct quotes) or formulated for each article to reflect the main outcomes of the study. When possible, these were direct quotes from the article. Key sentences were generally extracted from the Results or Discussion sections of the articles, and were mainly summarizing or concluding sentences. Next to reflecting the main outcomes of the study, they had to be related to the aims of the review. Examples of key sentences are: *"EL2 children with the lowest expressive language skills demonstrated fewer uptakes of their educator's recasts in comparison to EL2 children with higher expressive skills"* (Tsybina, Girolametto, Weitzman, & Greenberg, 2006, p. 177) and *"The use of a consistent routine in the classroom allowed the Latino children to become participants in the community despite not having a full understanding of the language"* (Gillanders, 2007, p. 50). Each article would typically have multiple key sentences. In total, 91 key sentences have been included in the analysis. The key sentences were determined by the first author. The second and third author conducted an audit on this process, in which it was carefully described and discussed how key sentences were determined.

Thematic analysis on domains of teacher-child interactions

This analysis was conducted based on the three domains of the *Teaching through interactions* framework (i.e., emotional support, classroom management and instructional support). All key sentences were categorized as focusing on one or more of the domains. This categorization was based on the detailed description of the three domains of the Classroom Assessment Scoring System manual (Pianta, La Paro, & Hamre, 2008). The results of the included studies were synthesized separately for each of the three domains of teacher-child interactions – emotional support, classroom organization, and instructional support – first for the 19 category A articles, followed by the findings from the other categories.

Thematic analysis on comparison of monolingual and multilingual children

We were especially interested in studies that made a comparison between monolingual and multilingual children as this shows how the interactions between monolingual and multilingual children might actually differ. The same key sentences were used for this specific comparison analysis. Studies that involved both monolingual and multilingual children and made an explicit comparison between the teacher-child interactions of monolingual and multilingual children were included in this analysis. Only five studies were identified that made such a comparison.

RESULTS

Study characteristics

In total 31 studies were included in this review. Table 2.3 shows the study characteristics. The majority of the articles used a qualitative research design (N = 21). Most studies were conducted in English-speaking countries (i.e., USA, UK, New Zealand and Australia; N = 28) of which ten studies focused on multilingual children with Spanish as their home language in the USA. Other studies focused on a wide range of languages. Participants in 11 studies spoke one particular home language (e.g., Turkish, Chinese, Djambarrpuyngu, Hebrew, Samoan) or a group of languages (e.g., Indian languages, such as Punjabi, Urdu, Gujarati), whereas the participants of the other studies spoke a mixture of languages in their home environment. Worryingly, information on the multilingualism of the participants in the included studied was limited. Seven studies only reported that the children were multilingual and only five of these seven studies reported the home language of these children. Of the remaining 24 studies, 21 included the home language(s) of the children, whereas three did not. The information on the language proficiency of the participants in all their languages is also limited in most articles. Only 12 articles reported something about the language level of the participants, with (N = 4) or without (N = 8) presenting proficiency scores. Ten of these studies reported that the children had low language levels

Table 2.3 Informational value, Study Characteristics and Domains in the Included Studies

	Informational value			Study characteristics						Domains		
	Category	Transparency	Focus	Design	Data collection measures[a]	Language of instruction	Country	Age/grade[a]	Comparison	ES	CM	IS
Aarts et al. (2016)	A	+	+	Quan (C)	V,Q	Dutch	The Netherlands	4.1-4.4/kindergarten	Yes			✓
Björk-Willen & Cromdal (2009)	C	+	-	Qual	V	English	Australia	4/preschool	No		✓	
DaSilva Iddings (2005)	A	+	+	Qual	I,V	English	USA	7/primary	Yes	✓		✓
De Oliveira et al. (2016)	A	+	+	Qual	A,I,F	English	USA	Kindergarten	No	✓	✓	✓
Dolley & Wheldall (1991)	A	+	+	Quan (E)	V	English	UK	3.3-3.9/preschool	No			✓
Gámez (2015)	A	+	+	Quan (C)	LO	English	USA	6.1	No			✓
Gardner (2008)	A	+	+	Qual	F,I,V	English	UK	5-6/kindergarten	No	✓		✓
Gardner & Rea-Dickins (2001)	D	-	-	Qual	I,LO,V	English	UK	5-7/kindergarten	No			✓
Gillanders (2007)	A	+	+	Qual	A,I,F	English	USA	4/kindergarten	No	✓	✓	
Girolametto et al. (2005)	C	+	-	Quan (C)	V,Q	English	Canada	32-54 months/preschool	No	✓		
Gregory (1993)	C	+	-	Qual	A,I	English	USA	kindergarten	Yes			✓
Henderson & Palmer (2015)	A	+	+	Qual	F,I,V	English	USA	5/kindergarten	No		✓	✓
Jule (2002)	C	+	-	Quan (C)	V	English	Canada	Primary	No			✓
Konishi (2007)	B	-	+	Qual	F,I	English	USA	3/preschool	No			✓
Lara-Alecio et al. (2009)	A	+	+	Mixed (E)	LO	English	USA	Kindergarten	No	✓	✓	✓
Leung (1993)	A	+	+	Quan (C)	A	English	UK	Kindergarten	No			✓
Lowell & Devlin (1998)	D	-	-	Qual		English	Australia	Primary	No			✓
Martin-Jones & Saxena (2003)	A	+	+	Qual	A,F,V	English	UK	Primary	No	✓		✓
Martin-Jones & Saxena (1996)	C	+	-	Qual	V	English	UK	4-5/kindergarten	No		✓	✓
Mohr (2007)	B	-	+	Qual		English	USA	Primary	No			✓
Park (2014)	A	+	+	Qual	F,V	English	USA	Preschool	No	✓		✓
Piker & Rex (2008)	A	+	+	Qual	LO,V	English	USA	3-5/preschool	No	✓	✓	✓
Ping (2014)	A	+	+	Qual	V	German	Germany	3-6/preschool	No			✓
Rosborough (2014)	A	+	+	Qual	F,I,V	English	USA	7-8/primary	No			✓
Sayer (2013)	A	+	+	Qual	F,I	English	USA	Primary	No	✓		✓
Sherris (2011)	A	+	+	Qual	V	English	USA	5.7/kindergarten	No			✓
Soltero-Gonzalez (2009)	C	+	-	Qual	A,F,I,V	English	USA	4-5/preschool	No		✓	✓
Sullivan et al. (2015)	C	+	-	Quan (C)	LO,Q	English	USA	Kindergarten	Yes	✓		
Tsybina et al. (2006)	A	+	+	Quan (C)	Q,V	English	Canada	20-49 months/preschool	Yes			✓
Verhoeven (1991)	C	+	-	Quan (C)	Q	Dutch	The Netherlands	6.1-6.9/kindergarten	No		✓	✓
Vine (2006)	A	+	+	Qual	A,I,LO,V	English	New Zealand	5/primary	No		✓	✓

Note. Category A: transparent & focused on research question; B: less transparent & focused on research question; C: transparent, less focused on research question; D: less transparent & less focused on research question. + indicates more focused/transparent studies, - indicates less focused/transparent papers. Quan = quantitative, Qual = qualitative. C = correlational, E = experimental. A = audio recording, F = field notes, I = interview, LO = live observation, Q = questionnaire, V = video observation. Country indicates the country where the study took place. Age/grade specifies the age and grade level of the participants. Comparison shows whether the article compares the interactions of monolingual and multilingual children. ES = Emotional Support, CO = Classroom Organization, IS = Instructional Support ✓ indicates that the domain is discussed in the study. ªNot all studies provided information on the data collection, age and/or grade level of the participants. All available information is presented in the table.

in the majority language. The participants of the remaining two studies had a mix of language proficiency levels. Most other articles also implied to focus mainly on children with low language proficiency in the majority language. Eight articles focused on children that had primarily been exposed to the home language and were starting to learn the majority language. Furthermore, four studies focused on recently arrived immigrants and in two studies the children were labelled by the school as language minority students. The remaining five articles were unclear about the language background and proficiency of the participants.

Participants in the studies were between 1.5 and 7 years old. In most studies ($N = 18$) children were between 4 and 6 years old. The grade levels ranged from preschool to the first years of primary school. The studies were conducted in either special multilingual classrooms ($N = 12$) or regular classrooms with both monolingual and multilingual children ($N = 19$).

Domains of teacher-child interactions

Each domain of the *Teaching through interactions* framework – emotional support, classroom organization and instructional support – is known to be an important aspect of classroom interaction (Hamre et al., 2013) and results will therefore be separately discussed for each of these domains. Furthermore, since the described classroom practices could have implications for multiple domains, depending on the focus of a specific study, some classroom practices will be covered in more than one domain. Each subsection first discusses the results of the 19 category A articles (i.e., transparent and major focus), followed by the results of the other categories. Whenever we talk about children, we mean multilingual children, unless otherwise specified. Table 2.4 shows an overview of all found classroom practices per domain and informational value category.

Emotional support

Nine category A studies described practices related to teachers' emotional support. We identified four classroom practices related to emotional support that appeared at least once in the included studies: creating a safe learning environment, facilitating peer interaction, adding a play element to activities, and the use of home language and culture (Table 2.4).

Five studies described strategies that teachers used to create a safe learning environment for their multilingual students (DaSilva Iddings, 2005; Gillanders, 2007; Lara-Alecio, Tong, Irby, & Mathes, 2009; Park, 2014; Piker & Rex, 2008). Nonverbal communication and consistent classroom routines are strategies used to establish safe communication with the children and give them the chance to fully participate in the classroom, even though they might still have limited knowledge of the majority language (Gillanders, 2007; Park, 2014). These strategies are also used for classroom organization and instructional support and will therefore be described in more detail in those sections.

Table 2.4 Summary of Findings for Each Domain per Informational Value Category

Domain	Classroom practices	Informational Value			
		A	B	C	D
Emotional support	Create safe learning environment e.g. use of nonverbal communication, consistent classroom routine, teacher-child relationship	5	0	1	0
	Facilitate peer interaction with same and different language peers	2	0	1	0
	Add a play element to activities	1	0	0	0
	Use home language and culture to facilitate emotional support e.g. translating, provide encouragement, use bilingual assistants	5	1	0	0
Classroom organization	Create different learning opportunities e.g. activities take longer, less participation in classroom activities	2	0	0	0
	Consistent classroom routine	3	0	1	0
	Use home language to manage the classroom e.g. get attention, focus on activity	1	0	2	0
Instructional support	Simplify language and interactions e.g. amount of interaction, simplified speech, short and low complex teacher turns	4	0	5	0
	Use complex semantics and syntax e.g. lexical diversity, syntactical complexity	3	0	0	1
	Use of nonverbal communication	3	1	1	0
	Use of home language for translating purposes e.g. emphasize concepts, repeat instruction	1	0	2	1
	Support extended discourse e.g. use of wh-prompts, clarification requests, recasts, encourage interaction	6	1	0	0
	Scaffold language use	1	0	0	0

Note. Classroom practices summarize the main findings for this domain. Articles could focus on multiple domains or classroom practices. Informational value indicates the number of articles in that category focusing on the specific classroom practice

Two studies (DaSilva Iddings, 2005; Piker & Rex, 2008) showed how teachers created a safe learning environment by facilitating peer interaction between multilingual children and their classmates with the same home language. Peer interaction with same language peers can act as a resource for understanding and participating in classroom activities.

Gardner (2008) aimed to raise child engagement by adding a play element to a literacy activity. This gave children more control over the activity as they were treated as knowledgeable actors in the interaction with the teacher. The children were also more motivated and showed more interest in language.

The use of the multilingual child's home language and culture plays a role in all three domains of teacher-child interactions and was covered in several articles belonging to categories A, B and C. Five category A articles described how teachers used the cultural and linguistic background of multilingual children to facilitate emotional support (de

Oliveira, Gilmetdinova, & Pelaez-Morales, 2016; Gillanders, 2007; Martin-Jones & Saxena, 2003; Piker & Rex, 2008; Sayer, 2013). There was a wide variety in the way teachers used children's backgrounds. Teachers used the children's home language for translating purposes (Piker & Rex, 2008), for creating a safe teacher-child relationship and providing encouragement (de Oliveira et al., 2016) or for creating a classroom environment in which the multilinguals could become full participants (Gillanders, 2007). Sayer (2013) described in a case study how a teacher in a bilingual education program not only used the home language of the children to encourage their language learning in all their languages, but also talked with the children about their ethnicity and their multilingual background to form a multi-ethnic identity. The inclusion of bilingual assistants in the classroom could also be a way to use the child's home language at school. The study of Martin-Jones and Saxena (2003) showed that bilingual assistants used culture-specific cues in their interaction with the children and in that way related the learning activities to the home context, making the activities more accessible for multilingual children.

One of the two category B articles focused on emotional support. This study also focused on integrating children's home language in the school setting. In this case study a teacher with the same language background used the child's home language and culture to create safety and comfort for a recently arrived immigrant child, while the child was still learning the majority language (Konishi, 2007).

Emotional support was covered in two category C articles. Although interaction with same language peers can be helpful to create a safe learning environment (see category A articles by DaSilva Iddings, 2005; Piker & Rex, 2008), Girolametto, Weitzman and Greenberg (2005) found that teachers hardly supported multilingual children when engaging in peer interaction. Another study found that teachers also seem to have better teacher-child relationships with monolingual children, compared to multilingual children (Sullivan et al., 2015). No articles in category D focused on emotional support.

Classroom organization

Six category A studies described findings related to classroom organization. In these articles three classroom practices were described: creating different learning opportunities, consistent classroom routine, and use of home language and culture (Table 2.4).

Two studies mention that because of the multilingual background of children, it might be hard for teachers to create the same opportunities in the classroom as for monolingual children. Gardner (2008) found that language activities took much longer in a linguistically diverse classroom, as multilingual children needed longer time to read, a translation might be necessary, and the teacher took more time for word meanings. This created a tension between the demand to cover the curriculum and the need to invest time in extended conversations with all students. Furthermore, DaSilva Iddings (2005) found that multilingual children often participated less in classroom activities compared to their monolingual classmates and had a hard time fully understanding instruction.

Three studies mention the importance of a consistent classroom routine. This makes it possible for multilingual children to understand what is going on in the classroom in spite of not fully understanding the language (Gillanders, 2007; Henderson & Palmer, 2015; Vine, 2006). Vine (2006) observed how a child with very low proficiency in the majority language learned curriculum content in a language and resource rich classroom. However, the child's focus in interactions with the teacher and peers was primarily on classroom routines and procedures. This might have been more important to that child at that point as understanding classroom practices gives access to participating in them (Vine, 2006).

De Oliveira and colleagues (2016) furthermore exemplifies a teacher who did not only use children's home language for emotional or instructional purposes, but also sporadically used children's home language to manage the classroom, such as getting their attention and focusing them on the activity. In this way, the teacher ensured that all children in the classroom understood the instruction and knew the classroom routines.

Three category C articles focused on classroom organization. Soltero-González (2009) supports the previous findings from category A of the importance of having consistent routines in the classroom. The teacher in this case study used predictable routines to make it easier for multilingual children to understand what was happening in the classroom. Björk-Willén and Cromdal (2009) studied the use of the child's home language at school and found that although children were free to choose which language to use, the classroom practice of the teacher determined what language children were speaking. Children would mirror the behavior modeled by the teacher, including the language choice, even if the modeled language was their less developed language. Finally, although the use of the child's home language might be beneficial for multilingual children, Martin-Jones and Saxena (1996) found that teachers turn out to have difficulties organizing this in the classroom, as the teachers in their study constrained the contributions that bilingual assistants could make to the learning activities. None of the category B and D articles focused on classroom organization.

Instructional support

Instructional support was covered in 16 category A articles. We identified six classroom practices that appeared at least once in the included studies: simplify language and interactions, use complex semantics and syntax, use of nonverbal communication, use of home language for translating purposes, supporting extended discourse, and scaffold language use (Table 2.4).

Ten articles focused on how interaction can foster the language growth of multilingual children. Children in classes of teachers that used more lexically diverse and syntactically complex interaction showed more language growth (Aarts et al., 2016; Gámez, 2015). Ping (2014) found that children would give same level responses as the teacher prompts even though they were still acquiring the language. In the study of Gardner (2008), the teacher challenged the children to explain and justify their answer, rather than giving a yes/no

answer. Furthermore, the use of nonverbal communication, such as gestures (Park, 2014; Rosborough, 2014), and materials (e.g., tangible examples, classroom attributes; Vine, 2006) in the interaction were both found to be useful tools in helping multilingual children in their language development. The use of nonverbal communication was found to help create joint attention and made it easier for a child to understand the interaction. Finally, De Oliveira and colleagues (2016) found that teachers also used the child's home language to support the meaning-making process, for example by emphasizing an important concept or repeat an instruction in the home language to avoid confusion.

Six studies described strategies to create extended discourse and support language development (Dolley & Wheldall, 1991; Gardner, 2008; Ping, 2014; Sayer, 2013; Sherris, 2011; Tsybina et al., 2006). The teachers in the study of Ping (2014) primarily used wh-prompts (i.e., use of "what", "where", "why" questions) to encourage children to contribute in the interaction. Sherris (2011) explored the spontaneous interactions between a multilingual child and the teacher. This teacher used a wide variety of strategies to extend the interaction. She used simple yes/no questions to open up the conversation, but moved on by asking clarification requests to let the child explain more and repeated responses to check for understanding. Likewise, in the study of Gardner (2008) the teacher challenged the children to explain and justify their answer, rather than giving a yes/no answer. In the study of Dolley and Wheldall (1991) teachers successfully encouraged children to interact by creating learning activities that could only be completed by interacting with each other. The children in their study initiated more interactions and used more complex words in interaction with their teacher. Teachers also supported grammar learning through implicit corrections in interaction with the child (Ping, 2014; Sayer, 2013; Tsybina et al., 2006). This way the teacher corrected a mistake without explicitly mentioning it, but still keeping the flow of the interaction. Finally, Henderson and Palmer (2015) described the use of process scaffolds - i.e., teacher modeling of the expected language use and behavior in an activity - and found that this facilitated pair work between children from diverse language backgrounds.

Four studies showed that multilingual children were not always exposed to high quality teacher-child interactions. For examples, teachers tended to give limited language support to multilingual children (Piker & Rex, 2008) and teacher turns were often of low complexity (Ping, 2014). Children tend to mirror this low complexity level of teacher turns (Lara-Alecio et al., 2009), and they also tend to give short one-word or one-clause responses to teacher initiations (Leung, 1993).

Both category B articles focused on instructional support. Konishi (2007) described the value of using gestures and materials (e.g., communicate through a toy puppet) to help the multilingual child understand what was being said. Mohr and Mohr (2007) showed that teachers were persistent in having conversations with multilingual children in which these teachers valued the child's efforts to respond and scaffolded elaboration.

Six articles in category C focused on instructional support. Again, they showed that teachers made use of materials to support the interaction with multilingual children (Soltero-González, 2009). Teachers, for example, used visual aids to teach the basic concepts, such as shapes, colors and numbers. The amount of teacher-child interactions that multilingual children have with their teacher during a day was found to be limited (Sullivan et al., 2015), especially for girls (Jule, 2002), but the amount was still found to be a positive predictor of child language outcomes (Verhoeven, 1991). Soltero-González (2009) found that teachers used simplified speech in interaction with multilingual children. Teachers were most often the initiators of interactions and children often only gave short responses (Martin-Jones & Saxena, 1996). Finally, Gregory (1993) found that children with a different cultural background had difficulty understanding interaction and instruction because of the different rules in the majority culture.

Two studies focused on the use of the home language in the classroom. Martin-Jones and Saxena (1996) found that teachers mainly used the home language as long as the knowledge of the child of the majority language was not yet sufficient to understand the instruction, and Soltero-González (2009) found that teachers did not encourage the use of the home language.

Both category D articles focused on instructional support. Lowell and Devin (1998) showed similar strategies for teacher-child interactions as have been reported in category A, B and C articles, namely the use of the home language and teacher scaffolding. Finally, Gardner and Rea-Dickens (2001) showed that in language assessment of multilingual children teachers take different approaches depending on the expertise of the teacher and the language support needed by the child.

Comparing monolingual and multilingual young children

As many classrooms have both monolingual and multilingual children, it is important to know how the teacher-child interactions of monolingual and multilingual children might differ. We therefore also specifically focused on the five articles that made this comparison; three in category A (Aarts et al., 2016; DaSilva Iddings, 2005; Tsybina et al., 2006) and two in category C (Gregory, 1993; Sullivan et al., 2015). The articles in category A all focus on different age groups (in the range of 2-6 years), different language populations, and different aspects of teacher-child interactions. One article focused on the classroom organizational domain (DaSilva Iddings, 2005), the other two on the instructional support domain (Aarts et al., 2016; Tsybina et al., 2006).

The research of DaSilva Iddings (2005) focused on the learning opportunities of multilingual and monolingual second graders. It showed that the teachers in this classroom organized the classroom activities for monolingual and multilingual children differently and invested much effort in adapting learning opportunities in the classroom for both the monolingual and multilingual children; however, it also led to unequal chances in classroom activities. The teachers, for example, used separate reading activities for the

multilingual children in the classroom that primarily focused on decoding, whereas the reading activities of the monolingual children included discussions and making connections with their own lives.

The studies of both Aarts and colleagues (2016) and Tsybina and colleagues (2006) focused on linguistic aspects of teacher-child interactions. Aarts and colleagues (2016) compared the academic language use of teachers with monolingual and multilingual children. Their study shows that teachers used shorter sentences with a less diverse vocabulary when talking to multilingual children compared to monolingual children. Yet, the content of these sentences was often more abstract (i.e., beyond the directly perceptual context) than in the interactions with monolingual children. Tsybina and colleagues (2006) studied the use of recasts by teachers of monolingual and multilingual children. Recasts are responses to child turns that include a linguistic correction of the child turn. Tsybina and colleagues (2006) observed that teachers used an equally low amount of recasts with monolingual and multilingual children. They also studied the amount of uptake, which are child responses that include (a part of) the recast. Multilingual children with the lowest language skills showed more difficulty with the uptake of the recasts, compared to monolingual children and multilingual children with better language skills. This might be explained by the fact that children with low language proficiency levels often did not respond at all to a teacher prompt.

The remaining two articles were both in category C. Sullivan and colleagues (2015) explored the teacher-child relationship and teacher-child interactions of both monolingual and multilingual children in the same classroom and found that teachers had a closer relationship, with more affection, with monolingual children than with multilingual children; however, they also had more conflict with monolingual children. They found no differences between monolingual and multilingual children for most types of interactions, such as extended discourse and routine interaction. They only found a difference for what they called *minimal interaction*, which includes giving short directives or responding to direct requests from the child. Monolingual children had less minimal interaction with their teacher than multilingual children. Finally, Gregory (1993) conducted a case study on how interaction evolves during a reading lesson. It was shown that children who understood the content and structure of the discourse in a reading lesson, had richer interactions with the teacher that involved more finely tuned feedback. The multilingual children had more difficulties with understanding the reading lesson conventions, which resulted in less rich interactions with their teacher.

Summary of findings

The narrative analysis of the included studies showed that all studies combined covered the three domains of the *Teaching through interactions* framework (Hamre et al., 2013). Most studies focused on instructional support, followed by emotional support, and finally classroom organization. Table 2.4 shows an overview of the main findings for

each domain. In the emotional support domain, studies emphasize the importance of creating a safe learning environment and teacher-child relationship for both monolingual and multilingual children and to facilitate peer interaction. In the domain of classroom organization, studies found that multilingual children might receive unequal learning opportunities in the classroom, as compared to monolingual children. Multilingual children, like their monolingual peers, benefit from consistent classroom routines to understand and participate in classroom practices. In the domain of instructional support, the studies focused on the complexity of the interactions, the use of nonverbal communication, and the facilitation of peer work through process scaffolds. Many studies focused on encouraging extended discourse to support language development through, amongst others, the use of recasts and wh-prompts. Some studies found that teachers gave limited language support to multilingual children. Finally, several studies showed that teachers use the child's home language and culture as means to promote all three domains of classroom interaction, i.e. for emotional supportive purposes, to facilitate classroom organization or to provide effective instruction.

We only found five studies that made a comparison between the interactions of teachers with their monolingual and multilingual children. It was found that multilingual children received different opportunities in the classroom. Furthermore, teachers had different interactions with monolingual than multilingual children in terms of linguistic complexity and vocabulary.

DISCUSSION

In this systematic review we aimed to gain a better understanding of the teacher-child interactions to which multilingual young children are exposed. Our search resulted in 31 included studies. The findings were organized per domain of the *Teaching through interactions* framework, i.e. emotional support, classroom organization, and instructional support (Hamre et al., 2013). These domains are all known to be important aspects of classroom quality and are found to be related to developmental outcomes. We found that studies mainly focused on multilingual children with a low language proficiency in the majority language, and that only 5 out of 31 studies made a comparison between monolingual and multilingual children. The results showed that multilingual children, just like monolingual children, have high quality interactions with their teacher that encourage them to take an active role in the interaction. In addition, teachers do adopt specific strategies to create effective learning opportunities for multilingual children, such as the use of home language and culture.

The majority of the studies focused on classroom practices that support multilingual children in their academic development. Several small-scale studies, included in the review, described detrimental practices, that is, multilingual children received less

opportunities (DaSilva Iddings, 2005; Gardner, 2008) and limited language support in the classroom (Piker & Rex, 2008). These outcomes should be taken seriously, as many multilingual children enter early childhood education with a delay in academic skills (Reardon & Galindo, 2009); hence, limited support in the classroom would only enlarge this achievement gap instead of closing it. The limited support that multilingual children may receive in the classroom could be partly explained by teacher expectations. Previous research on teacher expectations has focused on ethnic minorities, but similar effects could be expected for multilingual children, as many children from ethnic minorities have a different language background. A meta-analysis on primary and secondary classrooms showed that teachers often have lower expectations of children from ethnic minorities (Tenenbaum & Ruck, 2007). Similar results are found for expectations by early childhood teachers, that is, children from ethnic backgrounds that are favored by the teacher perform better on academic skills (Peterson, Rubie-Davies, Osborne, & Sibley, 2016).

Many of the classroom practices that have been described in the included studies are in line with the existing approaches to effective teacher-child interactions. Teachers should have a warm and trusting relationship with the children in their classroom and should be sensitive to children's academic and emotional needs in order to create a safe learning environment in which children can develop. Consistent classroom routines are important so that children know what is expected of them and the children can participate in learning activities. Furthermore, teachers should provide high quality instruction that stimulates higher-order thinking (Hamre et al., 2013) and supports children to take an active role in the interaction (Michaels & O'Connor, 2015). All these topics have also been addressed in this review as important classroom practices when teaching multilingual children. In addition, we found some strategies teachers use specifically in interactions with multilingual children.

A strategy that is specific to teaching multilingual children – and has been mentioned in several studies included in this review ($N = 9$) – is the use of the home language and culture. In most of these studies ($N = 7$) the teacher worked in classes where only one other (home) language was being spoken, next to the majority language. This makes the use of the home language in the classroom more feasible. In the remaining two studies (Martin-Jones & Saxena, 1996, 2003) the multilingual assistants were able to speak most of the language varieties spoken in the classroom. However in, for example, Europe – with the high influx of immigrants over the past couple of years – many classrooms have a wide variety of home languages (Leseman & Slot, 2014). This might make it harder for a teacher to adopt this strategy, as the teachers cannot be expected to speak all those languages or to include all those languages in their teaching. Since many studies in this review showed that the use of the home language can be beneficial to create a safe learning environment and support language learning in both the home and majority language, more research should be conducted on how this strategy can be used in classrooms where multiple languages are being spoken. Leseman and Slot (2014) suggest that a solution could be found in engaging

parents in the education program and let multilingual children work on activities at home in the home language parallel to the activities at school in the majority language. Such an approach in the Netherlands with Turkish-Dutch preschoolers showed positive effects for both their Dutch and Turkish language development (Leseman & Van Tuijl, 2001).

Several studies in the review (Gillanders, 2007; Park, 2014; Rosborough, 2014; Vine, 2006) also emphasized the use of nonverbal communication to support verbal communication and to facilitate multilingual children's understanding of the interaction. Previous research showed that the use of gestures in interaction offers a child a simpler way to express and understand something (Goldin-Meadow, 2000). The use of gestures in classroom interaction could be especially helpful for children that show difficulty expressing themselves nonverbally and have lower language levels (Daniels, 1997). This suggests that the use of gestures in communication is mainly a good practice for teaching children with low language proficiency, which is often the case for multilingual children. Almost all participants in the studies included in this review had low language levels in the majority language and therefore either benefited (or could have benefitted) from the use of gestures in interaction with their teacher.

Limitations

We recognize several limitations in our study. First, the included studies show that multilingual children cannot be considered a homogeneous group. Multilingual children differ on many characteristics that might partly explain their school success, such as their socioeconomic status, language exposure and proficiency in all their languages (Cummins, 1979). Worryingly, information on the language background and proficiency was limited in the included studies. Furthermore, almost all participants in the included studies had low language levels in the majority language. As was shown in a previous review on the mathematics education of primary school multilingual children (de Araujo et al., 2018), most studies on multilingualism take a deficit perspective when studying multilingual children, assuming that these children have a delay. It should be noted that a sole focus on multilingual children with low language levels limits the generalizability of the present study, as the included studies only cover a small part of the multilingual population. There are also many multilingual children with high language proficiency in all the languages that they are speaking. As many of the studies seemed to focus on how to interact with children that are in the early stages of learning the majority language, it remains unclear what teacher-child interactions with highly proficient multilingual children look like, and if they are any different from the interactions the teacher has with their monolingual peers.

Second, only six of the included studies presented direct measures of language proficiency, whereas most other studies only implicitly mentioned the language background of the participants. As multilingual children are not a homogenous group when it comes to language proficiency, this is important information to consider when

interpreting research findings. To acquire a more nuanced understanding of the school experiences of a wide range of multilingual children, future research should report more extensively on the background of multilingual children, including, amongst others, their language proficiency in all their languages, socioeconomic status, age of acquisition and language exposure in all their languages.

Third, although we identified a range of classroom practices that are used by teachers in interaction with multilingual children, we cannot make claims about the effectiveness of these classroom practices. Most of the included studies focused on exposure to certain classroom practices rather than on the effectiveness of those classroom practices. It might be tempting to make a direct comparison between the classroom practices that we found multilingual children are exposed to and the classroom practices considered effective in a general (monolingual) population. However, one core consideration behind this study is that, due to their unique blend of background characteristics, multilingual children might need and benefit from different classroom practices than monolingual children. Thus, we refrained from drawing such conclusions from the present study.

Fourth, the included studies varied widely in the aspects of the teacher-child interactions that were examined and the data collection methods used. Both quantitative and qualitative methods were used, e.g., questionnaires, video and audio recordings, and field notes. Whereas several studies focused on specific classroom activities, other studies focused on interactions throughout the day. Certain classroom practices might only have been identified because of the focus and/or method chosen in a particular study.

Suggestions for future research

Although the current review expanded our insights into teacher-child interactions of multilingual children, some questions remain for future research. First, there were only five studies that directly compared the teacher-child interactions of monolingual and multilingual children. Although several previous studies investigated the relation between teacher-child interactions and child development (Aukrust, 2008; Aukrust & Rydland, 2011; Bowers & Vasilyeva, 2011), these did not differentiate in the teacher-child interactions that monolingual and multilingual children are exposed to in the same classroom. Hence, many questions remain on how teachers manage their interaction with monolingual and multilingual children in one classroom. Second, we found that some multilingual children had difficulty following the cultural norms in the classroom, because they were different to their home culture. It should be acknowledged that multilingual children are not only learning multiple languages, but are also often living in two cultures. Therefore, more attention should be paid to how family and cultural norms play a role in a child's development in early childhood education.

Implications

The results of the present study have several implications for practice. First, when interacting with multilingual children with low language levels in the language of instruction, teachers face the need to support the understanding of verbal interaction. This review sheds light on some practices that can facilitate this task, such as using nonverbal communication, creating consistent classroom routines or, when possible, using the child's home language in the classroom. Second, in their quest to adapt classroom activities to diverse children, teachers need to avoid downward biases in the creation of learning opportunities for multilingual children. If multilingual children are stably exposed to relatively less challenging and less engaging classroom activities, learning and developmental gaps between monolingual and multilingual children will only be enlarged. Third, inclusion in a linguistically diverse classroom requires teachers to be aware of the potential differences between the majority culture and the home culture of multilingual children. Differences between home and majority cultures play a role in multilingual children's adaptation to the school culture and classroom practices, and are therefore critical in the creation of inclusive learning environments.

Conclusion

In sum, this systematic review showed that much of what is known about teacher-child interactions that multilingual children are exposed to is in line with what is known about effective teacher-child interactions in general. In addition, several studies point towards specific strategies that the teacher adopt to facilitate the development of multilingual children. The worry that multilingual children might be exposed to unequal learning opportunities compared to their monolingual classmates remains and therefore this important issue should be investigated deeper. The current review has shown that it is of importance to study the teacher-child interactions of multilingual children to ensure that the learning opportunities of this growing group of children can be optimized and to create equal opportunities in early childhood education for all children.

2

3

Profiles of individual teacher-child interactions and behavioral engagement of multilingual and monolingual children in kindergarten

Early childhood education serves an increasing number of multilingual children, and teachers are challenged to ensure their learning opportunities in the classroom. Engaging in high-quality interactions with the close environment determines the learning opportunities children engage in. The present study therefore examined how multilingualism relates to engagement and teacher-child interactions, taking a person-oriented approach. During one school year 76 kindergarteners (43 multilingual) from 19 classrooms were observed for behavioral engagement and individual teacher-child interactions. We identified five engagement profiles that reflect different levels of engagement across classroom settings. Multilingual children were overrepresented in profiles that showed lower engagement in one or more settings. We also identified five teacher-child interaction profiles that showed strong diversity in the interactions of teachers with the children in their classroom. Monolingual and multilingual children were equally represented across the profiles. Children in the more beneficial interaction profiles, were also often in the moderate-to-high engagement profiles.

Keywords: early childhood education; multilingualism; teacher-child interaction; engagement; profile analysis

INTRODUCTION

Children develop through interaction with the close environment (Bronfenbrenner & Morris, 2007). In the school context, this means learning opportunities are created by interactions with peers and the teacher. Interactions between children and the teacher are of special interest due to a teacher's pedagogical and educational role in classroom interactions, and their task to steer interactions with children, while keeping individual learning goals in mind. In effective learning opportunities, children are engaged (Fredricks et al., 2004) and have good quality interactions, that uses of both verbal and nonverbal channels (Goldin-Meadow, 2000), and supports extended, inferential talk (van Kleeck et al., 2006).

Early childhood education is increasingly faced with children that speak a different language at home than at school, and faces new challenges for ensuring their inclusion and learning opportunities in the classroom. Although comparison studies on the teacher-child interactions of monolingual and multilingual children are limited, our review study (Langeloo, Mascareño, Deunk, Klitzing, & Strijbos, 2019; Chapter 2) suggests that multilingual children have different interactions with their teacher than monolingual children. Teachers use more nonverbal communication when interacting with multilingual children and use less complex language in their interaction, limiting the learning opportunities of multilingual children in interaction with the teacher. Furthermore, since multilingual children are often from a different cultural background, they might face problems to productively engage with the activities in the classroom, potentially because they have trouble following the cultural rules of the majority culture (Razfar & Rumenapp, 2012). In the present study, we therefore examined the learning opportunities of multilingual and monolingual children by focusing on their teacher-child interactions and behavioral engagement. Moreover, most research on teacher-child interactions uses global classroom interaction assessments, concealing individual differences in learning opportunities within the classroom. Similarly, child engagement appraisals are typically captured by static teacher reports. We will focus on the teacher-child interactions that are unique for individual children, and on repeated observational measures of child engagement, in order to capture the situational nature of both teacher-child interactions and engagement.

Teacher-child interactions

The bioecological model of human development (Bronfenbrenner & Morris, 2007) describes development as a result of the continuous interaction between the child's characteristics and the close context – the so-called proximal processes of development. In an educational setting, the interaction with the teacher is the main proximal process. A teacher is expected to adjust the teacher-child interactions – and with that the learning opportunities – of an individual child to his or her characteristics, so as to promote the child's academic

development (Hamre & Pianta, 2007). Three aspects to describe this adjustment of teacher-child interactions are the quantity of interactions with individual children, the language complexity of those interactions, and the communication channels used. Our systematic review revealed that these aspects are critical in describing the interaction of teachers with monolingual and multilingual children (i.e., Chapter 2, Langeloo et al., 2019).

Quantity of interaction

Having opportunities to interact with the teacher is key for the development of young children (Childers & Tomasello, 2002; Christ, Wang, & Chiu, 2011). Differences in vocabulary size between children can, for an important part, be explained by the number of words they have heard in their early years (Hoff & Naigles, 2002; Weizman & Snow, 2001). These studies suggest that a rich language environment in the classroom, with a high amount of teacher talk exposure, is important for creating high quality learning opportunities.

Language complexity

Talk about topics beyond the direct context – i.e., inferential talk, as opposed to literal talk, which refers to directly available information – is crucial for developing language skills (Massey, Pence, Justice, & Bowles, 2008). Inferential talk is more cognitively challenging than literal talk as it requires the child to make inferences – such as reasoning, predicting, and remembering – on available information (van Kleeck et al., 2006). The results from studies on book reading in early childhood education show that the use of inferential talk has a positive influence on children's language skills, including comprehension, literacy, and vocabulary (De Temple, 2001; Wasik & Bond, 2001; Wasik et al., 2006), and that children are more likely to use inferential talk when their teacher uses it as well (Mascareño, Deunk, Snow, & Bosker, 2017).

A related aspect of complexity are teacher follow-ups. Teachers can follow-up on child responses with either an evaluative or an elaborative utterance. The evaluative utterance is limited to a simple evaluation (such as, "*good job", "well done")* or repetitive confirmations or falsifications of the child utterance, whereas elaborative follow-ups expand the conversation by elaborating on the child utterance or by giving a hint (Mascareño et al., 2016). Elaborative follow-ups carry the opportunity for extended discourse and are related to more child participation (Nassaji & Wells, 2000) and greater vocabulary development (Wasik et al., 2006). Teachers, however, are generally found to use mainly simple evaluative follow-ups, rather than the more complex elaborative follow-ups (Dickinson, McCabe, & Anastasopoulos, 2003).

Communication channel

Teacher-child interactions can take the form of verbal utterances (i.e., the smallest units of speech that are often separated by a silence), but it often also includes symbolic gestures, and purely nonverbal communication. Nonverbal communication through symbolic gestures offers a child a simpler way to express and understand the interaction (Goldin-Meadow,

2000), before they can verbally express it. When teachers use gestures, children can use this information as additional resources to understand the teacher talk (Roth, 2001). The use of gestures in interactions with young children is known to support verbal language acquisition (Goodwyn & Acredolo, 1998; Goodwyn, Acredolo, & Brown, 2000) and is especially useful for children who have difficulty expressing themselves verbally (Daniels, 1997). This could be children with lower language levels or children who are still learning the majority language.

Behavioral engagement

The potential contribution of teacher-child interactions to students learning opportunities presupposes that children are able to focus and maintain their attention on the activity and interaction at hand. This implies that children are engaged. Engaged children are involved in the social and academic tasks in the classroom, by showing attention, dedication, and self-reliance (Fredricks et al., 2004; Laevers, 1993).

In kindergarten, there is a wide variety of activities and settings that demand different expressions of behavioral engagement. Previous studies on behavioral engagement in early childhood education indicate that children might show different levels of engagement in diverse classroom settings with or without the teacher, potentially affecting academic development. When children are involved in a free choice activity, they often show high engagement with the activity at hand, whereas in whole class teacher-directed activities children are more engaged with the teacher (Booren et al., 2012; Vitiello et al., 2012). Although the level of engagement differs per activity, children that show higher engagement levels with peers and teachers in the classroom, also show higher task engagement (Williford, Maier, Downer, Pianta, & Howes, 2013). Furthermore, children that are primarily engaged in activities with the teacher show better school readiness than children that are primarily engaged in individual activities (Chien et al., 2010). Bratsch-Hines and colleagues (2019) found that the time spent in large group settings was negatively associated with literacy development, potentially because teachers were less actively engaging children in the activity.

Multilingual children: teacher-child interactions and engagement

Multilingual children often enter and leave early childhood education with a smaller vocabulary in the language of instruction than monolingual children (Bialystok & Feng, 2011; Verhoeven, 2000), they often come from a different cultural background than the majority culture and a lower socioeconomic background (Veenstra & Kuyper, 2004). These differences between monolingual and multilingual children in their developmental trajectories and cultural background, in combination with possible teacher bias (Tenenbaum & Ruck, 2007), might lead multilingual children to be involved in suboptimal learning opportunities in the classroom. Being exposed to good quality interactions can be safely assumed to be beneficial both for monolingual and multilingual children. However, research findings suggest that this exposure might differ for monolingual and multilingual children. Multilingual children

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seem to have more infrequent interaction with their teacher in a regular classroom setting (Sullivan et al., 2015). Furthermore, teachers seem to use more symbolic gestures to support the verbal interaction with multilingual children (Gillanders, 2007; Park, 2014; Rosborough, 2014; Vine, 2006). Teachers might do so because they assume that nonverbal communication eases the understanding of the interaction. This way, children can participate in the classroom activities without fully understanding the vocabulary used. In addition, several studies found that teachers use simplified, low-complexity language when interacting with multilingual children (Lara-Alecio et al., 2009; Leung, 1993; Ping, 2014).

Additionally, high behavioral engagement can be assumed to be beneficial for both monolingual and multilingual children. However, to date research on the differences in engagement between young children with diverse language backgrounds received little attention. As multilingual children are often growing up in two or more different cultures, they might have trouble following the norms and expectations on child socialization and development of the majority culture (Bossong & Keller, 2018; Greenfield et al., 2000). One study by Sullivan and colleagues (2015) found that multilingual children acted more often as a non-participating observer in activities than monolingual children, but found no significant difference in the engagement of monolingual and multilingual children.

Taking a person-oriented approach in educational research

Contrary to the common practice in the field of educational sciences, we adopt a person-oriented approach, rather than a variable-oriented approach. A variable-oriented approach focuses on relations between variables or concepts, whereas a person-oriented approach allows for summarizing patterns within individuals (e.g., profiles), which offers a more comprehensive analysis of the diverse domains that play a role in the learning opportunities of individual children (Bergman & Trost, 2006; Hickendorff, Edelsbrunner, McMullen, Schneider, & Trezise, 2018). The person-oriented approach acknowledges the heterogeneity in young children and identifies homogenous subgroups that show similar developmental patterns (Hickendorff et al., 2018).

Present study

Previous research has shown that the quality of teacher-child interactions as well as a child's behavioral engagement during educational activities are important aspects of the learning opportunities of young children. However, multilingual children might be exposed to less beneficial learning opportunities, such as low quantity of interaction, because of differences in developmental trajectories and teacher bias. The present exploratory study builds on these findings by examining the unique contribution of each of the aspects of learning opportunities within individual children in relation to their monolingual or multilingual background. Thus, this study has three aims: (1) to identify subgroups of children according to (a) their individual teacher-child interactions and (b) their behavioral engagement in different classroom settings; (2) to examine whether multilingualism predicts membership

for both the individual teacher-child interaction and the engagement profiles; and, (3) to examine how teacher-child interaction and engagement profiles are related to each other. We will identify separate profiles of teacher-child interactions and behavioral engagement. By identifying profiles, we acknowledge the diversity and complexity of the interactions that children have with their teacher, as well as the role of classroom settings for the engagement of individual children, while providing a comprehensive overview of the learning opportunities that monolingual and multilingual children are exposed to. Based on the aforementioned literature, we expect that multilingual children will be overrepresented in profiles that are characterized by lower quantity of interaction, lower complexity of interaction, and high prevalence of symbolic gestures. We furthermore expect that multilingual children will be overrepresented in profiles with lower engagement levels.

3

METHOD

Sample

The present study was conducted in the Netherlands. In Dutch education, kindergarten entails the first two years of primary school (4-6 years old). The primary language of instruction is Dutch (apart from schools in the province of Friesland, where Frisian is also an official language of schooling). The schools in the present study were all located in neighborhoods with a prevalence of immigrants (i.e., at least one parent was born abroad) above national average (CBS, 2013) and were therefore expected to serve ample multilingual children.

The participants (5-6 years old) came from 20 kindergarten classrooms from 12 schools across the Netherlands. All kindergarten classrooms in participating schools with enough monolingual and multilingual children were included in the study. In each classroom, four children were selected (two multilingual, two monolingual; 80 children in total); henceforth referred to as the 'focal children'. In order to select focal children, teachers were asked to report which children in their classroom were multilingual, defined as children who habitually interacted in a language other than Dutch in their home environment. Monolingual children were children that spoke only Dutch, both at home and at school. When there were more than two multilingual children in one classroom, multilingual children were selected in such a way to retain an even distribution in gender and socioeconomic status (SES; based on the Dutch school funding policy) within the classroom and across the sample. Monolingual focal children were matched to the multilingual children based on SES and gender. When there were multiple possibilities, children were selected randomly. All children present during the filming in the classroom had active parental consent for filming. Focal children were selected from the children for whom parental consent was also given for individual observation and assessment (93% of all parents).

Although we aimed for 40 children in both language groups, the final sample consisted of 76 children, of whom 43 were multilingual. This was due to three reasons. First, when

comparing the available parent questionnaires (only 42 of 80 (53%) parent questionnaires were returned) and the information provided by the teachers, four focal children that were monolingual according to the teacher, and selected as such by us, turned out to have frequent interactions in other languages than Dutch at home according to the parents. We decided to include them in the multilingual sample. Second, in one classroom only one of the three monolingual children had parental consent for individual observations. Therefore, we included three multilingual children in that particular classroom. Third, one classroom dropped out of the project after the first observations because of teacher burn out. Furthermore, one multilingual child was ill during the observations of the first time point and will therefore only be included in the analyses of engagement.

Table 3.1 Background statistics of teachers and focal children

| | Teachers (*N* = 19) | | Focal children (*N* = 69) | | | |
| | *M (SD)* | Range | Monolingual (*N* = 30) | | Multilingual (*N* = 39) | |
			M (SD)	Range	*M (SD)*	Range
Age	40.06 (13.12)	22 - 63	5;5 (4.54)	4;10 – 6;7	5;4 (4.89)	4;7 – 6;5
Experience in primary ed.	16.94 (14.02)	1 - 40				
years in kindergarten	12.50 (13.30)	0 - 40				
Class size	21.21 (3.76)	14 - 28				
of which multilingual	40.98% (20.89)	13 - 86%				
SES			Low: 26%		Low: 32%	
Gender	18 female (95%)		14 boys (47 %)		19 boys (49%)	
Home language(s)	Dutch		Dutch		Turkish	*N* = 7
					Arabic	*N* = 6
					Polish	*N* = 4
					Moroccan, Papiamento	*N* = 3
					Berber, English, Somali, Spanish	*N* = 2
					Albanian, Armenian, Chinese, Czech, French, Greek, Hindi, Indonesian, Isan, Kurdish, Lingala, Portuguese, Punjabi, Sarnami Hindustani, Thai	*N* = 1

Note. Teacher's age and experience is in years. Children's mean age and range are indicated in years and months; *SD* in months. *Primary ed.* = primary education. *Years in kindergarten* refers to the number of years a teacher has been teaching kindergarten classrooms. *SES* was based on the Dutch school funding policy. A low SES indicates that the highest parental education level is prevocational education or a maximum of two years of a higher level secondary education.

Background information on the teacher, classroom composition, and focal children is presented in Table 3.1. All teachers were native-Dutch speakers. Multilingual children spoke a wide variety of languages. Eight children interacted in two foreign languages at home; the home language was unknown for one child, although the teacher indicated that the child was multilingual. There were no statistically significant differences in gender, age, and SES between the language groups. The sample was representative for the Dutch population (CBS, 2019). There is no official data on the languages spoken in the Netherlands. However, the languages of the biggest migrant groups in the Netherlands (i.e., Turkey – e.g., Turkish, Kurdish, Arabic; Morocco – e.g., Arabic, Moroccan, Berber; Indonesia – e.g., Indonesian) were all represented in our sample (CBS, 2018).

Design and procedure

This study is part of a larger study with a longitudinal design of three time points in one school year; each roughly three months apart (October 2016, January 2017, April 2017). At each time point the same data was gathered. For this study, we used the teacher-child interaction data of time point 1, and the engagement data of all three time points (reasons explained under the section *Engagement*).

Two researchers came into the classroom for one morning to collect the data at each time point. One researcher filmed the teacher for the entire morning – excluding outdoor play – including all interactions between the teacher and the focal children. Simultaneously, the other researcher observed the focal children in order to assess their engagement in diverse classroom settings. Where possible the same researchers would return to a classroom at subsequent time points to limit the number of unfamiliar faces in the classroom. The filming and observations were conducted by the first author and twelve research-assistants. The research assistants were all final year Bachelor's students or Master's students in educational sciences or a related field. They were trained in two sessions on the observation of child engagement by the first author. In between the training sessions, training videos were independently coded. During the next session, all disagreements were discussed. The training took about eight hours in total. Before the second and third time point all research-assistants refreshed the observation rules with four training videos.

The videos were used for observing the individual teacher-child interactions. All interactions in which the teacher specifically addressed the focal child were considered individual teacher-child interactions. The interactions could take place with more children around (e.g., in circle time or in a small group), but in the analyses only the teacher utterances that specifically addressed the focal children were included. Three research-assistants, all Master's students in educational sciences or a related field, and the first author transcribed these segments of individual teacher-child interactions. The research-assistants were trained in transcription rules and conventions by the first author in three training sessions, of about ten hours in total. In between sessions, they independently transcribed video segments. Disagreements were discussed during the next session.

The transcripts were coded by another research-assistant and the first author. To limit the complexity of the coding procedure, the first author identified the codable utterances for each focal child (i.e., all utterances that were directed to a focal child or from the focal child him- or herself). The research-assistant only coded these utterances. She was a Master's student in educational sciences, trained in the coding scheme in five sessions by the first author. After each session new data was coded independently by both coders. Disagreements were discussed in the next session. In nine instances the coding rules were revised. After the coding of all transcripts, an internal audit by the authors revealed certain inconsistencies in the coding of language complexity that compromised the validity of it, although the construct was coded reliably. The first three authors discussed the issue and revised the definition and coding rules for language complexity. Consequently, the first author recoded all data for language complexity. The reliability of this coding was ensured with an audit. The first author randomly selected and coded ten segments from eight different transcripts (152 utterances), and discussed the codes with the second and third author. After the coding of all transcripts, the first author discussed all utterances ($N = 25$) that were difficult to make a decision about the corresponding coding with the second and third author, and they jointly agreed upon a code for each of these cases.

Measures and variables

Demographic background information

Before the start of the observations, the teachers completed a short questionnaire on their own professional background (i.e., age, gender, teaching experience and professional training) and classroom composition (i.e., date of birth, gender, SES, and language background). The background information about the children was used to select the focal children. After the second time point, the parents also completed a questionnaire on the home literacy environment. This questionnaire included questions on the use of different languages with family and friends and in specific activities in the home environment (e.g., watching television, book reading, and playing).

Individual teacher-child interactions

To code individual teacher-child interactions, we developed a coding scheme (informed by Mascareño et al., 2016) that focused on the aspects of teacher-child interactions where potential differences could be expected between monolingual and multilingual children. The transcripts were coded on utterance level and both teacher and child utterances were coded. Each utterance was coded on three dimensions: *Communication channel*, *Type of utterance* and *Language complexity*. Appendix B provides an overview of the coding scheme. The dimension *Communication channel* distinguishes between the use of verbal and nonverbal communication. Verbal utterances were further divided in verbal with and without meaningful gestures. The dimension *Type of utterance* was divided in six main

categories: prompting, informing, response, follow-up, supporting flow, and residual. Utterances coded as supporting flow and residual were not used in the final analyses. The categories prompting, response, and follow-up are in combination also known as the Initiation-Response-Feedback-sequence (Sinclair & Coulthard, 1975), but, in contrast to the traditional use, both teacher and child could initiate. Teacher initiations are most common during teacher-led activities, but as we included all interactions that happen during a day, children had more opportunity to initiate interactions as well. The dimension *Language complexity* was coded for teacher prompts (including open questions, closed questions, and directives) and child responses. These specific utterances were chosen, since these types of utterances could take different forms that reflect diverse levels of complexity. Utterances regarding behavioral control (i.e., redirecting child behavior) were not included in the coding of complexity, since this was not the focus of our research and complexity in these types of interaction might take a different form. In line with previous research, language complexity was coded using the literal-inferential distinction (Mascareño et al., 2016; Massey et al., 2008; Tompkins, Zucker, Justice, & Binici, 2013; van Kleeck, Gillam, & Hamilton, 1997; Zucker, Justice, Piasta, & Kaderavek, 2010).

The first author and a research-assistant double-coded nine segments from five different transcripts (157 utterances in total) to determine inter-rater agreement. On both dimensions high agreement was found (Channel: Krippendorff's α = .98; 95% CI [.92;1.00]; Type: Krippendorff's α = .93; 95% CI [.88;.96]). Reliability of language complexity was ensured using an audit procedure, as was described under *Design and procedure*.

Engagement

Child behavioral engagement was assessed during real time observations using the Situational Behavioral Engagement scale, an instrument specifically developed for this study. The focal children were observed for time intervals of five minutes using a visual analogue scale (Aitken, 1969). Observers had to indicate on a ten-centimeter line how engaged the child was. This was transformed to a score between 0 (not engaged) and 100 (fully engaged). Three indicators were used to determine the engagement level: *attention*, *dedication* and *self-reliance* (Laevers, 1993). An engaged child shows uninterrupted attention for the activity at hand; is dedicated with full focus on the task; takes responsibility and initiative and is not fully dependent on the teacher. Although the indicators are separately described, they are not independent: A child that shows self-reliance needs dedication and attention for the activity at hand. Therefore, one general engagement score was given instead of separate scores for each indicator. Since we were interested in the engagement levels of children in different classroom settings, an engagement score was given every time, within the five-minute interval, the classroom setting of the observed focal child changed. Children could be observed in eight settings, based on the size of the group and the presence of the teacher: *individual*, *individual with teacher*, *pair*, *pair with teacher*, *small group* (3-6 children), *small group with teacher*, *large group* (more than 7 children), *large group with teacher*.

Initially, analyses were planned on data from the first time point only. However, this resulted in too much missing data. As the observations only took place during one morning, individual children were not observed in all eight different settings. To overcome this, engagement data from the second and third time point was added. Twelve research-assistants and the first author conducted the observations. They coded five training videos for reliability assessment. This showed good reliability for both engagement (ICC = .84; 95% CI [-.07-1.00]) and setting (Krippendorff's α = .74; 95% CI [.64 - .82]).

Analyses

Data pre-processing for profile extraction

To identify the profiles for teacher-child interactions and behavioral engagement, raw data had to be pre-processed to create interpretable predictors for the profiles. We were interested in three aspects of the interaction: quantity of the interaction, complexity of the interaction, and communication channel. We included the quantity of interaction as a predictor by taking the total amount of relevant utterances for each child. For complexity we focused on the complexity of teacher prompts, child responses, and the use of elaborative follow-ups by the teacher (i.e., elaborations and hints). Furthermore, for communication channel we made a comparison between the use of meaningful gestures (i.e., completely nonverbal utterances, and verbal utterances supported by symbolic gestures) and completely verbal utterances. This included all child utterances, and all teacher utterances that were specifically directed to the child. In all, six predictors were included in the profile analysis: meaningful gestures of (1) teacher and (2) child, (3) teacher complex prompts, (4) child complex responses, (5) teacher elaborative follow-ups, and (6) quantity of interaction. As there were large differences across children between the number of utterances that children produced and were exposed to, the raw frequencies for all predictors were adjusted to correct for this difference. We assumed that being exposed to and producing more utterances in general would also increase the probability of showing higher frequencies of the different predictors. We therefore calculated a unique weight for each child and used that to adjust the raw frequencies. These adjustments made the frequencies equivalent across classrooms, and could therefore be compared to interactions of average length. Weighted frequencies were used in the subsequent analyses. The quantity of interaction was corrected for the total length of the video for that particular classroom.

For the profiles of behavioral engagement, we were interested in the role of group size and presence of the teacher on the engagement levels of children. The eight classroom settings that were observed were merged to three main settings: *small group with teacher* (including small group, pair and individual with teacher), *small group without teacher* (including small group, pair and individual without teacher), and *large group* (including large group with and without teacher). We calculated an engagement score for each child

in each setting by averaging all scores in the included settings. Since multiple observations could take place in the five-minute interval, we corrected for the length of observation.

Profiles of teacher-child interactions and engagement

We identified separate profiles for the child's engagement and the individual teacher-child interactions using Latent Profile Analysis (LPA) in MPlus Version 8 (Muthén & Muthén, 1998-2017). Child engagement profiles were estimated considering their individual engagement scores across the three categories of classroom settings (small group without teacher, small group with teacher, large group). Profiles of individual teacher-child interactions were based on the weighted frequencies of teacher and child meaningful gestures, teacher complex prompts, child complex responses, teacher elaborate follow-ups, and quantity of interaction. Model fit of LPA was determined based on the (1) Bayesian Information Criterion (BIC), (2) Akaike Information Criterion (AIC), (3) entropy, (4) Lo-Mendell-Rubin adjusted Likelihood Ratio Test, and (5) interpretability of the profiles. A lower BIC and AIC indicate better fit. A high entropy score (above .80) indicates better fit. A significant likelihood ratio test indicates a better fit than the model with one less profile. To take into account the nested structure of the data a sandwich-estimator was used (TYPE=COMPLEX).

Predictive value of multilingualism on profiles of teacher-child interactions and engagement

We tested whether there was an association between multilingualism and the probabilities of membership to different teacher-child interaction and engagement profiles. Therefore, a multinomial logistic regression was conducted in MPlus Version 8 with profile membership as the dependent variable and multilingualism as the independent variable. The alpha-level was set at .05. Profile membership was determined by modal assignment (i.e., all children were assigned to their profile with the highest posterior probability). Again, a sandwich-estimator (TYPE=COMPLEX) was used to account for the nested structure in the data.

Relation between interaction and engagement profiles

To explore the relation between engagement and teacher-child interaction profile membership, we created a crosstab with both profiles for monolingual and multilingual children. We conducted a descriptive analysis of the co-occurrence of specific interaction and engagement profiles. Because of the small sample size we could not statistically test these relations.

Table 3.2 Means, Standard Deviations and Range of the Profile Predictors per Interaction Profile

		Full sample	P1 G±C±FU±Q-	P2 G+C-FC-Q-	P3 G±C+FU±Q-	P4 G±C+FU+Q+	P5 G±C±FU+Q+
N	Total	75	38	3	13	6	15
	Multi	42	22	3	6	4	7
Teacher Meaningful Gesture	*M*	6.58	5.24	11.06	8.29	7.84	7.08
	SD	3.14	2.41	7.43	2.38	3.42	2.65
	Range	0.00-19.04	0.00-9.79	4.35-19.04	4.29-11.59	4.60-13.85	2.67-12.31
Child Meaningful Gesture	*M*	13.45	11.89	27.86	15.08	12.03	13.68
	SD	5.24	4.53	2.24	3.35	1.98	4.64
	Range	3.93-29.16	3.93-21.14	25.27-29.16	7.29-19.95	9.11-14.42	4.31-23.02
Teacher Complex Prompt	*M*	4.29	3.50	0.65	6.69	8.59	3.21
	SD	2.85	2.28	1.12	2.74	2.05	1.35
	Range	0.00-12.46	0.00-8.31	0.00-1.95	3.37-12.47	6.59-11.99	1.43-5.44
Child Complex Response	*M*	4.21	3.29	0.00	7.76	7.02	3.18
	SD	2.66	1.73	0.00	2.39	1.29	1.27
	Range	0.00-13.07	0.00-6.64	0.00-0.00	4.36-13.07	5.36-8.56	1.30-5.09
Teacher Elaborate Follow-up	*M*	1.36	1.24	0.00	1.19	1.99	1.84
	SD	0.97	0.94	0.00	0.97	0.32	0.99
	Range	0.00-3.85	0.00-3.21	0.00-0.00	0.00-2.84	1.38-2.35	0.31-3.85
Quantity of Interaction	*M*	139.83	95.92	26.97	81.06	219.03	292.90
	SD	93.40	36.90	13.99	28.24	48.09	44.80
	Range	17.54-366.50	20.01-171.58	17.54- 43.04	28.37-130.42	175.25-286.36	243.90-366.50

Note. Profile tags reflect the components of the profiles: G = gestures, C = complexity, FU = follow-up, Q = quantity. Multi = number of multilingual children in each profile.

RESULTS

Descriptive results

Detailed descriptive statistics are presented in Table 3.2 for interactions and in Table 3.3 for engagement. The results show a wide variety in the quantity of interaction, ranging from only 17.54 utterances to 366.50 utterances per child in the course of a day. On average, both teachers and children used mainly utterances of low complexity (teacher prompts: 13.77% complex prompts; child responses: 24.15% complex responses; teacher follow-ups: 17.64% elaborate follow-ups). Children used relatively more meaningful gestures, either in completely nonverbal utterances or to support a verbal utterance (46.13%) than teachers (14.40%).

The three categories of classroom settings (small group without teacher, small group with teacher and large group) were used as predictors for the engagement profiles. On

average, across the three time points, focal children were 5.70 times observed in small group settings without the teacher (*SD* = 11.27; range: 1 - 12), 2.33 times in small group settings with the teacher (*SD* = 1.75; range: 0 - 7) and 11.14 times in large group settings (*SD* = 4.14; range: 1 - 20). Results of the full sample revealed that children in general showed moderate engagement in all settings. There was a wide range in engagement levels between children in all settings.

Table 3.3 Means, Standard Deviations and Range of the Profile Predictors per Engagement Profile

|		Full sample	P1 S-ST-L-	P2 S-ST-L+	P3 S+ST+L±	P4 S+ST±L-	P5 S+ST+L+
N	Total	76	13	6	31	4	22
	Multi	43	9	5	14	4	11
Small group	*M*	66.00	57.56	47.94	69.76	77.70	68.48
	SD	11.90	10.24	6.88	10.50	10.24	8.46
	Range	42.06-93.50	42.06-80.83	42.06-60.10	51.71-93.50	62.78-86.00	53.92-83.27
Small group + teacher	*M*	71.09	49.38	55.31	77.56	69.63	77.85
	SD	14.28	8.77	10.06	9.01	10.08	9.05
	Range	36.01-96.00	36.01-64.16	38.00-64.50	63.00-96.00	58.00-76.00	63.71-95.00
Large group	*M*	64.73	55.72	70.59	61.47	39.72	77.59
	SD	10.90	5.28	3.82	4.22	1.28	3.37
	Range	38.61-83.28	47.36-62.49	67.46-77.27	50.84-68.52	38.61-41.50	72.42-83.28

Note. Profile tags reflect the classroom settings of the profiles: S = small group without teacher; ST = small group with teacher; L = large group. Multi = number of multilingual children in each profile.

Profiles of individual teacher-child interactions

LPA for the individual teacher-child interactions was conducted for two, three, four and five profile solutions. Both the three and five profile solutions showed good fit (Table 3.4). Since the interpretation of the five profile solution was more informative than the interpretation of the three profile solution, we proceeded with the five profile solution. Figure 3.1 shows a graphical representation of these profiles. The means, standard deviations and range are presented in Table 3.2. Henceforth, we have characterized and labeled the profiles, including their prevalence in the focal children. We also gave each profile a short tag name, to be used in tables and figures. These tags reflect the four components in the profiles – i.e., gestures (G), complexity (C), elaborate follow-ups (FU), and quantity (Q) – and the level of each of the components – i.e., above average (+), close to average (±), and below average (-).

Table 3.4 Model fit Latent Profile Analysis for Interactions

# of profiles	AIC	BIC	Entropy	LMR LRT (p) adjusted	
2	2660.505	2704.538	.976	(vs 1 class)	.2185
3	2632.390	2692.644	.987	(vs 2 classes)	.3736
4	2623.209	2699.686	.873	(vs 3 classes)	.7724
5	2615.914	2708.614	.913	(vs 4 classes)	.3848

Figure 3.1 Channel, complexity and quantity of interaction for all interaction profiles.
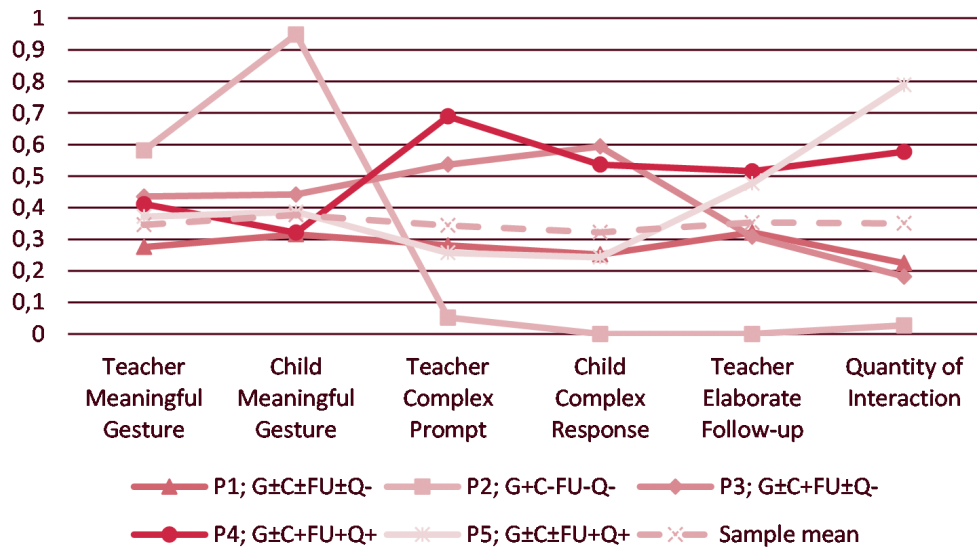
Note. Profile tags reflect the components of the profiles: G = gestures, C = complexity, FU = follow-up, Q = quantity.

- **Profile 1: Low quantity of typical interactions (G±C±FU±Q-).** This was the profile with the highest prevalence, including half of all focal children (51.0%). Their interactions had a mix of verbal and nonverbal utterances, and high and low complex utterances. However, they had a low quantity of interaction with their teacher.
- **Profile 2: Low quantity of nonverbal, non-complex interactions (G+C-FU-Q-).** This profile had only three children (4.0%), and was characterized by the almost complete absence of complex utterances. These children had the lowest amount of interactions that were often of a nonverbal nature.
- **Profile 3: Low quantity of high complex interactions (G±C+FU+Q-).** Children in this profile (18.1%) used an average amount of meaningful gestures in their interaction. Their interactions were of high complexity in both the teacher prompts, as well as in the child responses. The teacher used an average amount of elaborative follow-ups. The quantity of interaction was low.

- **Profile 4: High quantity of high complex interactions (G±C+FU+Q+).** This profile is similar to Profile 3. Interactions with these children (7.1%) used an average amount of meaningful gestures, and both teachers and children used many complex utterances in their prompts and responses. The teacher furthermore used many elaborative follow-ups. The children had many interactions with their teacher.
- **Profile 5: High quantity of followed-up interactions (G±C±FU+Q+).** Children in this profile (19.9%) had the most interactions with their teachers, these were of average complexity, but with a high use of elaborative follow-ups. Both children and teachers used a combination of verbal utterances and gestures.

Profiles of child engagement

LPA was conducted to identify the profiles for engagement for a solution with two, three, four and five profiles. The model fit for all solutions is presented in Table 3.5. Model fit indicators showed that the five-profile solution had the best fit to the data. Figure 3.2 shows a graphical representation of the engagement levels across the three different settings for each profile. Table 3.3 shows the means, standard deviations, and range of the engagement scores in each setting for each profile and for the complete sample. Henceforth, these five profiles have been characterized and labeled, including the percentage of focal children in each profile. Tag names were given to reflect the characteristics of the profiles in tables and figures. These tags include the setting – small group without teacher (S), small group with teacher (ST), and large group – and the level of engagement – above average (+), close to average (±), below average (-).

- **Profile 1: Low engagement (S-ST-L-).** Children in this profile (17.10%) were among the lowest scoring focal children on engagement across all settings. The engagement levels were low in all settings.
- **Profile 2: Low small-group engagement (S-ST-L+).** Children in this profile (7.90%) showed low engagement in both small groups settings; although particularly low levels in small group without the teacher. The children in this profile showed high engagement in large group settings.
- **Profile 3: High small-group and moderate large-group engagement (S+ST+L±).** Children in this profile (40.80%) showed high engagement levels in small group settings and moderate engagement levels in large group settings.
- **Profile 4: High small-group and low large-group engagement (S+ST±L-).** Children in this profile (5.26%) had high engagement levels in small group settings without the teacher, close to average levels in small group settings with the teacher, and the lowest engagement levels in large group settings.
- **Profile 5: High engagement (S+ST+L+).** Children in this profile (28.95%) showed very similar, high engagement levels in small group settings as Profile 3. However, children in Profile 5 also showed high engagement in the large group.

Table 3.5 Model fit Latent Profile Analysis for Engagement

# of profiles	AIC	BIC	Entropy	LMR LRT (p) adjusted
2	1714.983	1738.290	.752	(vs 1 class) .159
3	1714.955	1747.586	.804	(vs 2 classes) .566
4	1716.582	1758.535	.807	(vs 3 classes) .786
5	1707.585	1758.862	.900	(vs 4 classes) .088

Figure 3.2 Engagement scores across settings for each profile.
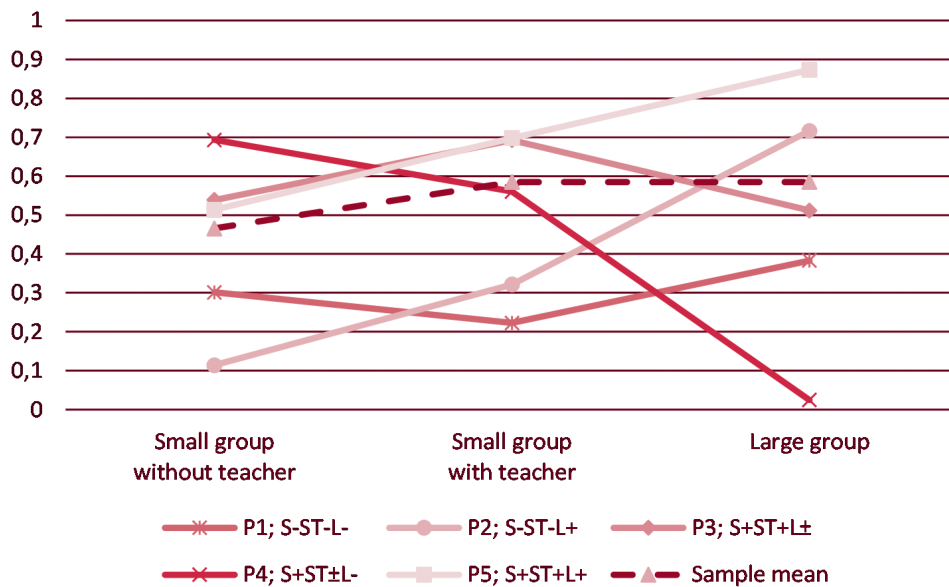
Note. Profile tags reflect the classroom settings of the profiles: S = small group; ST = small group with teacher; L = large group.

Predictive value of multilingualism on teacher-child interaction

The distribution of multilingual children over the interaction profiles is presented in Table 3.2. In all but one profile the distribution is fairly even between monolingual and multilingual children. In profile 2 (i.e., low quantity of nonverbal, low complex interactions) all children ($N = 3$) were multilingual. The predictive value of multilingualism on profile membership was assessed using multinomial logistic regression. The results are presented in Table 3.6. Since profile 2 had only three children, odds ratio became extreme and cannot be interpreted. No significant differences were found between the other profiles. Multilingualism does not predict profile membership for individual teacher-child interactions.

Table 3.6 Odds Ratio and Confidence intervals of Multinomial Logistic Regression with Interaction Profiles

		Reference group			
		P2 G+C-FU-Q-	P3 G±C+FU±Q-	P4 G±C+FU+Q+	P5 G±C±FU+Q+
P1 G±C±FU±Q-	Odds ratio	extreme	1.60	.69	1.57
	95% CI		-.61;1.55	-1.97;1.22	-.42;1.32
	p	<.001	.391	.646	.307
P2 G+C-FC-Q-	Odds ratio		extreme	extreme	extreme
	95% CI				
	p		<.001	<.001	<.001
P3 G±C+FU±Q-	Odds ratio			.43	.98
	95% CI			.07;2.68	.25;3.81
	p			.365	.976
P4 G±C+FU+Q+	Odds ratio				2.29
	95% CI				.32;16.36
	p				.410

Note. Profile tags reflect the components of the profiles: G = gestures, C = complexity, FU = follow-up, Q = quantity. 95% CI = 95% confidence interval.

Predictive value of multilingualism on engagement

Next, the predictive value of multilingualism on membership of engagement profiles was assessed. Table 3.3 shows the number of multilingual children in each profile for engagement. In the two profiles with the highest prevalence, Profiles 3 (i.e., high small-group and moderate large-group engagement) and 5 (i.e., high engagement), about half of the children is multilingual. In the other three profiles the majority of the children is multilingual. Profile 4 (i.e., high small group and low large group engagement) includes only multilingual children and in Profile 2 (i.e., low small group engagement) only one of the six children is monolingual. To assess the predictive value of multilingualism on the engagement profiles a multinomial logistic regression was conducted. The results are presented in Table 3.7. Again, as Profile 4 has only four children, that are all multilingual, odds ratios become extremely large and cannot be interpreted.

The relative probability of being in Profile 2 (i.e., low small group engagement) rather than Profile 3 (i.e., high small-group and moderate large-group engagement) was significantly higher (*OR* = 6.07) for multilingual children than the corresponding probability for monolingual children. The same trend was visible for the relative probability of being in Profile 2 rather than Profile 1 (i.e., low engagement) or 5 (high engagement), however, less strong and not significant. Again, Profile 2 is a rather small profile with only 6 children, 5 of whom are multilingual. So results should be handled with great caution.

Table 3.7 Odds Ratio and Confidence intervals of Multinomial Logistic Regression with Engagement Profiles

		Reference group			
		P2 **S-ST-L+**	**P3** **S+ST+L±**	**P4** **S+ST±L-**	**P5** **S+L+**
P1 S-ST-L-	Odds ratio	.45	2.73	extreme	2.25
	95% CI	.07;2.88	.90;8.34		.57;8.85
	p	.399	.078	<.001	.246
P2 S-ST-L+	Odds ratio		6.07	extreme	5.00
	95% CI		1.62;22.66		.97;25.83
	p		.007	<.001	.055
P3 S+ST+L±	Odds ratio			extreme	.82
	95% CI				.28;2.41
	p			<.001	.723
P4 S+ST±L-	Odds ratio				extreme
	95% CI				
	p				<.001

Note. Profile tags reflect the classroom settings of the profiles: S = small group without teacher; ST = small group with teacher; L = large group. 95% CI = 95% confidence interval.

Relation between interaction and engagement profiles

Finally, we combined the two profiles to determine how the interaction and engagement profiles were related to each other. The results are shown in Table 3.8. Since our sample size is rather small, the cross-tabulation is scattered, and therefore it was not possible to conduct statistical testing of the associations.

Table 3.8 Crosstab of interaction and engagement profiles with multilingual language background

			Engagement					Total
			P1; **S-ST-L-**	**P2;** **S-ST-L+**	**P3;** **S+ST+L±**	**P4;** **S+ST±L-**	**P5;** **S+ST+L+**	
Teacher-child interactions	P1; G±C±FU±Q-	monolingual	3	1	9	0	3	38
		multilingual	3	4	7	2	6	
	P2; G+C-FC-Q-	monolingual	0	0	0	0	0	3
		multilingual	2	0	1	0	0	
	P3; G±C+FU±Q-	monolingual	1	0	3	0	3	13
		multilingual	1	1	4	0	0	
	P4; G±C+FU+Q+	monolingual	0	0	1	0	1	6
		multilingual	0	0	0	0	4	
	P5; G±C±FU+Q+	monolingual	0	0	4	0	4	15
		multilingual	3	0	1	2	1	
	Total		13	6	30[a]	4	22	

Note. Profile tags reflect the components of the interaction profiles: G = gestures, C = complexity, FU = follow-up, Q = quantity; and the settings of the engagement profiles: S = small group; ST = small group with teacher; L = large group.

[a] One child is missing, as no interaction profile could be calculated for this child.

All monolingual children that had a high quantity of interaction with their teacher (i.e., interaction profiles 4 and 5), showed moderate to high engagement across settings (i.e., engagement profiles 3 and 5). This co-occurrence does not appear for the multilingual children. Furthermore, monolingual and multilingual children that had high complex interactions (i.e., interaction profiles 3 and 4), are also primarily represented in the moderate to high engagement profiles (i.e., engagement profiles 3 and 5). From the three multilingual children in interaction profile 2 (i.e., low quantity of nonverbal, low complex interactions), two were part of engagement profile 1 (i.e., low engagement). These children did not only have very limited interactions with their teacher, with much nonverbal communication and low complexity, they also showed low engagement across all classroom settings. The third child in interaction profile 2 showed moderate to high engagement across classroom settings (i.e. engagement profile 3).

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DISCUSSION

The general purpose of this study was to obtain a better understanding of the learning opportunities that monolingual and multilingual children are exposed to in interaction with their teacher. We took a person-oriented approach to explore the existence of distinct profiles of the characteristics of individual teacher-child interactions, and of behavioral engagement in diverse classroom settings. Consequently, profile membership was compared for monolingual and multilingual children. Lastly, the co-occurrence of the engagement and interaction profiles was explored.

We identified five profiles for teacher-child interactions that differed in the use of meaningful gestures, level of complexity and the quantity of interaction. Four of the five profiles showed moderate use of gestures in the interaction, whereas one profile showed a high prevalence of nonverbal communication (i.e., interaction profile 2). All children in this profile were multilingual. Teachers often use more nonverbal communication, such as symbolic gestures, in interaction with multilingual children to support the understanding of verbal interaction (Gillanders, 2007; Park, 2014; Rosborough, 2014; Vine, 2006). Furthermore, profiles with a higher prevalence of elaborate teacher follow-ups, also had a higher quantity of interaction. This suggests that, by using elaborate follow-ups, teachers gave the opportunity for extended discourse and, therefore, for longer interactions. Extended discourse assigns children a more active role in the interaction, and creates space for reasoning and discussion (Michaels & O'Connor, 2015). However, teachers do not often use elaborate follow-ups in interaction with young children (Dickinson et al., 2003; Mascareño et al., 2016). The present study adds to that by showing that the exposure to extended discourse does not only differ between classrooms, but also individual children within the same classroom get different opportunities for extended discourse.

We did not find any differences in the representation of monolingual versus multilingual children on the teacher-child interaction profiles. Previous research (de Oliveira et al., 2016; Lara-Alecio et al., 2009; Ping, 2014) suggests that teachers use simplification strategies in interaction with multilingual children, such as the use of more nonverbal communication and less complex utterances. Our study did not replicate those findings. This is a promising result as this might suggest the absence of teacher bias in interaction with multilingual children. The opportunities children get in interaction with their teacher were not related to them being monolingual or multilingual.

We furthermore identified five profiles of behavioral engagement. We found differences in engagement levels across profiles, and between classroom settings within profiles. However, differences between engagement profiles were mainly determined by the size of the group involved in the activity, and not by the presence of the teacher. Only one profile showed a distinct difference in the engagement levels between the small group settings with and without the teacher. About one third of all children in our sample showed low engagement levels in one or more settings. Previous research has proven the importance of engaging in diverse settings, as they all have different affordances. Large group settings, such as circle time, are generally used to expose children to print materials, such as books, complex oral language, and early literacy (Cabell, DeCoster, LoCasale-Crouch, Hamre, & Pianta, 2013). Additionally, in small group settings children have more chances to participate in interaction with teachers and peers, and are able to select their own activities. Future research on engagement in early childhood education should address how teachers can adapt activities in diverse classroom settings to engage all children.

Multilingual children seemed to show lower engagement levels across settings. We found no indications of an association between classroom settings and engagement level of multilingual children. In other words, multilingual children were represented in profiles with low engagement in small and/or large groups, and in settings with and/or without the teacher. These results suggest that teachers struggle to engage multilingual children in classroom activities – both in small and large group settings – that connect to their interests and knowledge. Regular classroom activities aimed at children from the majority language and culture might be less appealing to multilingual children, for whom there might be a weaker link to the background knowledge they acquired within their home context (Gregory, 1993; Razfar & Rumenapp, 2012).

The third aim was to examine how engagement and interaction profiles co-occur. The results showed that children that had richer teacher-child interactions (i.e., high complexity and/or high quantity), also showed moderate to high engagement across classroom settings. This relation was more apparent for monolingual children than for multilingual children. Previous research also showed that children that have higher quality teacher-child interactions, display higher engagement as well (Cirino, Pollard-Durodola, Foorman, Carlson, & Francis, 2007; Williford et al., 2013). Our findings suggest that children will be more engaged, when they have interactions with their teacher that

stimulate dialogue, provide elaborate follow-ups and expand their vocabulary. Likewise, teachers might be more inclined to engage in extended discourse with students who show engaged behavior.

Limitations

We recognize several limitations in our study. First, the sample size of the present study was rather small and results should therefore be interpreted with caution. Moreover, some of the profiles are small and could therefore not be interpreted for the logistic regression. The small sample size is a consequence of our focus on individual children, which allowed us to collect a rich data set that offered detailed information on the learning opportunities of monolingual and multilingual children. Considering the sample size, the three-profile solution – which showed good fit as well – could have been considered more appropriate. However the five-profile solution was more informative, and the small profiles showed very distinct characteristics, and were identified in diverse profile solutions, which is an indication of the robustness of these findings.

Second, the present study addressed the multilingual children as a homogenous group. There are, however, many characteristics that might partly explain the learning opportunities that they are involved in and are benefitting from. This includes, for example, a child's language proficiency and exposure in all their languages, socio-economic status, and home literacy environment (Cummins, 1979). Simplifying multilingualism to a binary variable, as happens in most studies, could be considered a questionable decision, although understandable. To capture the nature of multilingualism, we collected information about the child's home language background using a parent questionnaire, including questions on which languages were used across settings and activities and with different people, but, unfortunately, only about half of the questionnaires was returned, which forced us to operationalize multilingualism as a binary variable. The questionnaires we did receive, and the information provided by the teacher, showed that the multilingual children indeed varied widely in terms of home language(s), language exposure and socioeconomic status. Future research on learning opportunities of multilingual children should address the heterogeneous nature of multilingual children by either using methods that are more suitable for smaller samples, by addressing only a subgroup of multilingual children with comparable background characteristics (e.g., home language, socioeconomic status, age of acquisition), or by using a larger sample.

Conclusion

The present study contributed to the current knowledge base by taking a person-oriented approach and by using micro-analytic, observational data. Typically, research on the topic of learning opportunities in early childhood education uses whole classroom observation and a variable-oriented approach. However, we conducted observations on the individual level, which allowed us to collect rich data across the year in 19 classrooms including

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micro-level interaction data. This way, we could capture the complexity of teacher-child interactions and engagement patterns of monolingual and multilingual children within one classroom. Future research on this topic should also examine how the different learning-opportunity profiles are related to academic outcomes of monolingual and multilingual children.

In sum, the present study showed that children within the same classroom are exposed to different learning opportunities. The teacher-child interactions of individual children differ on the level of communication channel, complexity and quantity. It is promising to see that multilingual children are exposed to the same quality of interaction as monolingual children. However, they do show lower levels of engagement across classroom settings compared to their monolingual classmates. The present study emphasizes the importance of studying the learning opportunities of monolingual and multilingual children to create equal learning opportunities for all children in early childhood education.

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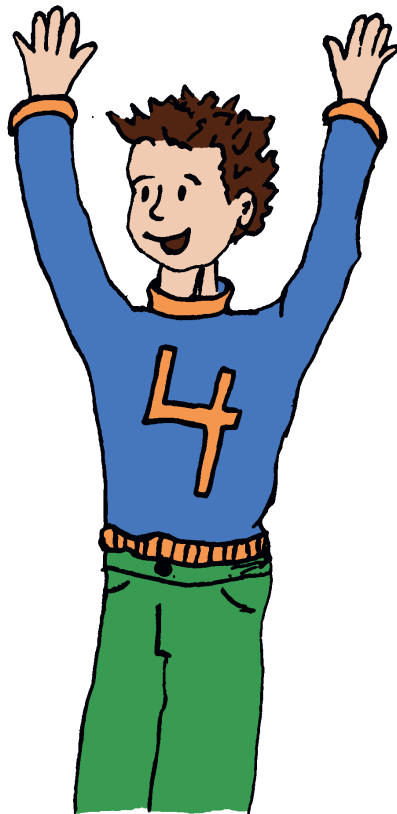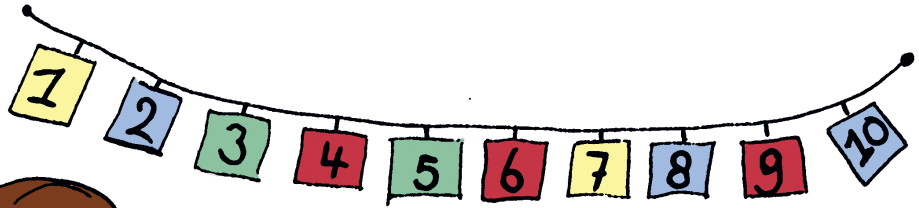
Learning opportunities of monolingual and multilingual kindergarteners and their early literacy and executive functioning development

Nowadays, classrooms include children coming from a wide range of cultures and speaking different languages. Teachers are therefore challenged to create appropriate learning opportunities for very diverse children. The current study examined the unique contribution of general classroom interaction, individual teacher-child interactions and behavioral engagement, on early literacy and executive functioning development of monolingual and multilingual kindergarteners. Nineteen classrooms were followed for one school year. On three occasions teacher and children were observed for teacher-child interactions and the children were assessed on engagement, early literacy and executive functioning. *Research findings*: The results show that learning outcomes of both multilingual and monolingual children were positively associated with high engagement in large groups and frequent interactions with the teacher. Furthermore, monolingual children's favorable academic outcomes were predicted by complex interactions; multilingual children's favorable outcomes were predicted by low classroom organization. *Practice or policy*: The present study emphasizes the importance of recognizing the differences between monolingual and multilingual children in their needs in the classroom, as well as recognizing that these groups might be unjustifiably exposed to different educational experiences, in order to optimize the learning opportunities for all children, regardless of their language background.

Keywords: teacher-child interactions; engagement; executive functioning; early literacy; multilingualism

INTRODUCTION

In kindergarten, children are expected to acquire foundational skills for a successful transition to formal schooling. Offering the appropriate learning opportunities to support this process is in itself a challenge for early childhood educators. As schools are becoming more culturally diverse, classrooms include children coming from a wide range of cultures and speaking different languages, requiring teachers to create appropriate learning opportunities for all children from diverse backgrounds. Since children develop mainly through human interaction (Bronfenbrenner & Morris, 2007), we should examine learning opportunities in the classroom in the light of the interactions teachers and children engage in. Ample research shows that in order to promote a child's cognitive, academic, and socio-emotional development, teachers need to engage in high-quality interactions with the children in the classroom (Bandel et al., 2014; Hamre et al., 2013; Mashburn et al., 2008). However, there is considerable variation in the learning opportunities that different children receive within one classroom (Pelatti et al., 2014; Weyns et al., 2019). Furthermore, engagement of the interaction partners is central to high-quality interaction (Fredricks et al., 2004). Learning opportunities should therefore be conceived as a combination of the quality of teacher-child interactions, at the classroom and the individual level, and child engagement. Even though, previous research exemplifies the importance of these components of learning opportunities, it remains unclear how these components relate to the development of multilingual children. When considering the development of multilingual children and comparing it to monolingual children, two developmental areas are of particular interest: early literacy and executive functioning. Multilingual children often lag behind on early literacy skills in the language of instruction (Bialystok & Feng, 2011), whereas they might show greater executive functioning skills compared to their monolingual peers (Barac et al., 2014). Therefore, the current study will examine the unique contribution of general classroom interaction, individual teacher-child interactions and child engagement, to the development of early literacy and executive functioning skills of monolingual and multilingual children during one year in kindergarten.

Multilingual children

Multilingualism is a complex concept and definitions and labels vary widely (García, 2011; Wei, 2000). The concept of multilingualism does not only refer to mastering multiple languages, but also often implies being raised in diverse social and cultural contexts (García, 2011). It is difficult to determine when someone should be called multilingual, and cognitive differences might even evolve from the number of languages people speak (Baumgart & Billick, 2018; Schroeder & Marian, 2017). In the present study, we choose to use the term multilingualism rather than bilingualism, as it is more inclusive and some of our participants (N = 8) spoke more than two languages. We call children

multilingual when they habitually interact in a different language than Dutch in their home environment.

Multilingual children's early literacy skills

Early literacy skills are important for later school success, as they prepare children to become successful readers. Aside from an orientation to (the use and functions of) text, vocabulary is important when learning to read (Verhoeven, van Leeuwe, & Vermeer, 2011), as well as to have the ability to recognize and manipulate the separate phonemes in a word (i.e., phonological awareness; Melby-Lervåg, Lyster, & Hulme, 2012). There are suggestions that multilingual children show different developmental pathways concerning phonological awareness and vocabulary. They are often found to have lower vocabulary levels in the language of instruction (Bialystok & Feng, 2011; Leseman, 2000; Verhoeven, 2000), but also in their native language (Bialystok & Feng, 2011), as compared to their monolingual peers. The vocabulary size in the language of instruction accelerates when multilingual children enter early childhood education, but remains smaller than that of monolingual children (Leseman, 2000). The smaller vocabulary size of multilingual children could be partly explained by possible confounders, such as socioeconomic status or home literacy environment. Families of many multilingual children often live in disadvantaged socioeconomic conditions (Calvo & Bialystok, 2014), and therefore might have less resources to offer children a rich and stimulating home literacy environment (van Steensel, 2006), which are both found to have an impact on a child's vocabulary development. Lower vocabulary levels of multilingual children, however, do not imply that multilingual children are incompetent communicators. The lower vocabulary levels do not transfer to other, related, abilities (Bialystok & Feng, 2011). For example, the phonological awareness skills of multilingual children appear to be similar or even better than that of monolingual peers (Bialystok et al., 2003; Bruck & Genesee, 1995).

Multilingual children's executive functioning skills

Executive functions are those skills that are needed for higher order thinking, which involves, amongst others, flexibility, creativity, planning, analyzing, and reasoning. These skills are found to positively relate to school readiness in young children, as it helps children to hold an instruction in mind, resist distractions in the classroom, and focus on the relevant aspects of a task (Brock, Rimm-Kaufman, Nathanson, & Grimm, 2009; Fitzpatrick, McKinnon, Blair, & Willoughby, 2014). In this study we adhere to the conceptualization of Diamond (2013) and Miyake and colleagues (2000), which distinguishes three skills: working memory, inhibition, and cognitive flexibility. Working memory is used to hold information available while using it, whereas inhibition is needed to suppress impulses in order to complete a task. Cognitive flexibility evolves from these two skills and makes it possible to switch between perspectives or tasks. For this, a child needs to suppress the one perspective (inhibition) and to activate the other in their working memory (Diamond,

2013). Although separately mentioned here, the three executive functioning skills work together and are often hard to distinguish from one another.

A large body of research has examined the development of executive functioning skills of multilingual children (Adesope et al., 2010; Barac et al., 2014; Blom, Küntay, Messer, Verhagen, & Leseman, 2014; Carlson & Meltzoff, 2008). Because multilingual children continuously switch between their languages and need to suppress the one language to speak the other, they are constantly practicing their executive functions. This could lead to better developed executive functions (Adesope et al., 2010). The results, however, are mixed. Background characteristics of the studied multilingual population seem to be important for finding significant executive functioning differences between monolingual and multilingual children (van den Noort et al., 2019). These background characteristics include, amongst others, the age of acquisition of the second language (Struys et al., 2015), as well as sociolinguistic contexts (Blom, Boerma, Bosma, Cornips, & Everaert, 2017), school ethnic composition (Ready & Reid, 2019), and home language environment (Verhagen, Mulder, & Leseman, 2017). For example, children who started the acquisition of both languages at birth are found to outperform children that started learning a second language at a later age on nonlinguistic cognitive control (Struys et al., 2015).

A review study of Barac and colleagues (2014) across 26 studies on the effects of multilingualism on the executive functioning development of young children found primarily effects for inhibition. Multilingual children are generally better able to suppress or ignore distractions than monolingual children. The results for working memory are mixed, but seem to suggest that multilingualism represents a benefit when the working memory task requires a very high level of executive functioning. For cognitive flexibility there seems to be a multilingual benefit, however, the evidence is still limited (Barac et al., 2014).

It should be noted, that evidence for the multilingual benefit on executive functions is still under debate. Many studies that report null results are not being published, and studies that find effects have generally small sample sizes, fail to have comparable groups based on demographic characteristics, or use flawed statistical testing (de Bruin, Treccani, & Della Sala, 2015; Paap et al., 2015; van den Noort et al., 2019).

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Learning opportunities of monolingual and multilingual young children

The academic and cognitive development of multilingual and monolingual young children is for an important part influenced by the learning opportunities created in early childhood education. Learning opportunities in education are all the classroom experiences that children have, including the quality and quantity of their interactions with teachers, and the activities they engage in (Hamre & Pianta, 2007; La Paro et al., 2009). These classroom experiences have the potential to generate changes in our cognitions, behaviors, and feelings, particularly in young children, but do not necessarily need to be capitalized – i.e., translated into learning gains – in order to be an opportunity. Since

children develop by meaningfully interacting with and actively engaging in their learning environment (Bronfenbrenner & Morris, 2007; Fredricks et al., 2004), the present study examines three key components that define the learning opportunities of monolingual and multilingual kindergarteners: the quality of general classroom interaction, the quality of individual teacher-child interactions, and child engagement. All three components have been separately found to relate to early literacy and executive functioning development of monolingual children. It is unclear, however, how these components relate to each other and uniquely contribute to the outcomes. Additionally, it is also unclear how these learning opportunity components relate to the developmental outcomes of multilingual children.

General classroom interaction

Classroom interactions play an important role in a child's school success. Three domains of classroom interaction are typically distinguished in educational research: emotional support, classroom organization, and instructional support (Hamre et al., 2013; La Paro et al., 2004). First, in *emotionally supportive* classrooms the teacher shows enthusiasm and has an emotional connection with the children in the classroom. In addition, the teacher is sensitive to the academic and social needs of the children. As a result, children are open for learning and able to take risks in their learning because of the safe environment that is created. Second, a classroom shows good *classroom organization* when the teacher shows flexibility towards the children's interests and class schedules. Furthermore, the teacher monitors the behavior of the children in the classroom and the productivity of the class. In well-organized classrooms it is easier for children to stay engaged in the activities provided and learn from those, because they can take an active role and are able to focus on the goal of the activity. Third, an *instructionally supportive* teacher stimulates higher-order thinking and problem solving. This teacher engages in extended interactions with children and provides high quality feedback, thereby maximizing learning opportunities (La Paro et al., 2004). In general, studies from different countries all over the world found that teachers show low to moderate levels of instructional support, moderate levels of classroom organization, and higher levels of emotional support (Cadima et al., 2010; La Paro et al., 2009; Pakarinen et al., 2010).

High quality general classroom interactions are associated with the development of early literacy skills and executive functioning. First, teacher warmth and emotional support, has been associated with gains in early literacy skills (Carr et al., 2019; Curby, Rimm-Kaufman, et al., 2009; Pianta, Belsky, et al., 2008) and executive functioning skills (Broekhuizen et al., 2015). Second, teacher behavioral support and good classroom organization, is linked to higher early literacy (Cameron et al., 2008; Carr et al., 2019; Curby, Rimm-Kaufman, et al., 2009) and executive functioning skills (Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). Third, in classrooms where teachers provide high quality instruction, children also show higher levels of early literacy (Bratsch-Hines et al., 2019; Carr et al., 2019; Curby, LoCasale-Crouch, et al., 2009; Mashburn et al., 2008)

and executive functioning (Rimm-Kaufman et al., 2009). The same relations between early literacy skills and quality of general classroom interaction have been found for multilingual children (Peisner-Feinberg et al., 2014). Yet, high quality general classroom interaction might be even more important for multilingual children as it is found to reduce the gap in language development between monolingual and multilingual children (Leseman & Slot, 2014). High quality instructional support is particularly important for their development of early literacy skills (Buysse, Castro, & Peisner-Feinberg, 2010). The relation between general classroom interaction and executive functioning for multilingual children is still unknown. In the present study we will therefore further explore how general classroom interaction relates to learning outcomes of multilingual children.

Individual teacher-child interactions

Interactions measured at the classroom level are only partly informative for the learning opportunities of individual children. While interactions measured at the classroom level can be a good indication of learning opportunities for the children in the classroom, the interactions individual children have with their teacher, might be of different quality than the individual teacher-child interactions of the other children in the classroom. The differential classroom experiences for monolingual and multilingual children that might arise because of this are rarely studied. Our review (i.e., Chapter 2; Langeloo et al., 2019) showed that only five studies compared the individual teacher-child interactions of monolingual and multilingual children. Teachers were found to offer different learning opportunities to multilingual children in the classroom, which led to unequal chances in classroom activities (DaSilva Iddings, 2005; Gregory, 1993). For example, teachers would offer separate reading activities for multilingual children that primarily focused on decoding skills, whereas the reading activities for monolingual children would focus much more on discussion and making connections to their own lives (DaSilva Iddings, 2005). Furthermore, the linguistic complexity and vocabulary that was used in interactions with multilingual children was less diverse, albeit more abstract, than in interactions with monolingual children (Aarts et al., 2016; Tsybina et al., 2006). Teachers also more often had shorter interactions, including simple directives and direct requests, with multilingual children, than with monolingual children (Sullivan et al., 2015). Although this indicates that multilingual children might be exposed to different individual teacher-child interactions than monolingual children, it remains unclear how this might affect their learning outcomes. In the present study, we explore both the possible differences in the interactions monolingual and multilingual children are exposed to, and the potential different associations of these interactions with the outcomes.

Engagement

The potential impact of high quality interactions – both at the classroom and individual levels – presupposes that children are able to focus and maintain their attention on the

activity at hand. In other words, children need to be engaged in order to profit from the interaction and educational activity. In early childhood education, engaged children focus on the activity, show dedication, enthusiasm and motivation, and are able to self-regulate their behavior around the activity at hand (Fredricks et al., 2004). Children that are more engaged are found to have better language outcomes on vocabulary and phonological awareness (Bohlmann & Downer, 2016), and have better outcomes on executive functioning, including self-regulation (Brock et al., 2009; Portilla, Ballard, Adler, Boyce, & Obradović, 2014). Research on the differences in engagement of monolingual and multilingual young children is limited. Sullivan and colleagues (2015) found no significant differences in engagement between monolingual and multilingual children. However, they did find that multilingual children acted more often as a non-participating observer when the teacher was not directly addressing them. The authors suggest that this might mean that multilingual children might not have understood the teacher's instruction or are experiencing a silent period, common to multilingual children. Furthermore, showing only observing behavior does not necessarily mean the child is not engaged (Larson, 1999). As research on the behavioral engagement of multilingual children is limited and it remains unclear how multilingual children's engagement relates to their learning outcomes, the present study will explore these relations.

Present study

Previous research has shown that general classroom interaction, individual teacher-child interactions, and engagement are important components that make up a child's learning opportunities. These learning opportunities are important predictors of children's academic and cognitive development. Since multilingual children show differences in the development of early literacy and executive functioning compared to monolingual children, they might benefit from different learning opportunities. It is still unclear what components constitute the learning opportunities of multilingual children and how they impact their development of early literacy and executive functioning. Therefore, the present study aims to examine the unique contribution of general classroom interaction, individual teacher-child interaction, and engagement on early literacy and executive functioning outcomes in monolingual and multilingual children. We formulated the following research question: How do the three components of learning opportunities relate to early literacy and executive functioning outcomes in kindergarten for monolingual and multilingual children?

METHOD

Design

This study is part of a larger study with a longitudinal design of three time points in one school year; each roughly three months apart (October 2016, January 2017, April 2017). At

each time point the same data was gathered. Data collection at each time point for each classroom took two days. On the first day the focal children were observed for engagement and the teacher-child interactions were filmed. On the second day, the early literacy and executive functioning skills of the focal children were assessed.

Sample

The participants (5–6 years old) came from 20 kindergarten classrooms from 12 schools across the Netherlands. The schools were all located in neighborhoods with a prevalence of immigrants (i.e., at least one parent was born abroad) above national average (CBS, 2013) and were therefore expected to have ample multilingual children. In each classroom, four children were selected (two multilingual, two monolingual; 80 children in total); henceforth referred to as the 'focal children'. In order to select focal children, teachers were first asked to report which children in their classroom were multilingual, defined as children who habitually interacted in a language other than Dutch in their home environment. When there were more than two multilingual children in one classroom, multilingual children were selected in such a way to retain an even distribution in gender and socioeconomic status (SES; based on the Dutch school funding policy) within the classroom and across the sample. Monolingual children were children that spoke only Dutch, both at home and at school. Monolingual focal children were matched to the multilingual children based on SES and gender. When there were multiple possibilities, children were selected randomly. All children present during the filming in the classroom had active parental consent for filming. Focal children were selected from the children for whom parental consent was also given for individual observation and assessment. This consent for observation and assessment was given by 93% of all parents.

Although we aimed for 40 children in both language groups, the initial sample consisted of 33 monolingual and 43 multilingual children. This was due to three reasons. First, parents of focal children were asked to fill in a questionnaire about their home literacy environment. When comparing the available parent questionnaires (only 42 of 80 (53%) parent questionnaires were returned) and the information provided by the teachers, four focal children that were monolingual according to the teacher, and selected as such by us, turned out to have frequent interactions in other languages than Dutch at home according to the parents. We decided to include them in the multilingual sample based on the information the parents gave about the use of different languages in the school and home context. Second, in one classroom only one of the three monolingual children had parental consent for individual observations. In order to attain the number of four focal children per classroom, we included three multilingual children in that particular classroom. Third, one classroom dropped out of the project after the first observations because of teacher burn out.

The initial sample was used for the identification of the individual teacher-child interactions and engagement profiles. The monolingual and multilingual groups did not

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significantly differ on age (monolingual: *M* = 5;5, *SD* = 4.86 months; multilingual: *M* = 5;4, *SD* = 5.30 months), gender (monolingual: 52% boys; multilingual: 49% boys), and SES (monolingual: 24% low SES; multilingual: 30% low SES).

Since seven children were not present during the test assessment at the third time point, the sample that was used for the analysis aimed at predicting developmental outcomes consisted of 69 children. Three children changed schools during the school year, one child was diagnosed with a developmental disorder, and the other three children were not present due to illness. The background information about this final sample of focal children and their teachers is presented in Table 4.1. The multilingual children spoke a wide variety of languages, namely Albanian (*n* = 1), Arabic (*n* = 6), Armenian (*n* = 1), Berber (*n* = 2), Chinese (*n* = 1), Czech (*n* = 1), English (*n* = 2), French (*n* = 1), Greek (*n* = 1), Hindi (*n* = 1), Indonesian (*n* = 1), Isan (*n* = 1), Kurdish (*n* = 1), Lingala (*n* = 1), Moroccan (*n* = 3), Papiamento (*n* = 3), Polish (*n* = 4), Portuguese (*n* = 1), Punjabi (*n* = 1), Sarnami Hindustani (*n* = 1) Somali (*n* = 2), Spanish (*n* = 2), Thai (*n* = 1), and Turkish (*n* = 7). Eight children interacted in two foreign languages at home. The home language was unknown for one child, although the teacher indicated that the child was multilingual.

Table 4.1. Background statistics of teachers and focal children.

| | Teachers *(N = 19)* | | Focal children *(N = 69)* | | | |
| | | | Monolingual *(N = 30)* | | Multilingual *(N = 39)* | |
	M (SD)	Range	*M (SD)*	Range	*M (SD)*	Range
Age	40.06 (13.12)	22 - 63	5;5 (4.54)	4;10 – 6;7	5;4 (4.89)	4;7 – 6;5
Experience in primary ed.	16.94 (14.02)	1 - 40				
years in kindergarten	12.50 (13.30)	0 - 40				
Class size	21.21 (3.76)	14 - 28				
of which multilingual	40.98% (20.89)	13 - 86%				
SES			Low: 26%		Low: 32%	
Gender	18 female (95%)		14 boys (47 %)		19 boys (49%)	

Note. Teacher's age and experience is in years. Children's mean age and range are indicated in years and months; *SD* in months. Primary ed. = primary education. *Years in kindergarten* refers to the number of years a teacher has been teaching kindergarten classrooms. *SES* was based on the Dutch school funding policy. A low SES indicates that the highest parental education level is prevocational education or a maximum of two years of a higher level secondary education.

Measures and variables

General classroom interaction

The Classroom Assessment Scoring System (CLASS; Pianta, La Paro, et al., 2008) was used to assess the general quality of classroom interactions in three domains: emotional

support, classroom organization and instructional support. Emotional support includes four dimensions that assess positive climate, negative climate, teacher sensitivity, and regard for student perspectives. Classroom organization includes three dimensions that focus on behavior management, productivity, and instructional learning formats. Instructional support entails three dimensions that assess concept development, quality of feedback, and language modeling. The ten dimensions covering the three domains are scored on a 7-point Likert scale. Scores 1 and 2 indicate low quality of teacher-child interactions, 3 to 5 indicates mid-range quality, and 6 and 7 indicate high quality teacher-child interactions. Each recorded morning session was coded on the CLASS domains in cycles of 30 minutes (20 minutes observation; 10 minutes scoring) by a certified, reliable observer (i.e. the first author; La Paro et al., 2004). Depending on the length of the video and time in outdoor play (not scored), the number of cycles of CLASS scoring per recorded morning session ranged from four to seven; most videos (N = 10) had five cycles.

Data pre-processing for classroom level interaction
For each classroom a score for each dimension of CLASS was calculated by averaging the scores over the different cycles. A Principal Component Analysis (PCA) with varimax rotation on the scoring on the ten dimensions revealed a three component solution explaining 76.67% of the variance replicating the three CLASS domains. The first component accounted for 32.44% of the variance with moderate to high loadings (.54–.91) and represented the emotional support domain, including positive climate, negative climate, teacher sensitivity, and regard for student perspectives. The instructional support domain, including concept development, quality of feedback, and language modeling, was represented in the second component. This component accounted for 22.55% of the variance and had moderate to high loadings (.56–.81). The third component accounted 21.67% of the variance and represented the classroom organization domain with high loadings (.70–.89) on behavior management, productivity, and instructional learning formats. To limit the complexity of the final model, the factor scores for the three domains were used, instead of the separate dimensions.

Profiles of individual teacher-child interactions
The profiles of individual teacher-child interactions that were used in the present study have been identified in a previous study (i.e., Chapter 3). The profiles were based on the individual teacher-child interactions that were filmed during one whole morning in the classroom. As the teacher was constantly followed in the classroom, all interactions between the teacher and the focal children were filmed. All interactions in which the teacher specifically addressed the focal child were considered individual teacher-child interactions. The interactions could take place with more children around (e.g., in circle time or in a small group), but in the analyses only the teacher utterances that were specific for the focal child were included, either because the focal child responded to that teacher

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utterance, or because the teacher utterance was in response to a focal child utterance. These interactions were transcribed and coded on utterance level for communication channel, type of utterance, and language complexity. Communication channel distinguished between the use of verbal and non-verbal communication. The dimension type of utterance was divided in six main categories: prompting (e.g., "What do you see?"), informing (e.g., "I'm going to the bathroom"), response (e.g., "What do you see?"/ "A tree"), follow-up (e.g., "yes, that is a tree"), supporting flow (e.g., turn giving), and residual (i.e., utterances that did not fit the aforementioned categories). Finally, language complexity made a distinction between literal (e.g. "Can you distribute the scissors?") and inferential utterances (e.g. "Do you have the letter R in your name?"). The complete coding scheme can be found in Appendix B. The first author and research-assistant double-coded nine segments from five different transcripts (157 utterances in total) to determine inter-rater agreement (Krippendorff's alpha) on communication channel and type of utterance. On both dimensions high agreement was found (Communication channel: Krippendorff's α = .98; 95% CI [.92,1.00]; Type of utterance: Krippendorff's α = .93; 95% CI [.88,.96]). After the coding of all transcripts, an internal audit (Akkerman, Admiraal, Brekelmans, & Oost, 2008) by the authors revealed that – though reliably coded by the first author and research assistant – the definitions of the language complexity code had certain inconsistencies in terms of their construct validity. The first three authors discussed the issue and revised the definition and coding rules for language complexity. Consequently, the first author recoded all data for language complexity. The reliability of this coding was ensured with an audit. The first author coded 10 segments from 8 different transcripts and discussed the codes with the second and third author. They agreed with the codes given by the first author. After the coding of all transcripts, the first author discussed all complicated cases (N = 25) with the second and third author and they jointly agreed upon a code for each of these cases.

Using Latent Profile Analysis (LPA) in MPlus Version 8 (Muthén & Muthén, 1998-2017) profiles were identified and children were assigned to their profile with the highest probability. Five profiles could be identified. Alongside the profile label, we gave each profile a short tag name, to be used in tables and figures. These tags reflect the four components in the profiles – i.e., gestures (G), complexity (C), elaborate follow-ups (FU), and quantity (Q) – and the level of each of the components – i.e., above average (+), close to average (±), and below average (-). Children in the profile of *low quantity of typical interactions* (G±C±FU±Q-) had a low number of interactions with their teacher. These interactions can be characterized by a close to the sample average use of meaningful gestures and complex interactions. The profile of *low quantity of nonverbal, non-complex interactions* (G+C-FU-Q-) can be characterized by the near absence of complex moves and lowest amount of interaction. The children in the profile with *low quantity of high complex interactions* (G±C+FU+Q-) used an average amount of meaningful gestures, but the interactions, although of low quantity, were of high complexity. The children in the profile

with *high quantity of high complex interactions* (G±C+FU+Q+) had many interactions with their teacher that were characterized by an average use of meaningful gestures and high complexity. Finally, the profile of *high quantity of followed-up interactions* (G±C±FU+Q+) was characterized by an average use of meaningful gestures and complex interactions, and a high use of elaborate follow-ups. The children in this profile had a high number of interactions with their teacher. Children's profile membership was used in further analyses.

Profiles of engagement

We used profiles of engagement that were identified in the same study as the profiles of individual teacher-child interactions (i.e., Chapter 3). The profiles were based on live observations of the focal children during three whole mornings in the classroom. The focal children were consecutively observed for time intervals of five minutes. Behavioral engagement was scored on a visual analogue scale (Aitken, 1969) where observers had to indicate on a ten-centimeter line how engaged the child was. Since child engagement is expected to be sensitive to classroom settings at the moment of observation – such as group size and role of the teacher – children received a new engagement score every time a new *setting* (i.e., individual, individual with teacher, pair, pair with teacher, small group, small group with teacher, large group, large group with teacher) took place during the five-minute observation intervals. Twelve research-assistants and the first author conducted the observations. They coded five training videos for reliability assessment. This showed good reliability for both engagement (ICC = .84; 95% CI [-.07,1.00]) and setting (Krippendorff's α = .74; 95% CI [.64,.82]).

An average engagement score was calculated for the three aggregated classroom settings – *small group* (up to six children) *with teacher*, *small group* (up to six children) *without teacher*, and *large group* (seven or more children) *with or without teacher* – and corrected for the duration of the observation. Again, LPA was conducted with the engagement scores in the diverse classroom settings as predictors for the profiles and children were assigned to their profile with the highest probability. Five profiles were identified. Next to profile labels, tag names were given to reflect the characteristics of the profiles in tables and figures. These tags include the setting – small group without teacher (S), small group with teacher (ST), and large group – and the level of engagement – above average (+), close to average (±), below average (-). Children in the *low engagement* (S-ST-L-) profile showed the lowest engagement in all settings. Children in the *low small-group engagement* (S-ST-L+) profile showed low engagement in small group settings with and without the teacher, but high engagement in the large group. The profile of *high small-group and moderate large-group engagement* (S+ST+L±) was characterized by high engagement in small group settings and moderate engagement in the large group. The profile of *high small-group and low large-group engagement* (S+ST±L-) showed high engagement in small groups without the teacher, average engagement in small groups with the teacher and the lowest engagement

in large group settings. Finally, the children in the *high engagement* (S+ST±L-) profile showed high engagement across all classroom settings. Children's membership of one of the profiles was used in further analyses.

Early literacy

Three subtests of a Dutch standardized early literacy test were used to assess early literacy (Aarnoutse, Beernink, & Verhagen, 2016). The productive vocabulary subtest required the child to pronounce the word representing the construct described by the researcher. Phonological awareness was assessed with the other two subtests: the analysis subtest required the child to indicate which of two words contained a certain phoneme, and the synthesis subtest required the child to create a new existing word by removing the first or last phoneme. According to the test administration rules, each subtest was stopped when four consecutive items were answered incorrectly. The subtests had 20 (i.e., analysis and synthesis) or 25 items (i.e., vocabulary) and had good internal consistency (productive vocabulary: Cronbach's α = .85; analysis: Cronbach's α = .90; synthesis: Cronbach's α = .93). Several longitudinal studies with these subtests support their validity (Aarnoutse et al., 2016; Aarnoutse, van Leeuwe, & Verhoeven, 2000; Verhagen, Aarnoutse, & van Leeuwe, 2006).

Data pre-processing for early literacy

Sum scores of correct responses were calculated for the three separate subtests. We conducted a PCA with varimax rotation separately for both time point 1 and 3. Both analyses revealed a one component solution representing early literacy skills. There was slight variation in the explained variance (T1: 49.98%; T3: 50.23%) and the corresponding range of factor loadings (T1: .67-.78; T3: .55-.86). The factor scores were added to the final model as a measure of early literacy at both time points.

Executive functioning

To assess executive functioning three tests were administered. First, the Corsi Block task (Corsi, 1972) was administered to test visuospatial working memory. We selected a nonverbal working memory test to limit the effect of potential differences in the language skills of multilingual and monolingual children. Nine small blocks were fixed on a square board. The child had to replicate the exact same order as the sequence of blocks that were tapped by the researcher (Kessels, van Zandvoort, Postma, Kappelle, & de Haan, 2000). The sequences started with two blocks, and each second trial the sequence length increased by one block. The test was stopped when both trials of a sequence length were repeated incorrectly. The number of correctly repeated sequences was taken as the score for the Corsi block task.

Second, Hearts and Flowers (Diamond, Barnett, Thomas, & Munro, 2007) was used to measure three components of executive functioning: working memory, inhibition, and

cognitive flexibility. The task was administered on a laptop computer and consisted of three blocks. In the congruent block, a heart was presented on either the left or the right side of the screen, and the instruction for the child was to press a button on the same side. This block requires working memory, as the child has to remember the rule that has to be used. In the incongruent block, a flower was presented on either side of the screen and the child had to press a button on the other side. This block requires both working memory (i.e., remembering the rule), and inhibition (i.e., inhibit a prepotent motor response). Finally, in the mixed block, both hearts and flowers were presented and the child had to follow the specific rule of the previous blocks (i.e., same or opposite side) for the picture that was presented. This block requires all three executive functions, as the child has to remember both rules, switch between them and inhibit the one rule to adhere to the other rule. The first two blocks consisted of 12 items, the third block had 32 items.

Third, the Flanker task (Diamond et al., 2007) also assesses three components of executive functioning. Again, the task was administered on a laptop computer. In this task the child had to feed the hungry fish by pressing the button on the same side as the direction where the hungry fish were swimming. In each trial five fish were presented on the screen, with either the middle or the outer fish being hungry. They could appear in four possible combinations: (1) all fish swim in the same direction, either left or right (i.e., congruent trials), (2) the distractor fish swim in the other direction (i.e., incongruent trials), (3) only the hungry fish is presented (i.e., no distractor trials), and (4) the distractor fish swim downwards (i.e., neutral trials). The task consisted of three blocks. In the first block, blue fish were presented on the screen and the child had to indicate in which direction the middle fish was swimming. This block assesses inhibition: the child has to inhibit visual distraction. In the second block, the fish were pink and the child had to indicate in which direction the outer fishes swim. This block also assesses inhibition. Again, the child has to inhibit visual distraction, but also the rule of block 1. In the third block, both pink and blue fish were presented and the child had to press the button according to the rules of the previous two blocks. This block requires all three executive functions. The child has to remember the two rules, switch between rules, and inhibit the one rule to be able to adhere to the other rule. The first two blocks had 16 trials and the mixed block had 64 trials.

Data pre-processing for executive functioning
All trials of the Hearts and Flowers and the Flanker tasks with a response time shorter than 200 milliseconds were removed (TP1: Flanker: 3.93%, Hearts and Flowers: 2.25%; TP3: Flanker: 3.29%, Hearts and Flowers: 2.69%), as these should be considered 'anticipatory', meaning that the response was too fast to be in response to the stimulus (Davidson, Amso, Anderson, & Diamond, 2006). Since reaction times are found to be a less reliable and sensitive measure with young children, we used the accuracy on the Hearts and Flowers and Flanker tasks for further analyses (Cohen, Bixenman, Meiran, & Diamond, 2001; Diamond et al., 2007). The total number of correct responses was calculated for each block

on both tests. At time point 1 there was a ceiling effect on the hearts block (M = 9.26; SD = 2.91). This block was therefore not included in further analyses. Since the blocks of both tasks assess multiple executive functions at once (Diamond et al., 2007), and the three executive functions are not independent, but build upon one another (Diamond, 2013), a PCA with varimax rotation was conducted to explore what components of executive functioning could be distinguished. The separate blocks from the Hearts and Flowers and Flanker tasks were included in the PCA, as well as the Corsi block score. In line with previous research (Lin, Liew, & Perez, 2019), only one component was identified. This component accounted for 46.92% of the variance at time point 1 and 57.12% at time point 3. The factor loadings ranged from .46 to .81 in time point 1 and from .52 to .85 in time point 3. The factor scores, representing a general level of executive functioning will be used in further analyses.

Procedure

Data collection at each time point was spread out over two days. On the first day, two researchers came into the classroom for one morning to collect the video and live observational data at each time point. One researcher filmed the teacher for the entire morning – excluding outdoor play – thus including all interactions between the teacher and the focal children. Video data is the raw material for the assessment of general classroom interaction, as well as the individual teacher-child interactions. Simultaneously, the other researcher consecutively observed the focal children during the same activities in order to assess their behavioral engagement. The filming and observations were conducted by the first author and twelve research-assistants. The research assistants were all final year Bachelor's students or Master's students in educational sciences or a related field. They were trained on the observation of child engagement by the first author. The training consisted of two sessions. In between the training sessions, training videos were independently coded. During the next session all disagreements were discussed. The training took about eight hours in total. Before the second and third time point all research-assistants practiced coding again with four videos in order to refresh the observation rules.

On the following day one of the research assistants returned to the classroom to assess language and executive functioning skills of the four focal children. The test assessments were conducted individually in a quiet room and took about 45 minutes. Children could take breaks in between tests. The tests were always administered in the same order (i.e., *Vocabulary*, *Corsi block task*, *Analysis*, *Flanker task*, *Synthesis*, *Hearts and Flowers*). The Hearts and Flowers task and Flanker task were conducted on a laptop. After completing all tests the children could pick a sticker as a reward. All research-assistants were trained on the assessments of these tests by the first author and had to practice the assessment with one of the other research-assistants prior to the start of data collection.

The recorded morning sessions in the classroom were used for the assessment of general classroom interaction and individual teacher-child interaction. The first author coded

the videos for quality of general classroom interaction using CLASS. Three research-assistants, all Master's students in educational sciences or a related field, and the first author transcribed the segments of individual teacher-child interactions for the first time point. The research-assistants were trained in transcription rules and conventions by the first author in three training sessions. In between sessions they independently transcribed video segments. Disagreements were discussed during the next session. The training took about ten hours in total.

The transcripts were coded by another research-assistant and the first author. The research-assistant was a Master's student in educational sciences and trained in the coding scheme by the first author. The training consisted of five sessions in which the coding rules were explained. After each session new data was coded independently by both coders. Disagreements were discussed in the next session. In nine instances the coding rules were revised. To limit the complexity of the coding procedure, the first author selected the moves that had to be coded for each focal child and coded *language complexity*. The research assistant only coded for *communication channel* and *type*.

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Analyses

For the purpose of this study we intended to use the engagement data and classroom level and individual teacher-child interaction data of time point 1, and the child outcome data of time point 1 and 3. However, for the engagement data this resulted in too much missing data as we needed engagement data across different classroom settings and observations of only one time point did not cover well all eight different settings. To overcome this problem, engagement data from the second and third time point was added. The profiles for individual teacher-child interaction and engagement were identified in a previous paper (i.e., Chapter 3). The other analyses by which the research question for this study was investigated are described below.

Comparing the relation between learning opportunities and development of monolingual and multilingual children

To examine the unique contribution of the components of learning opportunity on the early literacy and executive functioning skills of kindergarteners and whether this differs for multilingual and monolingual children, a multiple group structural equation model was conducted in MPlus Version 8 (Muthén & Muthén, 1998-2017). We used a sandwich estimator (TYPE=COMPLEX) to account for the nested structure of the data (i.e., children in classes) of the data. Executive functioning and early literacy at time point 3 were used as the outcome variables. The learning opportunity variables – the three domains of classroom level interaction (i.e., emotional support, classroom organization, and instructional support) and the profiles of individual teacher-child interactions and engagement – were added as predictor variables. Early literacy and executive functioning outcomes at time point 1 were added to control for initial early literacy and executive

functioning. The profiles that could be considered reflecting the highest quality for learning opportunities were taken as reference profiles (i.e. *high quantity of complex interaction* profile and *high engagement* profile). The children in the *low quantity of nonverbal, low complex interactions* profile and the *low large group* engagement profile were all multilingual. These profiles could therefore not be included in the model. The chi-square statistic (χ^2) and related *p*-value, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR) were used as fit indices with cut-offs that indicate good fit respectively at > .05 (*p*-value), > .90, < .08, and < .08 (Hu & Bentler, 1999).

Predicting early literacy and cognitive development of all multilingual children
Since two profiles only contained multilingual children, a part of the multilingual children could not be included in the comparison between monolingual and multilingual children. Therefore, a separate analysis was conducted to test the same model for all multilingual children with those two profiles included.

RESULTS

Descriptive results
Detailed descriptive statistics are presented in Table 4.2. The emotional support and classroom organization in the participating classrooms were of good quality, according to the CLASS standards. The instructional support of the teachers was of low quality. Multilingualism did not predict profile membership of the individual teacher-child interaction profiles. Furthermore, multilingual children were overrepresented in the engagement profiles with lower engagement across classroom settings. Multilingual children had a smaller Dutch vocabulary at both time points compared to their monolingual classmates. There were no significant differences between both language groups on phonological awareness at both time points. At the first time point some statistically significant differences were found on executive functioning. Monolingual children performed better on the mixed block of Hearts and Flowers and on the blue block of the Flanker task. Those differences disappeared at the third time point. Both monolingual and multilingual children improved on all early literacy and executive functioning measures between the start and the end of the school year. Multilingual children improved more than monolingual children on the Flowers block of the Hearts and Flowers task – Wilk's λ = .88; F (1, 63) = 8.35; *p* = .005 – and on the Blue block of the Flanker task – Wilk's λ = .93; F (1, 66) = 5.17; *p* = .026.

Table 4.2. Descriptive results for the learning opportunity components and the child outcomes.

|	Time point 1					Time point 3		
	Mean (SD)		*p*	N		*Mean (SD)*		*p*
	Mono	**Multi**		**Mono**	**Multi**	**Mono**	**Multi**	
General classroom interaction								
ES	5.61 (0.55)							
CO	5.83 (0.53)							
IS	2.42 (0.43)							
Individual teacher-child interactions								
P1: G±C±FU±Q-				14	22			
P2: G+C-FC-Q-				0	3			
P3: G±C+FU±Q-				7	6			
P4: G±C+FU+Q+				2	3			
P5: GC±FU+Q+				7	4			
Engagement (T1-3)								
P1: S-ST-L-				3	8			
P2: S-ST-L+				1	5			
P3: S+ST+L±				15	14			
P4: S+ST±L-				0	2			
P5: S+ST+L+				11	10			
Early Literacy								
Vocabulary	9.03 (6.71)	2.56 (3.17)	**< .001**			15.17 (5.69)	8.46 (7.49)	**< .001**
Analysis	10.37 (4.61)	9.53 (4.61)	.458			13.07 (5.67)	14.59 (11.07)	.495
Synthesis	8.83 (5.81)	5.79 (6.93)	.057			10.86 (7.49)	9.38 (8.12)	.446
Executive Functioning								
Flowers	8.39 (3.11)	6.79 (3.57)	.062			9.10 (3.08)	9.48 (2.41)	.576
Mix HF	16.75 (5.20)	13.42 (4.56)	**.008**			19.30 (8.80)	18.23 (4.66)	.524
Blue	9.90 (3.98)	7.90 (3.99)	**.045**			13.30 (3.02)	13.49 (2.32)	.771
Pink	10.10 (3.60)	9.03 (3.52)	.221			12.80 (2.88)	12.43 (2.74)	.594
Mix FF	36.72 (11.36)	32.72 (11.36)	.114			42.57 (11.29)	42.49 (8.72)	.992
Corsi	3.83 (1.77)	3.87 (1.44)	.921			4.63 (1.81)	5.00 (1.72)	.393

Note. ES = Emotional Support, CO = Classroom Organization, IS = Instructional Support. The scores on the domains of general classroom interactions are an average of the scores (1-7) on the underlying dimensions. Profile tags reflect the components of the interaction profiles: G = gestures, C = complexity, FU = follow-up, Q = quantity; and the classroom settings of the engagement profiles: S = small group; ST = small group with teacher; L = large group. Early literacy and executive functioning scores are the number of correct responses on the separate subtests and task blocks. HF = Hearts & Flowers task, FF = Flanker Fish task. Significant differences ($p < .05$) between monolingual and multilingual children are indicated in bold.

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Comparing the relation between learning opportunities and development of monolingual and multilingual children

The multi-group SEM showed overall good fit (χ^2 = 5.70, *p* = .223; CFI = .993; RMSEA = .116; SRMR = .008) and explained for monolingual and multilingual children respectively 88% and 85% of the variance in early literacy, and 80% and 77% of the variance in executive functioning. Figure 4.1 presents the results of the structural equation model for the monolingual children and Figure 4.2 for the multilingual children. The profile with *overall high engagement* and the profile with *high quantity of high complex interactions* were taken as reference profiles in the model. Since the children in the *low quantity of nonverbal, non-complex interactions* profile and the *high small-group and low large-group* engagement profile were all multilingual, these profiles could not be included in the comparison.

For both groups, executive functioning (monolingual: β = .86, *p* = < .001, 95% CI [0.67,1.05]; multilingual: β = .92, *p* = < .001, 95% CI [0.79,1.05]) and early literacy (monolingual: β = .89, *p* = < .001, 95%CI [0.77,1.01]; multilingual: β = .83, *p* = < .001 , 95% CI [0.66,1.01]) at the start of the school year predicted the executive functioning and early literacy outcomes at the end of the school year. However, there were large differences for the learning opportunity variables. For monolingual children, quality of general classroom interaction did neither predict early literacy, nor executive functioning outcomes at the end of the school year. Monolingual children in the *high small-group and moderate large-group engagement* profile had lower early literacy skills than monolingual children in the high engagement profile (β = -.18, *p* =.013, 95% CI [-3.12,-0.04]. The executive functioning and early literacy outcomes of monolingual children in the other engagement profiles did not significantly differ from the outcomes of the monolingual children in the high engagement profile. Monolingual children in the *low quantity of typical interaction* profile (β = -.21, *p* = .024, 95% CI [-0.38,-0.03]) and in the *low quantity of high complex interactions* profile (β = -.29, *p* = .002, 95% CI [-0.47,-0.11]) had lower early literacy skills than monolingual children in the *high quantity of high complex interactions* profile. Monolingual children in the *high quantity of high complex interactions* profile had better executive functioning skills than children in any other interaction profile – G±C±FU±Q-: β = -.62, *p* = .00, 95% CI [-1.05,.19]; G±C+FU±Q-: β = -.53, *p* = .022, 95% CI [-0.98,-0.08]; G±C±FU+Q+: β = -.45, *p* = .011, 95% CI [-0.79,-0.10].

Figure 4.1 Significant paths among general classroom interaction, engagement profiles, individual teacher-child interaction profiles, early literacy and executive functioning, controlling for previous performance for monolingual children.
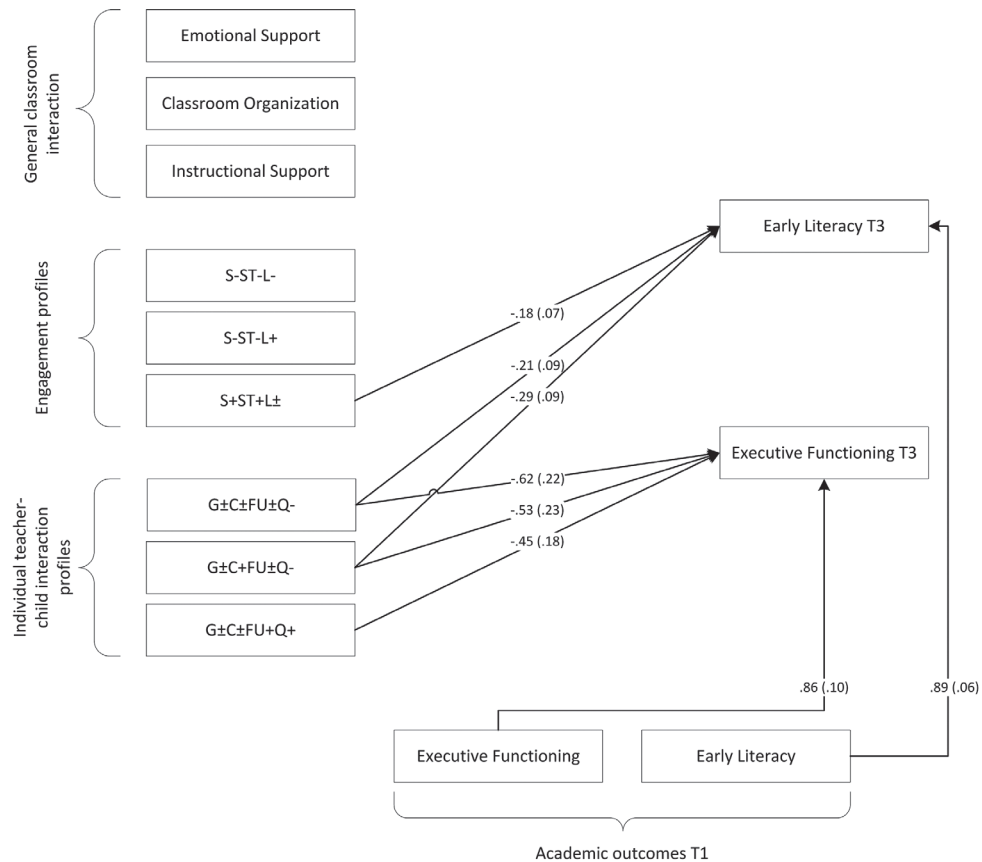
Note. Standardized coefficients (ß) and associated standard errors are presented. Profile tags reflect the components of the interaction profiles: G = gestures, C = complexity, FU = follow-up, Q = quantity; and the classroom settings of the engagement profiles: S = small group; L = large group. G±C+FU+Q+ and S+L+ were used as reference profiles.

The model for multilingual children shows a different picture. It indicated a negative relationship between classroom organization and early literacy outcomes at the end of the school year – β = -.19, *p* = .049, 95%CI [-0.37,-0.00]). Furthermore, the children in the *low quantity of typical interaction* profile showed lower early literacy skills than multilingual children in the *high quantity of high complex interactions* profile – β = -.27, *p* = .014, 95%CI [-0.49,-0.06]. There were no learning opportunity measures that predicted the executive functioning outcomes of multilingual children.
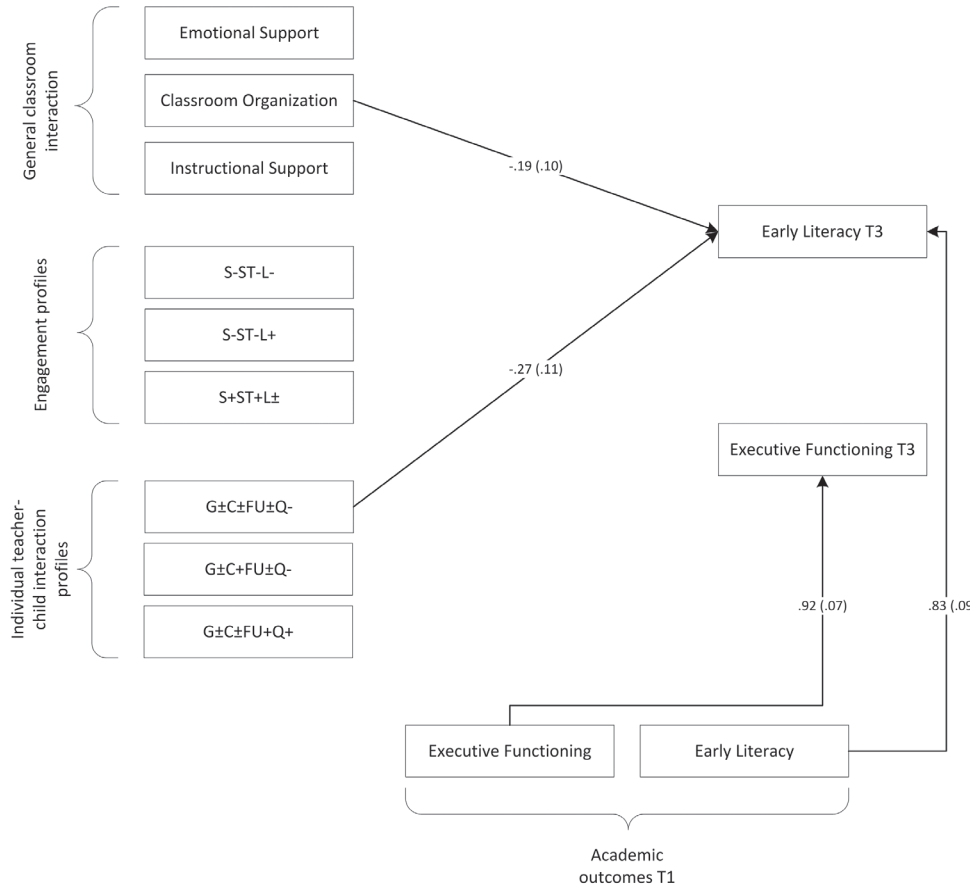
Figure 4.2 Significant paths among general classroom interaction, engagement profiles, individual teacher-child interaction profiles, early literacy and executive functioning, controlling for previous performance for multilingual children.
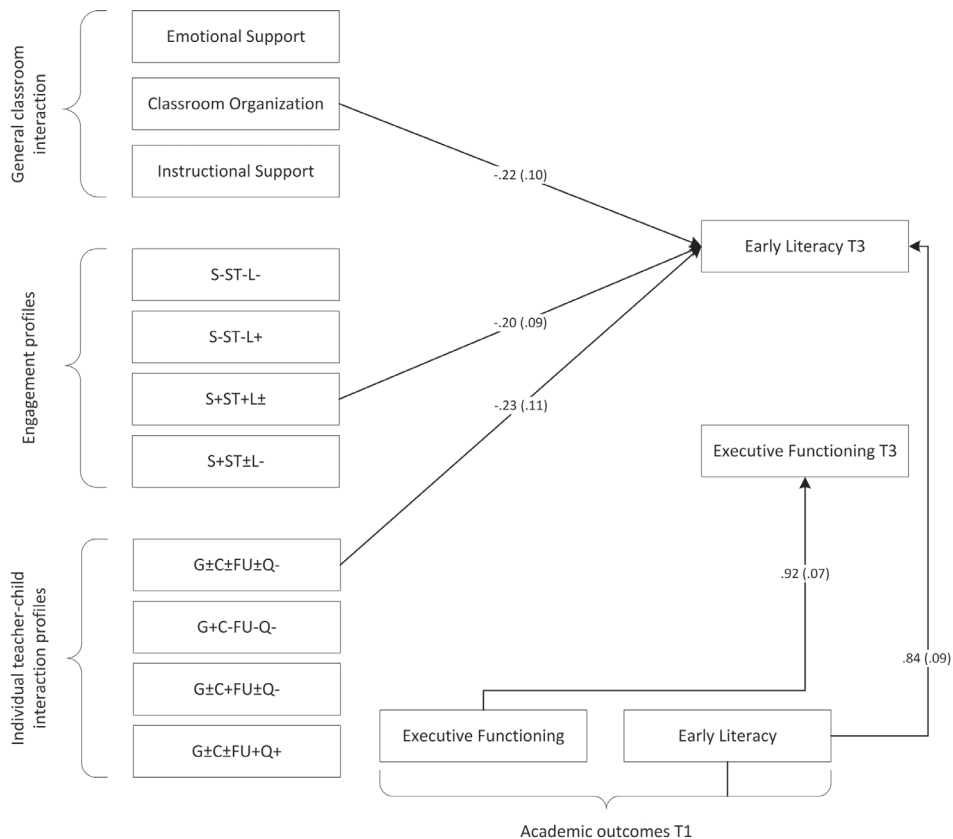

Note. Standardized coefficients (ß) and associated standard errors are presented. Profile tags reflect the components of the interaction profiles: G = gestures, C = complexity, FU = follow-up, Q = quantity; and the classroom settings of the engagement profiles: S = small group; L = large group. G±C±FU+Q+ and S+L+ were used as reference profiles.

Predicting early literacy and cognitive development of all multilingual children

A part of the multilingual children was not included in the multiple group structural equation model since their profiles (i.e. *low quantity of nonverbal, non-complex interactions* profile and the *high small-group and low large-group engagement* profile) only contained multilingual children. Therefore, we conducted a separate analysis with only the multilingual children. The model showed good fit ($\chi^2 = .34$, $p = .844$; CFI = 1.00; RMSEA = .00; SRMR = .004) and explained 85% of the variance for early literacy and 79% of the variance for executive functioning. The model is presented in Figure 4.3. Again, early literacy ($\beta = .84$, $p = <.001$, 95% CI [0.67,1.01]) and executive functioning ($\beta = .92$, $p = <.001$, 95% CI [0.79,1.05]) at the first time point positively

predicted performance at the third time point. None of the learning opportunity predictors predicted executive functioning outcomes. For early literacy there were a few significant relations, similar to the outcomes of the previous model. Classroom organization negatively predicted early literacy outcomes (β = -.22, p = .023, 95% CI [-.40,-0.03]). Furthermore, children in *the high small-group and moderate large-group engagement* profile had lower early literacy skills than children in the *high engagement* profile (β = -.20, p = .037, 95% CI [-0.38;-0.01]) and children in the *low quantity of typical interactions* profile performed lower than children in the *high quantity of high complex interactions* profile (β = -.23, p = .040, 95% CI [-0.46;-0.01]). Early literacy and executive functioning outcomes of children in the other engagement and interaction profiles did not differ from the outcomes of the children in the reference profiles (i.e., *high engagement* and the *high quantity of high complex interactions* profiles).

Figure 4.3 Significant paths among general classroom interaction, engagement profiles, individual teacher-child interaction profiles, early literacy and executivefunctioning, controlling for previous performance for all multilingual children.

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Note. Standardized coefficients (ß) and associated standard errors are presented. Profile tags reflect the components of the interaction profiles: G = gestures, C = complexity, FU = follow-up, Q = quantity; and the classroom settings of the engagement profiles: S = small group; L = large group. G±C+FU+Q+ and S+L+ were used as reference profiles.

DISCUSSION

With the present study we explored how the learning opportunities of monolingual and multilingual children relate to their academic outcomes in kindergarten. We examined the unique contribution of general classroom interaction, individual teacher-child interaction, and engagement on the early literacy and executive functioning of monolingual and multilingual children. We found substantial differences in the relations between the learning opportunities and the child outcomes for monolingual and multilingual children. Below, the results will be discussed for each learning opportunity component, followed by the limitations of the present study and the implications for practice.

The first learning opportunity component that was explored was general classroom interaction. We did not replicate the relation between the quality of general classroom interaction and child outcomes with both early literacy and executive functioning found in previous research (Bratsch-Hines et al., 2019; Leyva et al., 2015; Pianta, Belsky, et al., 2008; Rimm-Kaufman et al., 2009). The only statistically significant relation we found between general classroom interaction and child development is counterintuitive: a negative association of quality of classroom organization with early literacy for multilingual children. It is difficult to explain why classrooms that are considered to be less well-organized would be profitable for the early literacy of multilingual children. It goes against previous research reporting how multilingual children still learning the language of instruction benefit from clear classroom routines (Gillanders, 2007; Henderson & Palmer, 2015; Vine, 2006). Although these studies primarily focused on children starting to learn the majority language, in the present study most children already had some exposure to Dutch before. Furthermore, the classroom organization of the participating classrooms was generally of a high level and none of the classrooms had a low mean score (2 or below) on classroom organization. Given the correlational nature of the study that does not inform us about the direction of associations, a possible explanation of the findings is that classroom organization follows multilingual children's language and literacy levels – rather than the other way around. In other words, it could be that in classrooms where the language and literacy development of the multilingual students is low, teachers make extra efforts to have a well-organized classroom as a way to support their participation in the classroom. In opposition, when multilingual children in the classroom possess a higher language and literacy development, teachers might have more flexible classroom rules, reflected in lower scores in the organizational support domain. In-depth, qualitative analysis of the classroom video data could help to get a clearer image of the aspects of classroom organization that are primarily lower in the classroom of this group of children.

Of the three included learning opportunity components, general classroom interaction was the only component measured on classroom level, as individual teacher-child interactions and engagement were explored on child level. The unexpected results may be an indication that measuring educational quality on classroom level does not represent

learning opportunities for the individual child well enough. As emphasized by other scholars as well (Pelatti et al., 2014; Weyns et al., 2019), this underlines the importance of considering the within classroom variability and exploring more than just the classroom level variance.

The second component of learning opportunities we considered, was individual teacher-child interactions. The profiles of individual teacher-child interactions were a significant predictor of executive functioning for monolingual children. The children in the profile with a high quantity of teacher-child interactions, as well as high complex interactions, had better executive functioning outcomes than children in any other interaction profile. Interactions that go beyond the here and now and require inferences on the available information, depend upon a child's higher order thinking skills. Children learn to reason and respond to other's perspectives (Michaels & O'Connor, 2015), which requires working memory and cognitive flexibility. The present study suggests that in order to develop these skills, monolingual children not only need to be exposed to high complex interactions with the teacher, but also to a sufficient quantity of individual teacher-child interactions. Interestingly, this association was only found for the monolingual children in our sample. There were no differences in the executive functioning skills of the multilingual children classified in the different interaction profiles. Potentially, as multilingual children practice executive functioning on a daily basis through inhibiting and switching between their languages (Barac et al., 2014), the complexity and quantity of the individual teacher-child interactions, might be of less importance for their development of executive functions.

A similar relation was found between the individual teacher-child interactions and early literacy outcomes for both monolingual and multilingual children. Children in the *high quantity of high complex interactions* profile had better early literacy skills than children in the profiles with moderate to high complex interactions, but low quantity. This again shows that children should not only have complex interactions, but that these should also be frequent. This is in line with the notion stemming from bioecological model of human development that proximal processes should not only be of high quality but should also be stable over time (Bronfenbrenner & Morris, 2007). In addition, a reciprocal process might be at hand: for teachers and children it is easier and therefore possibly more pleasant and rewarding to engage in extended interactions when the child has good language proficiency, increasing the chances of high quantity of interactions.

The third component of learning opportunities that was explored was child engagement. Engagement was not found to be related to executive functioning skills of monolingual or multilingual children. For early literacy, we found a relation with one engagement profile. Monolingual and multilingual children (when the full sample of multilingual children was included) in the *high engagement* profile had better early literacy skills than children in the *high small-group and moderate large-group engagement* profile. Children in the latter profile showed high engagement in small group settings, but moderate engagement in large group settings. It is in line with expectations that children who show high engagement in

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all educational activities, both in small and large group settings, will benefit most from what is offered. Most of the literacy activities in the early childhood classroom take place in teacher-directed large group settings (de Haan, Elbers, & Leseman, 2013). This suggests that it is indeed important to be able to highly engage in the activities in large group settings. This finding, however, does not downplay the importance of spending time in small group settings for developing early literacy skills (Bratsch-Hines et al., 2019), because children are often less actively engaged in large group settings as these activities are more teacher-led and provide less opportunities for child initiative.

Limitations

The present study has several limitations. First, since the sample of our study was rather small and some profiles included a low number of children, results should be interpreted with caution. We suggest that these relations should be further examined in larger-scale studies. Furthermore, it would have been interesting to compare all profiles in relation to child outcomes. However, some profiles could not be included in the multigroup models because they only contained multilingual children, making any comparison between monolingual and multilingual groups impossible. Moreover, because of the small sample size, we could not include the data of all time points, as that would have excessively increased the complexity of the model. Our choice was to use time point 1 to data about the components of the learning opportunities, as we considered this time of the year to be particularly relevant in setting the stage for the classroom practices. Although the final models are therefore based on only one day of observations, by following the teacher and children for a full morning in different activities and settings, we were able to account for the fluctuations of learning opportunities across diverse classroom contexts.

Second, although many studies distinguish three separate executive functions, our analysis only identified one overall component of executive functioning. Generally, studies with young children that use the distinction between working memory, inhibition and cognitive flexibility do not conduct a component analysis. The few previous studies who did conduct such a component analysis could only identify one or two components of executive functioning (Lin et al., 2019; van de Sande, Segers, & Verhoeven, 2013), as did we. This shows the importance of identifying the components of executive functioning that are being measured before using them in further analyses, especially when studying executive functioning in young children.

Third, in the present study we solely focused on the interactions of monolingual and multilingual children with their teachers, ignoring the potential effects of peer interactions. Previous research has shown that peer interactions are associated with social competence, but also early literacy development (Mashburn, Justice, Downer, & Pianta, 2009; NICHD Early Child Care Research Network, 2001). For multilingual children, peer interactions can serve as a resource for understanding and participating in classroom activities (DaSilva Iddings, 2005; Piker & Rex, 2008). Future research should take this dimension of interactions into account.

Fourth, in this study, learning opportunity is defined as "all the classroom experiences that children have, including the quality and quantity of their interactions with teachers, and the activities they engage in". Due to the quantitative nature of the study, this is operationalized as a combination of general classroom quality – as measured by CLASS – , the quality of individual teacher-child interaction (a combination of the occurrence of meaningful gestures, complex prompts, complex responses, and elaborate follow ups, and quantity of interaction), and engagement in diverse classroom settings. Although the interactional nature of the data was taken into account when quantifying it, some contextual information that might be essential for understanding learning opportunities was lost. Quantifying the data this way was necessary for the type of analyses we envisioned and needed to study the relations of classroom experiences to outcomes. However, for interpreting the unexpected results and fully understanding the classroom experiences of the (heterogeneous group of) multilingual children, an additional qualitative analysis would be useful.

Implications for practice

With the present study we integrated different components of learning opportunities to obtain a comprehensive overview of the learning opportunities of multilingual and monolingual children and how they predict early literacy and executive functioning outcomes. We adopted a longitudinal and person-oriented approach that enabled us to examine the learning opportunities children are engaged in over one school year and how that relates to development. The present study has found substantial differences between monolingual and multilingual children in what learning opportunity components predicted executive functioning and early literacy outcomes. The results are not straightforward, nor easy to interpret, but do suggest that children might have different classroom experiences related to their language background.

We decidedly oppose the 'deficit approach', in which – with best intentions – multilingualism by itself is seen as a risk factor instead of an asset, with possibly unjustified lower expectations as a consequence. We therefore caution against translating the findings too literally to the classroom. For example, the finding that high complexity and quantity of individual teacher-child interactions is found to be positively related to the development of executive functioning of the group of monolingual but not for the group of multilingual children, does of course not imply that high occurrence of complex interactions with the teacher is of less importance to multilingual children.

The present study emphasizes the importance for educators to recognize that children from diverse language backgrounds might be exposed to different learning opportunities within the same classroom and to reflect on whether the differences occur in response to different needs, or have other causes, like bias or different expectations. This recognition lies at the base of the creation of optimal learning opportunities for all children, regardless of their language background.

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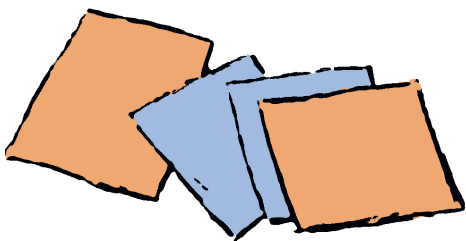
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Exploring the use of teacher third-position support of monolingual and multilingual children: a multiple case study in kindergarten classrooms

With a growing number of multilingual children entering early childhood education, teachers are challenged to create appropriate learning opportunities for all children. Since multilingual children often have lower literacy skills in the language of instruction and come from a different cultural background, early childhood educators might provide different support to children after an inappropriate child response, depending on the child's language background. Therefore, the present study aims to identify different types of teacher third-position support (i.e., support provided after not being satisfied with the child response, or nonresponse) in interaction with multilingual and monolingual kindergarteners. We conducted a multiple case study in which three kindergarten teachers and in total seven multilingual and five monolingual children were observed in the classroom during one school year. Support sequences were transcribed and analyzed using content analysis. We identified six different types of teacher third-position support in educational interactions with multilingual children: allocate turn to another child, provision of hints, reduction of choice, establishing common ground, modeling, and using the home language. Teachers tended to use reduction of choice more with multilingual children, whereas provision of hints was used more with monolingual children. Overall, the presented study enabled us, by taking a micro-analytic approach in authentic classroom settings, to obtain an in-depth view of how teachers differentially adopt types of third-position support in interaction with multilingual and monolingual kindergarteners.

Keywords: multilingualism; early childhood education; teacher-child interactions; support; case study

INTRODUCTION

Contemporary changes in Western societies, such as immigration and globalization, have resulted in more diverse early childhood classrooms with increasing numbers of multilingual children. Multilingual children are those children that habitually interact at home in a different language than the majority language. Since these children might have lower literacy levels in the language of instruction (Verhoeven, 2000) and often come from a different cultural background, their teachers might have lower expectations (Tenenbaum & Ruck, 2007) and early childhood educators might establish different interactions with these children than with monolingual children. One such situation might be the moment where a child needs support from the teacher. In those cases, a teacher could make different choices in the type of support provided, depending on the language background of a child (Mertzman, 2008). Therefore, in the present study, we will explore how teachers provide support to multilingual and monolingual children to help them provide the intended answer, thereby participating in teacher-initiated educational encounters.

Teacher third-position support in classroom interaction

There has been extensive research conducted on the topic of support in formal and informal learning, often referred to as *scaffolding*. Scaffolding builds on Vygotsky's zone of proximal development (Vygotsky, 1978) in which teachers support children to reach a level of understanding that they are not yet capable of independently. By providing appropriate support and instruction, children can learn within their zone of proximal development. Furthermore, by decreasing the level of support gradually, children learn to perform the task independently (van de Pol, Volman, & Beishuizen, 2010). In the present study, we use the term *teacher support*, instead of scaffolding, as we focus on micro moments of support in classroom interactions, rather than a range of support acts provided over a stretch of time, in which the level of support is gradually decreased.

Teacher support is always provided in an interactional context. One of the most commonly used interaction patterns in teacher-child interaction is the initiation/response/follow-up sequence (IRF; also known as IRE, initiation-response-evaluation; Sinclair & Coulthard, 1975). In these interaction sequences, the teacher takes the primary lead by asking a question or providing a directive (i.e., Initiation), the child then provides a response (i.e., Response), and the teacher follows up by assessing the response or by providing feedback (i.e., Follow-up; Howe & Abedin, 2013). IRF-sequences are primarily used by teachers to manage the classroom interaction, by checking knowledge and understanding and ensuring the progress of the overarching educational activity (Koole, 2012). In the present study, the third-position of the IRF-sequence, that is, the 'follow-up', is of particular interest. Teachers use follow-ups to accept or reject a child's response, evaluate it, or to elaborate on it (Sinclair & Coulthard, 1975). We will focus on IRF-sequences (i.e., support sequences) in teacher-initiated educational interactions in which the teacher

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shows dissatisfaction with the child's response or nonresponse and, consequently, provides support. We will henceforth refer to this as 'third-position support' because it focuses on helping the child to provide the anticipated response. This support could focus on the conventions of classroom interaction, as well as the informational content (Mercer, 1995). Understanding of classroom conventions may show from appropriate participation in the expected discourse structure. For example, by taking the floor only after turn allocation by the teacher during circle time, or by providing a description rather than an example when asked to give a definition. Understanding of content may show from providing the correct answer to a knowledge question; although the correct answer might indicate knowing or doing, rather than understanding (Koole, 2012).

In support sequences, within the educational interactions taking the IRF-structure, a teacher can employ different types of third-position support, including: feedback, hints, offering explanations, modeling, questioning, reducing degrees of freedom (van de Pol et al., 2010), verifying understanding (Silliman, Bahr, Beasman, & Wilkinson, 2000), predicting, reasoning, co-participating (Pentimonti & Justice, 2010), focusing, problematizing, promoting shared understandings, and affective supports (Hsin & Wu, 2011). A single support sequence often includes multiple IRF's, containing different types of third-position support (Henderson, Many, Wellborn, & Ward, 2002). The types of third-position support differ on many aspects and depend, among others, on the type of teacher initiation in the first position, the focus of support (i.e., classroom conventions or content knowledge), the teacher's wish for continuing the lesson (also referred to as 'preference for progressivity', Stivers & Robinson, 2006), and, of course, the type and content of the anticipated and actual child's response.

Supporting multilingual children

Most studies that focus on how teachers support young children in reaching an appropriate response has been conducted with monolingual children. However, since multilingual young children often show difficulties with the language of instruction (Bialystok & Feng, 2011; Verhoeven, 2000) and their language and cultural backgrounds might trigger forms of teacher bias (Tenenbaum & Ruck, 2007), teachers potentially provide different forms of support to multilingual children. Although few comparison studies have been conducted, there seem to be differences in the interactions of teachers with multilingual and monolingual young children. Teachers might use more nonverbal communication and less complex language in interaction with multilingual children, resulting in less beneficial learning opportunities in the classroom (Chapter 2; Langeloo et al., 2019). Classroom composition also affects the interactions that teachers have in the classroom: in general, teachers in classrooms with a higher number of disadvantaged children, including multilingual children and children with low literacy levels, are found to use simpler language (Girolametto & Weitzman, 2002; Justice, McGinty, Zucker, Cabell, & Piasta, 2013), often resulting in lower academic outcomes for these disadvantaged children.

Conversely, when there are less disadvantaged children in a classroom, these children tend to perform better (de Haan, Elbers, Hoofs, & Leseman, 2013; Mayo & Leseman, 2008).

Research on teacher's support to multilingual children is also limited. Across the world, children from ethnic minorities, a group which shows overlap with the group of multilingual children, often face lower expectations from the teacher (Peterson et al., 2016; van den Bergh et al., 2010; Wang et al., 2018). Lower expectations can lead to less beneficial teacher-child interactions. For example, research shows that teachers allot less time to respond to questions (Brophy & Good, 1970), provide less positive and more negative feedback (Chen, Thompson, Kromrey, & Chang, 2011), and set low-level learning goals to children from ethnic minority groups (Rubie-Davies et al., 2015). A small scale study of Mertzman (2008) on teacher support in literacy activities showed that teachers focused more on phonics and accuracy, rather than meaning and comprehension when supporting ethnic minority children or children from a low socioeconomic background. Combined, these findings lead to the hypothesis that, due to some shared characteristics with the group of ethnic minority students, the group of multilingual children might suffer similar bias as the group of ethnic minority students, and therefore experience different teacher-child interactions and as a consequence different teacher support as well.

In many studies, multilingual children are considered a homogenous group. However, the group of multilingual children is heterogeneous in many aspects and it is important to take these differences into account when studying this population (Cummins, 1979; Grosjean, 1998) as these could partly explain the differences found in the support provided by teachers to multilingual and monolingual children. Apart from the expected individual differences between students, multilingual children, for example, differ on their knowledge and use of their home language(s) and language of instruction, their immigrant status (Johnson De Feyter & Winsler, 2009), their socioeconomic status (Calvo & Bialystok, 2014), and their home literacy environment (Cummins, 1979). These aspects could directly or indirectly influence a child's performance across academic areas, including the proficiency in the language of instruction, as well as a teacher's expectations of the child (García, 2011).

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Present study

Although previous research has identified multiple types of teacher third-position support, many of these studies took place in experimental settings and in structured educational activities with monolingual children. However, since learning in early childhood education takes place throughout the day and children need support from the teacher in diverse classroom settings, the present study will explore support sequences in an authentic setting by observing the daily interactions in kindergarten classrooms and acknowledge the diverse settings in which children might need support. Furthermore, most studies on teacher support have been conducted in monolingual populations; only a few studies involved children from a minority background and/or multilingual children.

Since teachers might employ different types of third-position support in interaction with multilingual children than in interaction with monolingual children, the present study aims to identify the diverse types of third-position support that teachers use in IRF-sequences with multilingual kindergarteners. Since the number of studies directly comparing the teacher-child interactions of multilingual and monolingual children is very small (Chapter 2; Langeloo et al., 2019), we will not only explore the support provided for multilingual children, but also make a comparison with the support provided to monolingual children. To this end, we will conduct a multiple case study, which enables the in-depth and detailed description and comparison of several cases (Cresswell & Poth, 2013) by conducting analyses at a micro-level in an authentic situation. This offers us the opportunity to explore in detail the various support sequences that take place during a morning in a kindergarten classroom. We selected instances of teacher third-position support from three different classrooms to add confidence to the findings, as in this way we can observe differences and similarities with regard to how and where various types of teacher third-position support are used in authentic classroom contexts (Miles, Huberman, & Saldaña, 2014). We selected three classrooms that differ in classroom composition and literacy levels, in order to examine a diverse set of classrooms and explore the types of teacher third-position support used.

METHOD

Context of the study

Data were collected in Dutch primary schools. In the Netherlands, children generally start primary school at age 4, although compulsory education starts at age 5. The first two years of primary school (i.e., kindergarten) revolve around learning through playing and preparing for academic learning through teacher-managed activities (de Haan, 2015). Many schools combine those two years in one classroom (thus with children aged from 4 to 6 years old), although some schools have separate classes for the first and second year of kindergarten. One of the classrooms in the present study has a more exceptional combination of the second kindergarten year with Grade 1. The primary language in Dutch education is Dutch (with the exception of schools in the province of Friesland, in which Dutch and Frisian are the official languages of schooling). Also, lately, because of internationalization, the Dutch government allows schools to add English, French or German as official languages of schooling. The classrooms included in the present study only used Dutch as language of schooling and none of the included children spoke Frisian as a home language or language of schooling.

Data

The data in the present study were drawn from a larger study examining the learning opportunities of multilingual children. In this longitudinal project, we followed 80 children

from 20 kindergarten classrooms for one school year. In each classroom four children were selected as focal children, of whom two were multilingual (i.e., habitually interacted in a language other than Dutch in the home environment) and two monolingual. All focal children were in the second kindergarten year (i.e., K2). The data were collected in the school year 2016/2017 at three time points (October/November, January/February, and April/May). At each time point the teacher was filmed for the entire morning (8.30 AM to 12 PM) – excluding outdoor play – including all interactions between the teacher and the focal children. On the following day we returned to the classroom to assess the early literacy skills of the four focal children. Children were assessed on productive vocabulary and phonological awareness using a Dutch standardized early literacy test (Aarnoutse et al., 2016). Furthermore, both the teacher and parents were asked to fill in a questionnaire. The teacher questionnaire focused on classroom composition and teaching experience; the parent questionnaire focused on the home literacy environment of the focal children.

Sample

The three classrooms in the present study were selected from the larger set of 20 classrooms based on several criteria. First, we wanted to include classrooms of which we had complete data on early literacy development and video observations, and for which we received most of the parent questionnaires of the focal children (despite multiple reminders and attempts to collect them, only 53% of the parent questionnaires were returned). Second, as we expected that the proportion of multilingual children in a classroom might affect a teacher's interaction with multilingual children, we wanted variation in the proportion of multilingual children across the classrooms. Third, as we noticed large differences in the early literacy development of the full sample, we wanted variation in the early literacy development across the classrooms regarding progress throughout the school year and differences between multilingual and monolingual children within the same classroom to obtain a comprehensive picture of the types of teacher third-position support. In the present study, we focus on the interactions of the teachers with the four focal children in the three selected classrooms. Below we describe the three teachers, their classrooms and the focal children in each classroom based on the information provided in the teacher questionnaire, parent questionnaire and early literacy assessments. More information on the background of the focal children and their early literacy skills at the three time points can be found in Table 5.1. Table 5.2 provides more information on the classroom composition of the three classrooms and background of the teacher. All names are pseudonyms. Detailed descriptions of the home literacy environment of the focal children can be found in Appendix C.

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Table 5.1 Background information focal children

	Gender	Age[b]	Home language(s)	SES[c]	Early literacy[d]		
					T1	T2	T3
Class A, Miss Rachel							
Kevin[a]	Boy	5;0	Turkish, Dutch, English	low	0.45	1.25	1.98
Lieve[a]	Girl	5;2	Polish, Dutch	moderate/high	0.20	0.64	2.20
Janno	Boy	5;1	Dutch	low	0.14	0.16	1.57
Monique	Girl	5;4	Dutch	moderate/high	1.24	1.67	2.47
Class B, Miss Sonja							
Evita[a]	Girl	5;6	Albanese, Dutch	low	0.44	0.72	1.19
Jean[a]	Boy	5;2	Dutch, Papiamento, English	moderate/high	0.74	1.55	1.48
Kyra[a]	Girl	4;1	multilingual (languages unknown)	unknown	0.64	1.47	1.49
Jasper	Boy	4;11	Dutch	moderate/high	0.75	0.64	1.76
Class C, Miss Sietske							
June[a]	Girl	4;10	Portuguese, English, Dutch	moderate/high	0.30	0.20	0.29
Maxime[a]	Boy	5;1	Dutch, Thai, Isan	moderate/high	0.93	0.49	1.25
Keesje	Girl	5;0	Dutch	unknown	1.89	1.88	2.75
Ludwig	Boy	5;6	Dutch	moderate/high	1.37	0.66	1.37

[a] Multilingual children. [b] Age at T1: years;months. [c] Based on Dutch school funding policy. [d] Based on a Dutch standardized early literacy test (Aarnoutse et al., 2016). Scores could range between 0 and 3. Full sample: M_{T1} = 1.08, SD_{T1} = 0.58; M_{T2} = 1.31, SD_{T2} = 0.73; M_{T3} = 1.62, SD_{T3} = 0.72.

Table 5.2 Background information on the classrooms and teachers

	Class A	Class B	Class C
Classroom composition			
Gradea	K2	K2/Grade 1	K1/K2
Class size	19	26	19
Low SES	8 (42%)	unknown	unknown
Multilingual	15 (79%)	10 (38%)	4 (21%)
Teacher background			
Name	Rachel	Sonja[b]	Sietske
Age	30	unknown	54
Educational Qualification	Master's	unknown	Bachelor's
Experience in primary education (of which in K)	8 (5)	>15[c]	30 (20)

[a] K1 = first kindergarten year, K2 = second kindergarten year. [b] Sonja did not complete the teacher questionnaire. [c] personal communication

Class A

Miss Rachel was the teacher of Class A. This K2 class had the highest percentage of multilingual children (79%) of the selected classes. The early literacy skills of three of the four focal children (i.e., Janno, Lieve and, Kevin) in this classroom started below the classroom's average. By the end of the school year all four focal children performed above

average. There did not seem to be a clear distinction between the early literacy skills of the multilingual and monolingual focal children in this classroom.

Class B

Miss Sonja was the teacher of a K2/Grade 1 combination class with 38 percent multilingual children. Initially, two multilingual and two monolingual children were selected in this classroom. However, according to the information in the parent questionnaire, Evita was multilingual, instead of monolingual. All focal children showed a similar improvement in early literacy skills across the school year. They all started below average, but three of the four focal children performed around average by the end of the school year. There was no clear distinction in literacy growth between the multilingual children and the monolingual child.

Class C

Miss Sietske was the teacher of Class C. This was a K1/K2 combination class with only four multilingual children (21%). The multilingual focal children in Class C consistently scored lower than the monolingual children on early literacy tests on all time points.

Analyses

In the present study, we used the interaction data from the first and third time point. All interactions between the teachers and each of the focal children were transcribed (see Appendix D for transcript notations). These interactions could take place in one-to-one situations (e.g., individual support during center time), but also with more children around (e.g., in circle time or in a small group). From this data we selected all support sequences during activities in the classroom. We included all activities, ranging from center time to free play. A support sequence refers to an educational interaction in which the focal child does not respond to the teacher's initiation in a way that satisfied the teacher, indicated by the teacher providing third-position support until a satisfying response is produced by the child, or until the teacher unilaterally closes the interaction.

Data were analyzed using discourse and content analysis (Krippendorff, 2019; Mercer, 2010). The support sequences were coded in Atlas.ti 8.4 by the first author using emerging categories (Cresswell & Poth, 2013) with a focus on the observed types of teacher third-position support. We were interested in how the three teachers adopted these identified types of third-position support when interacting with either multilingual or monolingual children. During multiple data sessions the first three authors discussed the selection of support sequences and the identification of the diverse types of third-position support. In these sessions, we also focused on atypical instances of third-position support to obtain a comprehensive picture of the diverse types of support used by teachers.

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RESULTS

We will first focus on the types of teacher third-position support provided for multilingual children, followed by a comparison with the third-position support for monolingual children. Excerpts of support sequences will be included to illustrate our findings.

Support sequences took place across a wide range of activities on all time points and in all three classrooms. We identified 30 support sequences with multilingual children across the three classrooms. The number of support sequences ranged from 0 to 6 per child per recording. On average, the focal multilingual children were part of four of such interactions. The distribution of support sequences within classes varied widely, with eight out of ten support sequences in Class A being with Kevin and six out of eight support sequences in Class B being with Jean. In Class C, the distribution was equal with six support sequences with both June and Maxime. The majority of the support sequences took place in circle time ($N = 21$). Moreover, all support sequences took place in teacher-managed activities, primarily during literacy activities ($N = 13$), math activities ($N = 6$) and classroom organization moments ($N = 6$).

We identified five types of third-position support for multilingual children that are also known to be used by teachers for monolingual children: allocate turn to another child, reduction of choice, provision of hints, establish common ground, and modeling. We also identified one specific type of third-position support for multilingual children only: use of home language. The distribution of the types of third-position support across classrooms and focal multilingual children is shown in Table 5.3. In the following sections we will describe each type of third-position support, ordered from most prevalent to least prevalent and provide examples.

Table 5.3 Use of different types of third-position support across classrooms for multilingual children.

| | Support sequences | Types of third-position support | | | | | |
		Allocate turn to another child	Reduction of choice	Hints	Establish common ground	Modeling	Use of home language
Class A	*10*	*2*	*3*	*3*	*2*	*0*	*0*
Kevin	8	1	3	3	1	0	0
Lieve	2	1	0	0	1	0	0
Class B	*8*	*5*	*3*	*1*	*1*	*0*	*0*
Evita	1	1	0	0	0	0	0
Jean	6	3	3	1	0	0	0
Kyra	1	1	0	0	1	0	0
Class C	*12*	*3*	*3*	*2*	*2*	*3*	*1*
June	6	2	2	1	1	1	1
Maxime	6	1	1	1	1	2	0
Total	**30**	**10**	**9**	**6**	**5**	**3**	**1**
M	**4.29**	**1.43**	**1.29**	**0.86**	**0.71**	**0.43**	**0.14**

Allocate turn to another child

The most common type of teacher third-position support (N = 10) was to allocate the turn to another child when children were not able to provide an appropriate answer to the teacher initiation. This type was used by all three teachers equally. Teachers either allocated the turn to another child after the initial child gave an incorrect response in the eye of the teacher, or when a child did not provide a verbal response at all. For example, in Excerpt 1, Miss Sonja re-allocates the turn to another child following a nonresponse. First, Miss Sonja poses a vocabulary question in circle time. She asks Jean (Dutch, Papiamento, English; low Dutch literacy skills) the word for a dog moving its tail. When he does not respond, she offers a hint in the form of a meaningful gesture alongside a prompt for answering (line 4; for a further discussion see *Hints*). Again, he does not respond and Miss Sonja reassigns the question to another child, using an identical formulation. She continues reassigning the turn until Child 1 (line 10) provides her with the response she aimed for.

Excerpt 1 (Class B; T1) A child brought a robot dog to school and she is showing it to the class during circle time. The dog can also wag its tail.

	Speaker	English translation	Dutch original
1	Miss Sonja	moving your tail has its own word	staart bewegen heeft een eigen woord
2	Miss Sonja	Jean	Jean
3	Jean	*((does not respond))*	
4	Miss Sonja	what is it called when a tail goes like this? *((move her finger back and forth))*	hoe heet dat als een staart zo gaat?
5	Jean	*((does not respond))*	
6	Miss Sonja	Tommie, what's it called when a tail goes like that? *((again moves her finger back and forth))*	Tommie, hoe heet dat als de staart zo gaat?
7	Tommie	then he's happy	dan wordt ie blij
8	Miss Sonja	yes, but what's it called? then…	ja maar, hoe heet dat? dan..
9	Miss Sonja	*((points at Child 1))*	
10	Child 1	wagging	kwispelen
11	Miss Sonja	then he wags his tail	dan kwispelt ie met z'n start

Previous research has shown that children can learn from interactions they are not actively participating in. Reallocating turns, thus, does not necessarily mean loss of learning opportunity (O'Connor et al., 2017). In other words, although the teacher allocates the turn to others in the classroom, this can still be considered as implicit support and a learning opportunity for the child. By allocating the turn to another child, the teacher lets the content to be produced by the classroom, instead of providing the content herself, while ensuring the progress of the lesson (Stivers & Robinson, 2006).

In most cases, the teacher first provided different types of third-position support to the focal child in which the floor remained with that child, such as Miss Sonja giving a hint to Jean in Excerpt 1, before allocating the turn to another child. Reallocation has

the advantage of maintaining the flow of the interaction. It may also create emotional security for the child that did not provide an appropriate response by not lingering on the dispreferred response of the child in question.

Generally, when teachers re-allocated the turn to another child, the teacher did not explicitly return to the initial child after establishing the expected response. However, in two instances, both in Class B, the teacher returned to the initial child. For example, in Excerpt 2, children have been naming multiple words starting with the sound /S/. Kyra (languages unknown; low Dutch literacy skills) offers the word *huis* [house], which contains /S/, but does not start with it. Miss Sonja opens the floor and discusses with the group where the /S/ is in the word house. Remarkably, Kyra bids for getting the floor back by raising her finger, but does not get a turn (line 8). After the class figured out that the /S/ is at the end of the word, Miss Sonja explicitly addresses Kyra with the correction, who provides a non-verbal confirmation (line 18). The function of returning to the initial child is to provide an explicit correction. After a display of knowing the answer (Koole, 2010) by the child, in the form of a verbal or nonverbal confirmation, the teacher can proceed with the lesson (Stivers & Robinson, 2006).

Excerpt 2 (Class B; T1) During circle time children are asked to offer words starting with /S/. Kyra offers 'huis' [house].

	Speaker	English translation	Dutch original
1	Kyra	house	huis.
2	Miss Sonja	hous:e	huis:
3	Miss Sonja	I hear the s:	ik hoor de s:
4	Miss Sonja	*((to the class))* do you hear the s: in the word hous:e?	horen jullie de s: in het woord huis:?
5	Class	*((shout over each other))*	
6	Miss Sonja	but is it in front?	maar staat die vooraan?
7	Child 1	in front	vooraan
8	Kyra	*((raises her finger))*	
9	Miss Sonja	is it in front?	staat ie vooraan?
10	Child 1	in the end	achteraan
11	Miss Sonja	*((to the class))* listen carefully: h:ou:s::e	luister goed, h:ui:s::
12	Child 2	no, the ou	nee, de ui
13	Miss Sonja	no, the ou is also in there, but is the s: in front?	nee, de ui die zit er ook in, maar staat de s: vooraan?
14	Miss Sonja	h:ou:s::e	h:ui:s::
15	Jasper	no, in the end!	nee, achteraan!
16	Miss Sonja	*((looks at Kyra))*	
17	Miss Sonja	It is the last letter! he's running after it! listen: h:ou:s::e ((running with her fingers; breaths in)) almost too late! but he was in time!	het is de laatste letter! hij komt er achteraan gerend! luister maar: h:ui:s:: bijna te laat! maar hij was op tijd!
18	Miss Sonja	*((to Kyra))* S:, in the end	S:, aan het eind
19	Kyra	*((nods))*	

Reduction of choice

In nine occasions the teacher provided third-position support by reducing the range of possible responses that the child could provide. Reduction of choice supports children to appropriately respond to the initial prompt by limiting the range of options and narrowing their focus (Pentimonti & Justice, 2010; Quinn, Gerde, & Bingham, 2016). In most cases, reduction of choice was established by rephrasing the initial question into an alternative question, in which the child is offered two alternatives to choose from (Englert, 2010). Reduction of choice is considered a type of third-position support with relatively high teacher assistance and therefore especially suited for skills that a child is just starting to learn (Pentimonti & Justice, 2010; Quinn et al., 2016). For example, in Excerpt 3, reduction of choice is used to help Maxime to talk about a complex topic in Dutch. Maxime is a multilingual child (Dutch, Thai, Isan), who only moved to the Netherlands from Thailand 1.5 years ago and has low literacy skills in Dutch. Miss Sietske talks with him about the weather in Thailand, his home country. The weather in Thailand is an abstract topic, as the information is not directly available, goes beyond the here and now and requires the child to make inferences (van Kleeck et al., 2006). Especially for a child with lower literacy skills in Dutch, like Maxime, it might be hard to respond to such a question in Dutch. Maxime might know the answer or concepts in Thai or Isan, his home languages, but may have difficulties to verbalize it in Dutch. Interestingly, in formulating the question, Miss Sietske immediately rephrases it into a closed question with two answering options (line 1). Further along in the conversation she rephrases the question again into a closed question with two answering options after a nonresponse (line 7).

5

Excerpt 3 (Class C; T3) The children came back early from outdoor play because of rain. The class is now discussing the weather and Miss Sietske asks the multilingual children about the weather in their home country

	Speaker	English translation	Dutch original
1	Miss Sietske	how is the weather, is it different in Thailand or is it the same as in the Netherlands?	hoe is het weer, is het anders het weer in Thailand of is het hetzelfde als in Nederland?
2	Maxime	different	anders
		Interruption by a child that needs to go to the bathroom	
3	Miss Sietske	what did you say, Maxime?	wat zeg je, Maxime?
4	Maxime	it is different	het is anders
5	Miss Sietske	what kind of weather do you have in Thailand, then?	wat voor weer heb jij in Thailand dan?
6	Maxime	*((no response))*	
7	Miss Sietske	is it very hot over there or is it a lot of rain?	is het daar heel warm of is het heel veel regen?
8	Maxime	uhm, very hot	uhm, heel warm
9	Miss Sietske	very hot?	heel warm?
10	Maxime	*((nods))*	
11	Miss Sietske	is it ever very cold in Thailand?	is het ook wel heel erg koud in Thailand?
12	Maxime	uhm, yes	uhm, ja
13	Miss Sietske	okay	oké

Hints

Teachers provided hints in six occasions as a type of third-position support. Hints are teacher suggestions or clues intended to help the child think and move forward – as opposed to complete solutions or instructions (van de Pol et al., 2010). Hints have been found to be effective in supporting young children to acquire new skills (Murphy & Messer, 2000). By providing hints, the child can access a level of understanding that was not yet attainable without a hint (van de Pol et al., 2010). In four out of the six occasions of hint-use, the teacher supported the verbal hint with a nonverbal gesture, which might have reduced the complexity by making the verbalization more concrete. Our review study (Langeloo et al., 2019; Chapter 2) showed that teachers of multilingual children often use nonverbal communication to help children understand instruction without having fully mastered the language of instruction. Gestures can help a child understand the content of the interaction, without fully understanding the teacher talk (Goldin-Meadow, 2000; Roth, 2001). This could be especially useful for children who are still learning the language of instruction (Daniels, 1997). For example, in Excerpt 4, the letter of the week was M and children could bring items from home with the letter M. Kevin (Turkish, Dutch, English; low Dutch literacy skills) brought a mask (*masker* in Dutch) and Miss Rachel asks him to show it during circle time. When he does not immediately get his mask after being prompted, Miss Rachel asks him to come to her and repeats her question and points to the place of his mask. By using pointing as a hint, it might have been easier for Kevin to follow the teacher's directive and understand what he was asked to do.

Excerpt 4 (Class A; T1; 1:1) During circle time Miss Rachel asks Kevin to show his mask.

	Speaker	English translation	Dutch original
1	Miss Rachel	uh Kevin, you br-, brought something with the M	uh, Kevin, jij had iets ge-, meegenomen met de M
2	Miss Rachel	you can get it	pak m maar even
3	Kevin	*((remains seated))*	
4	Miss Rachel	Kevin, Kevin	Kevin, Kevin
5	Miss Rachel	*((asks him gesturing with her finger to come to her))*	
6	Miss Rachel	please come *((gestures again))*	kom eens
7	Kevin	[*((comes to the teacher))*	
8	Miss Rachel	[you brought something with the letter M	jij had iets meegenomen met de letter M
9	Miss Rachel	get it *((points to cupboard with his mask))*	pak het eens even
10	Kevin	*((walks to the cupboard to get his mask))*	

Establish common ground

In five support sequences, when a child did not give the desired response to the initial prompt, the teacher first tried to establish common ground. This means that the teacher takes a step back to find common ground with regard to what is known (Brownfield & Wilkinson, 2018; Puntambekar, 2009). Establishing common ground enables the teacher and children to think together, avoid misunderstandings and help children towards the desired response (Mercer, 2002). Once common ground is established, a teacher can build up from that point, potentially using other types of third-position support, to reach the desired response on the initial prompt. In Excerpt 2, when the class is figuring out whether the /S/ is the first sound of *house*, Miss Sonja first asks "*Do you hear the s: in the word hous:e?*" (line 4). This way, she first establishes whether the children know there is an /S/ in *house*, before moving on to the more complex question on the location of the /S/ within the word. Teacher fine-tuning, by adjusting the level of complexity in interaction with a child, such as taking a step back to establish common ground, is found to be positively associated with literacy development of young children (Mascareño et al., 2016). By establishing common ground, the teacher can still actively involve the child in the interaction, even though the prompt initially seemed too difficult for the child. In Excerpt 5, Miss Sietske asks the class to tell 'something special' about the mushrooms – made out of a small building block and a muffin cup – on the table in the center of the circle. Determining what is special about something is a complex question, because it requires abstract thinking (van Kleeck et al., 2006). After an interruption, Miss Sietske asks who wants to take a closer look. June (Portuguese, English, Dutch; low Dutch literacy skills) gets the floor, takes a look at the mushrooms, but does not see anything special. At that point, Miss Sietske takes a step back and, to establish common ground, she first asks June to describe what she is seeing, rather than describing what is special about it. June points at a block which makes up the stem of the mushroom, and Miss Sietske continues to talk about it with June and the rest of the class. It remains unclear whether the stem of

the mushrooms was one of the things that Miss Sietske considered special and wanted to talk about. However, by taking a step back and asking June to describe what she saw, they established common ground on the features of the mushroom. This can be considered an initial step that is needed before one can determine what is special.

Excerpt 5 (Class C; T1) During circle time Miss Sietske talks about the mushrooms (made out of a small block and a muffin cup) on the table in the center of the circle.

	Speaker	English translation	Dutch original
1	Miss Sietske	who can tell something peculiar about these mushrooms?	wie kan er iets bijzonders over deze paddenstoelen vertellen?
Interruption			
2	Miss Sietske	who would want to take a closer look at the mushrooms?	wie zou wat dichter bij de paddenstoelen willen kijken?
3	June	*((raises her finger))*	
4	Miss Sietske	June, you go take a close look at the mushrooms	June, ga jij maar eens heel goed kijken naar de paddenstoelen
5	June	*((walks to the mushrooms, looks, and sits down again.))*	
6	Miss Sietske	do you see something peculiar? do you see something special?	zie jij iets bijzonders? zie jij iets speciaals?
7	June	*((shakes her head))*	
8	Miss Sietske	but what do you see? at the [mushrooms]	maar wat zie jij dan? bij de [paddenstoelen]
9	June	[block]	[blok]
10	Miss Sietske	what do you say?	wat zeg je?
11	June	block	blok
12	Miss Sietske	*((nods))* a small block	een blokje
13	Miss Sietske	what is the small block for?	waar is dat blokje voor?
14	Miss Sietske	point at it	wijs eens aan
15	June	*((walks to the mushrooms and points))*	
16	Miss Sietske	yes, look closely *((gets a mushroom from the table))*	ja, kijk eens goed
17	Miss Sietske	*((holds the mushroom up and points at the stem))* who remembers how this part of the mushroom is called?	wie weet nog hoe dit stukje van de paddenstoel heet?
18	Miss Sietske	we have yesterday, we have talked about it.	daar hebben we het gisteren, hebben we het daar over gehad
19	Miss Sietske	who remembers?	wie weet dat nog?
20	Miss Sietske	the…	de...
21	Class	*((chorally))* stem!	steel!
22	Miss Sietske	the stem of the mushroom, right	de steel van de paddenstoel he

Modeling

Three occasions of modeling as a type of third-position support were identified; all of them only by Miss Sietske, and all involving counting. Modeling can take the form of showing a particular behavior, verbally demonstrating the thinking process needed to reach a desired response, or providing the target response. After a model is provided, the child is

expected to imitate the teacher (Silliman et al., 2000; van de Pol et al., 2010). Modeling is an extensively studied type of third-position support (van de Pol et al., 2010). By modeling the expected behavior, response, or line of thought, teachers can raise a child's efficacy as they feel more secure and able to perform a task (Brophy, 1999; Schunk, 2003; Schunk & Zimmerman, 2007). Modeling closely resembles the provision of hints; however, whereas hints deliberately do not provide the entire solution to a child and require more effort of the child to come up with the desired response, modeling involves showing a model of the desired response for imitation (van de Pol et al., 2010). In Excerpt 6, when Maxime (Dutch, Thai, Isan; average Dutch literacy skills) was rote counting, Miss Sietske used modeling several times to help him get to 10. First, she corrected his mistake (i.e., "…, *six, nine, eight"*, line 6) by verbally modeling the correct number after six. Second, she verbally modeled the next number after eight, because he got stuck and did not continue. She only modeled one number and gave him the opportunity to continue independently. Lastly, as he got stuck again at nine, she provided a nonverbal hint, rather than modeling, of the last number by showing 10 fingers.

Excerpt 6 (Class C; T1) In circle time Maxime told about his new computer game about counting. Therefore, Miss Sietske asks him to count to 10.

	Speaker	English translation	Dutch original
1	Miss Sietske	can you already count on your own?	kun je al alleen tellen?
2	Maxime	yes	ja
3	Miss Sietske	do you dare in the circle like this?	durf je dat in de kring zo?
4	Maxime	yes	ja
5	Miss Sietske	well, let's hear	nou, laat maar horen
6	Maxime	one, two, three, four, five, six, nine, [eight]	een, twee, drie, vier, vijf, zes, negen, [acht]
7	Miss Sietske	[seven]	[zeven]
8	Maxime	seven, eight…	zeven, acht...
9	Miss Sietske	nine	negen
10	Maxime	nine..	negen...
11	Miss Sietske	*((showing 10 fingers))* say it	zeg maar
12	Miss Sietske	do you remember?	weet je het nog?
13	Maxime	ten	tien!

5

Specific multilingual support: use of home language

Whereas the previous types of teacher third-position support are known, from previous studies, to be used in interaction with monolingual children as well, we also identified one support sequence specific for multilingual children (Excerpt 7), namely the use of the child's home language. The support sequence took place between Miss Sietske and June during an arts activity. June is a multilingual student (Portuguese, English, Dutch), who has been living in the Netherlands for 1.5 year and has low Dutch language skills. June was sitting in a small group of K2 children and they individually had to create

mushrooms out of muffin cups as the cap, with a drawn stem. The first question, *what are you actually making, do you already know?*, suggests that children could choose what they were making. However, there was a clear instruction beforehand that they had to make the mushrooms and, therefore, Miss Sietske's question should be considered a check question (Englert, 2010). When June does not immediately respond, Miss Sietske repeats the question, potentially to provide June with more time to respond. Further on in the interaction, Miss Sietske reduces the choice by suggesting *A hedgehog?* (line 9), knowing that this is the wrong answer, as is understood by June, who shakes her head. Miss Sietske confirms it is not a hedgehog and then returns to the fact check she wants to do by asking *what is it then*? (line 11). When June nonverbally shows she cannot provide the answer by glimpsing at a peer for help, Miss Sietske asks June to say it in English, which is one of her home languages. By offering to speak a different language, June gets the opportunity to use more of her lexicon and show that she might know the answer, just not in Dutch. In this case, June is not able to provide the answer in English either and Miss Sietske finally gives the answer herself.

Excerpt 7 (Class C; T1) June is working on an arts activity during center time in a small group. Ludwig is sitting next to her. The teacher joins the small group and starts a conversation with June.

	Speaker	English translation	Dutch original
1	Miss Sietske	what are you actually making, do you already know?	wat ga je nou eigenlijk maken, weet je dat al?
2	June	((nods))	
3	Miss Sietske	yes, what are you making?	ja, wat ga je maken?
4	June	((keeps gluing))	
5	Miss Sietske	what are you making, June?	wat ga je maken June?
6	June	((keeps gluing))	
7	Miss Sietske	((points at the paper June is gluing)) but, what is this, what is that?	maar, wat is dit, wat is dat?
8	June	((keeps gluing))	
9	Miss Sietske	a hedgehog?	een egeltje?
	June	((shakes her head))	
10	Miss Sietske	no, no hedgehog	nee, geen egeltje
11	Miss Sietske	what is it then?	wat is het dan?
12	June	((glimpses to Ludwig))	
13	Ludwig	((mimes the answer to June))	
14	Miss Sietske	can also say it in English, right	mag het ook in het Engels zeggen he
15	Miss Sietske	could you manage in English?	lukt het in het Engels wel?
16	June	((shakes her head))	
17	Miss Sietske	mushroom	paddenstoel
18	Miss Sietske	mushroom	paddenstoel
19	June	((does not respond, keeps gluing))	

Multiple studies (Langeloo et al., 2019, i.e., Chapter 2; Prevoo et al., 2016) have already pointed at the value of using a child's home language in interaction with multilingual children, for example, to facilitate emotional support (de Oliveira et al., 2016; Gillanders, 2007), manage the classroom (de Oliveira et al., 2016), or translate instructions (de Oliveira et al., 2016; Martin-Jones & Saxena, 2003). However, especially for teachers in Europe, it is challenging to incorporate the use of children's home languages in their teaching for several, practical and ideological, reasons. First, with the current influx of immigrants in Europe, classrooms have a wide variety of languages (Leseman & Slot, 2014). In the Dutch context, primary school teachers are, as will be the case for many other countries, predominantly Caucasian, native Dutch speakers (Traag, 2018) that are likely to have mastered only Dutch and (to some degree) the languages of the surrounding countries, such as German, French and English. Second, many schools adopt a monolingual policy, in which only the language of instruction is allowed at school (Jaspers, 2015). Finally, teachers tend to have higher appreciation of certain (Western) languages, compared to (non-Western) home languages that are often spoken by multilingual children (Agirdag, 2010; Goriot, Denessen, Bakker, & Droop, 2016).

Teacher third-position support for monolingual children

We compared the use of the types of teacher third-position support between the multilingual and monolingual focal children. Table 5.4 shows an overview of the prevalence of the different types of third-position support for the monolingual children. Overall, there are no differences in the number of support sequences of multilingual and monolingual children, or in the use of the different types of teacher third-position support. However, several things stand out in relation to modeling, hints and reduction of choice, and those will be discussed below with some examples.

Table 5.4 Use of different types of third-position support across classrooms for monolingual children.

		Types of third-position support					
	Support sequences	Allocate turn to another child	Reduction of choice	Hints	Establish common ground	Modeling	Use of home language
Class A	*8*	*2*	*1*	*3*	*1*	*2*	
Janno	6	1	1	3	1	2	NA
Monique	2	1	0	0	0	0	NA
Class B	*6*	*2*	*1*	*1*	*2*	*0*	
Jasper	6	2	1	1	2	0	NA
Class C	*7*	*1*	*0*	*4*	*0*	*1*	
Keesje	3	1	0	1	0	0	NA
Ludwig	4	0	0	3	0	1	NA
Total	**21**	**5**	**2**	**8**	**3**	**3**	
M	*4.20*	*1*	*0.40*	*1.60*	*0.60*	*0.60*	

5

First, whereas modeling was only used for multilingual children in one class (i.e., Class C), both Miss Rachel (i.e., Class A) and Miss Sietske (i.e., Class C) used modeling for monolingual children. Modeling was used in different ways, both verbally and nonverbally, and in different settings and activities. For example, Miss Sietske nonverbally modeled for Ludwig (Dutch, high Dutch literacy skills) how to fold a paper in a crafts activity (Class C, T1) and Miss Rachel discussed the rules of circle time with Janno (Dutch, low Dutch literacy skills) by nonverbally modeling the expected behavior, namely raising your finger when you want to tell something (Class A, T1).

Second, teachers tend to use on average less hints with multilingual children ($M = 0.86$) than with monolingual children ($M = 1.60$). Furthermore, the hints for monolingual children included less often a nonverbal gesture (three out of eight hints) and were more focused on educational content, rather than prompting behavior (Excerpt 4). For example, in Excerpt 8, Miss Sonja is working with a small group of children on subtracting. From the six pills (i.e., small beads, the classroom theme was 'being ill') in the center of the circle, she takes a few and the children have to guess, how many she has in her hand by showing the right number of fingers. When she goes around the circle to see the answers, she notices that Janno (Dutch, low Dutch literacy skills) gave the wrong answer. First, she repeats the question, but then gives a hint by telling the original number of pills to help him calculate the right answer (line 6). When Janno does not respond to her hint, she ends the support and returns to the group and individually addresses the responses of the other children.

Excerpt 8 (Class A; T1) In a small group of around nine children, the teacher is working on subtracting. She takes a few pills (beads) from the six in the middle of the circle and the children have to guess how many pills she took.

	Speaker	English translation	Dutch original
1	Miss Sonja	show it on your fingers. how many did I take? how many do I have in my hand?	laat maar op je vingers zien. hoeveel heb ik er afgehaald? hoeveel heb ik er in mijn hand?
2	Janno	((shows 5 fingers))	
3	Miss Sonja	((to another child)) 2, you think ((points at child))	2 denk jij
4	Miss Sonja	you think 5, Janno?	denk jij vijf Janno?
5	Miss Sonja	how many do I have in my hand?	hoeveel heb ik er in mijn hand?
6	Miss Sonja	there used to be 6	er waren er zes
7	Janno	((no response))	
8	Miss Sonja	((returns to other children in the group and individually addresses their responses)) you think 2, 2, 2 you think 4?	jij denkt 2, 2, 2. jij denkt 4?

Third, teachers tend to use reduction of choice primarily with multilingual children ($M = 1.29$), rather than with monolingual children ($M = 0.40$). Only Miss Rachel and Miss Sonja used reduction of choice as a type of third-position support for monolingual children, and

both used it only once. Interestingly, in Excerpt 9, in interaction with Jasper (Dutch, low Dutch literacy skills), Miss Sonja initially reduces the choice by rephrasing her question to a yes/no question (line 5), but after Jasper's agreement, she expands the choices again by asking an open question (line 7) and Jasper gives an appropriate response.

Excerpt 9 (Class B; T3) Earlier in the day, Miss Sonja promised Jasper to watch a movie about rockets during snack time. They are now discussion what movie he wants to see.

	Speaker	English translation	Dutch original
1	Miss Sonja	what did you want to see, regarding the rockets?	wat wou jij zien wat de raketten betreft?
2	Miss Sonja	what did I promise?	wat had ik afgesproken?
3	Jasper	uhm, that a movie	uhm, dat een filmpje
4	Miss Sonja	and what kind of movie would you like to see about the rocket?	en wat voor filmpje wil je zien over de raket?
5	Miss Sonja	that it takes off?	dat ie vertrekt?
6	Jasper	*((knikt))*	
7	Miss Sonja	or? What do you want?	of? Wat wil je?
8	Jasper	that it goes to the moon	dat ie naar de maan gaat

DISCUSSION

In the present study, we aimed to explore what types of third-position support teachers used in interaction with multilingual and monolingual children. We focused on IRF-sequences in which the teacher was unsatisfied with the child response and therefore provided support. We identified five types of third-position support that were used for both multilingual and monolingual children: re-allocating turns to another child, reduction of choice, provision of hints, establishing common ground, and modeling. Furthermore, we identified one specific type of third-position support with multilingual children: use of the child's home language. All these types of third-position support are known strategies and have been studied in monolingual populations (Murphy & Messer, 2000; O'Connor et al., 2017; Pentimonti, Zucker, & Justice, 2012; Silliman et al., 2000; van de Pol et al., 2010) or multilingual populations, in the case of the use of the home language (de Oliveira et al., 2016; Piker & Rex, 2008). By taking an ecologically valid approach – examining third-position support with multilingual children in naturally occurring classroom practices – we add to previous research that has mainly been conducted with monolingual children in experimental settings. The results show that teachers, to some extent, adopt different types of third-position support in interaction with multilingual and monolingual children. There was a tendency of teachers to use reduction of choice primarily in interaction with multilingual children, whereas hints were primarily used in interaction with monolingual children. Compared to reduction of choice, hints require more effort of the child after the teacher third-position support to give an appropriate

response (Pentimonti & Justice, 2010). Furthermore, the hints provided to monolingual children were often of a more complex level, than those provided to multilingual children, which often involved more concrete nonverbal communication. Because of differences in actual or perceived literacy skills of the children, or because of teacher bias (Peterson et al., 2016), teachers might tend to use third-position support that requires less effort of the child in interaction with multilingual children, compared to monolingual children. Of course, our interactional data can only show *what* teachers did, rather than *why* they did so. It is therefore impossible to make claims about the rationale behind the use of different types of teacher third-position support for children of different language backgrounds. Furthermore, these results do not show whether the adopted types of third-position support are beneficial for the development of the children. Therefore, we caution and stress that these results do not imply that teachers should adopt types of third-position support that require less child effort in interaction with multilingual children.

We expected that classroom composition could play a role in how teachers would interact with multilingual children, and therefore also in the support they provided (Girolametto & Weitzman, 2002; Justice et al., 2013). However, we did not see clear differences between the three observed classrooms on most types of third-position support. The only notable difference was in the use of modeling. In both Class A and B, modeling was not used with multilingual children (although Miss Rachel of Class A used it once with a monolingual child). The two focal multilingual children in Class C both recently moved to the Netherlands (less than two years ago), resulting in low literacy levels in Dutch compared to their focal monolingual classmates. Modeling is a type of third-position support with a high level of teacher assistance and requires less child effort (Pentimonti & Justice, 2010). Because of the low literacy levels of the multilingual children in Class C and their recent arrival to the Netherlands, potentially resulting in less knowledge on the expected behavior and responses in the classroom (Henderson & Palmer, 2015), Miss Sietske might have chosen to use modeling more often. By providing the children not only with clear models of informational content, but also of the expected behaviors and classroom interaction conventions (Mercer, 1995; Henderson & Palmer, 2015), she teaches the children both informational content and how to behave and respond in classroom interactions.

We expected that teachers might use different types of third-position support, depending on the characteristics of individual children, including their language background. This assumes that teachers have knowledge about the background characteristics of the children in the classroom. However, this was not always the case. For example, Miss Sonja (Class B) did not show a high awareness of the language background of her students. She incorrectly indicated Evita to be monolingual and she did not know the home language of Kyra. Knowing that high quality interactions depend on the interplay between teacher and child (Bronfenbrenner & Morris, 2007), it is important that teachers know the background of their students and can adapt their behavior when necessary.

Many studies view multilingualism as a dichotomous variable (i.e., multilingual and monolingual) and ignore the heterogeneity within the group of multilingual children (Chapter 2, Langeloo et al., 2019). There is large variation between multilingual children (as is between monolingual children), such as in their socioeconomic status, age of acquisition of and language exposure to their languages (Cummins, 1979) that will partly explain their behavior and development. In the present study we aimed to emphasize the importance of taking into account the background characteristics and heterogeneity of multilingual children. To this end, we presented extensive information on the language background of the focal children and we provided the context we thought necessary with the included excerpts. Furthermore, we initially focused primarily on the results for the multilingual children, as to acknowledge the differences occurring in the third-position support within this group. However, contrary to our aims, we still continued to use the multilingual-monolingual dichotomy in the final part of our results. We are aware that we need to challenge ourselves and other researchers to find a better strategy to acknowledge the heterogeneity within the group of multilingual children, while still rendering results relevant for this heterogeneous group, for example by providing extensive background information of all children and using this in the analyses.

Directions for future research

In the present study, we solely focused on teacher third-position support provided after a dispreferred child response. However, teachers also provide support in other contexts (Puntambekar, 2009), for example, prematurely during instruction or as self-repair, rephrasing and simplifying an initial contribution. Future research could examine whether the same types of support occur in these contexts or whether teachers use the types differently with diverse children.

Although we focused on support in terms of the follow-up part of IRF-sequence, we focused only minimally on the preceding teacher initiation and child response. However, the type of third-position support provided by the teacher is largely dependent on the question asked and the response given by the child (van de Pol et al., 2010). Therefore, future research could additionally take both the initiation and response in account, to more fully understand the third-position support provided.

The present study was an explorative study, in which we only focused on the types of third-position support teachers provided, rather than the effectiveness of that support. It remains unclear whether it is beneficial that teachers, to some extent, use different types of third-position support in interaction with multilingual and monolingual children. Furthermore, in some cases a certain type of third-position support leads to the 'correct', desired response, whereas in other cases the same type does not evoke the desired response. Future research could focus on the contexts in which certain types of third-position support lead to learning (or at least the desired response) and how that related to the academic development of multilingual and monolingual children.

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General Discussion and Conclusion

As children learn through interaction with their direct environment, learning opportunities in early childhood classrooms are shaped through the interactions between a teacher and a child. Multilingual children enter early childhood education with a different language background and often also a different cultural background than monolingual children, and as a result they might be exposed to and in need of different learning opportunities than their monolingual classmates. In the present dissertation we examined the learning opportunities of multilingual and monolingual children, and how these relate to their early literacy and executive functioning development. We conducted a systematic review on the teacher-child interactions that multilingual children are involved in (Chapter 2). We also conducted a longitudinal study in which we followed 80 matched multilingual and monolingual children in 20 kindergarten classrooms for one school year. We filmed the classrooms to explore the teacher-child interactions of the focal children, and conducted live observations to examine child engagement in diverse activities and settings. We also assessed the focal children on early literacy and executive functioning development.

This dissertation aimed to examine (a) the learning opportunities that multilingual and monolingual children in the Netherlands are exposed to and engaged in and (b) how these relate to their cognitive and language development. The first aim was examined in Chapter 2 through 5, with each chapter exploring the learning opportunities – including individual teacher-child interactions, child engagement, general classroom interaction, and teacher support – from a different perspective. The second aim was addressed in Chapter 4, in which we examined how the different learning opportunity components were related to child outcomes.

SUMMARY OF FINDINGS

In Chapter 2, we conducted a systematic literature review to gain a better understanding of the teacher-child interactions of multilingual young children in the classroom. We found 31 studies that explored the teacher-child interactions of multilingual children, only five of which specifically compared the interactions of multilingual and monolingual children. Most studies focused mainly on multilingual children with low language proficiency in the language of instruction and the need to learn the language of instruction. Our review showed that many of the described classroom practices were in line with existing approaches to high quality teacher-child interactions with monolingual children, such as encouraging children to take an active role in the interaction, building a warm and trusting relationship and creating consistent classroom routines. Several studies also suggested that multilingual children are exposed to more detrimental practices, such as limited language support and less beneficial opportunities in the classroom. Furthermore, some studies described classroom practices that were specific for multilingual children,

such as the use of home language and culture. This chapter supports the hypothesis that multilingual children might be involved in different learning opportunities than their monolingual peers, some of which beneficial, others detrimental. It also underlines the necessity of explicitly comparing the learning opportunities of multilingual and monolingual young children, as was done in this dissertation.

In Chapter 3, we aimed to identify profiles based on multilingual and monolingual children's individual teacher-child interactions and child engagement and to examine whether language background would predict profile membership. In line with Chapter 2, we focused on the use of nonverbal communication in frequent complex interactions. We identified five profiles for teacher-child interactions that differed in the use of nonverbal communication (i.e., meaningful gestures), level of complexity of teacher prompts and follow-ups, and child responses, and quantity of interaction. Contrary to what we expected based on Chapter 2, multilingual background did not predict profile membership. We identified five profiles of child engagement that differed in the level of engagement across classroom settings. Multilingual children were slightly overrepresented in profiles with lower engagement in diverse classroom settings. Furthermore, monolingual children that had high level teacher-child interactions, were more often part of profiles with high engagement levels. This suggests that children who are stimulated by their teacher to be involved in dialogue are more likely to show engaged behavior during classroom activities. Even though, based on Chapter 2, we expected teachers to have different interactions with multilingual compared to monolingual children, Chapter 3 did not support this expectation.

In Chapter 4, we examined the unique contribution of individual teacher-child interactions, child engagement, and general classroom interaction to multilingual and monolingual children's early literacy and executive functioning development. We found substantial differences in the relations between the learning opportunity components – individual teacher-child interactions, child engagement, and general classroom interaction – and child outcomes for multilingual and monolingual children. Of the three components of learning opportunities, individual teacher-child interactions were the strongest predictor of learning outcomes for both multilingual and monolingual children. In line with previous research (Hoff & Naigles, 2002; Wasik et al., 2006), we found that having frequent and complex interactions was important for the development of early literacy of both multilingual and monolingual children, and the development of executive functioning of monolingual children. Potentially, because multilingual children practice executive functioning on a daily basis by switching between languages and inhibiting the one language to speak the other, the complexity and quantity of individual teacher-child interactions might be of less importance for the development of their executive functioning.

Child engagement was found to be less important for the development of early literacy skills and executive functioning of multilingual and monolingual children. We found

that both multilingual and monolingual children with high engagement across settings, showed better early literacy skills than children with moderate engagement in large group settings and high engagement in small group settings. It is not surprising that children who show high engagement across all classroom settings, will also show more involvement in the interactions they are part of, and will therefore benefit the most from their classroom experiences. We found no relations between engagement and executive functioning for either of the language groups.

In contrast to what we would have expected based on previous studies (for example, Bratsch-Hines et al., 2019), we found almost no relations – for both multilingual and monolingual children – between the domains of general classroom interaction (i.e., emotional support, classroom organization, and instructional support) and children's early literacy and executive functioning development. This might be explained from the fact that, in general, the observed teachers, similar to previous studies on general classroom interaction (La Paro et al., 2009), showed high emotional support, high classroom organization and low instructional support. This lack of variation might have suppressed statistical associations. The only significant relation we found was a negative relation between classroom organization and the early literacy skills for multilingual children. It seems that in classes with multilingual children with low literacy levels, teachers make more efforts to have a well-organized classroom to support the participation of these children in the classroom.

In Chapter 5, we conducted a multiple case study to explore how teachers interacted with multilingual and monolingual children during teacher-directed educational sequences; more specifically, the type of support they provided after a child response they considered to be insufficient (i.e., third-position support). We identified five types of third-position teacher support in our data: re-allocating turns to another child, reduction of choice, provision of hints, establishing common ground, and modeling. We also identified one type of third-position support that was specific for multilingual children: use of the child's home language. This type of third-position support was also identified in the systematic review (Chapter 2) as a commonly used classroom practice. We found no discernible differences between the three teachers involved in the multiple case study in their use of different types of third-position support in general. However, the data signals some distinction in teacher support offered to multilingual and monolingual children. Teachers tended to use reduction of choice primarily when supporting multilingual children, and hints when supporting monolingual children. In general, providing the expected response requires less effort of a child after the teacher reduced the range of possible choices, than after the teacher offered a hint. Apparently, because of – correctly or incorrectly – assumed lower language skills of multilingual children, teachers might be inclined to use these types of third-position support, i.e. with more teacher assistance, in interaction with multilingual children.

INTEGRATING FINDINGS

Learning opportunities of multilingual and monolingual children

In this dissertation, we examined the learning opportunities of multilingual and monolingual children through the lens of teacher-child interactions. We adopted different approaches in exploring diverse aspects of the learning opportunities. We focused on teacher-child interactions that were specifically directed to an individual child, but also on the general classroom interactions, as these overheard interactions are still opportunities to learn for children. Furthermore, we considered a child's engagement with the interactions and classroom activities of importance in shaping learning opportunities. Finally, we focused on how teachers shaped learning opportunities when they viewed a child response to be insufficient and provided third-position support, either in an extended dialogue or in demarcated teacher-directed interaction. Our results show that, on some aspects, multilingual children are exposed to different learning opportunities than monolingual children. Below we discuss the most pressing findings on the learning opportunities of multilingual (and monolingual) children.

Individual teacher-child interactions of multilingual and monolingual children

Previous studies on the individual teacher-child interactions of multilingual children, both in the Netherlands and abroad, suggested that multilingual children might be exposed to different, potentially suboptimal, interactions compared to monolingual children (Aarts et al., 2016; DaSilva Iddings, 2005; Tsybina et al., 2006). However, our systematic review revealed that direct comparison studies were limited. The results from our three empirical studies showed a mixed picture. On the one hand, when considering all individual interactions that focal children had with their teacher during one morning, we found strong diversity in the interactions regarding the use of nonverbal communication and the complexity and quantity of the language used. However, this diversity was not explained by the language background of the children. On the other hand, when specifically focusing on one aspect of the individual teacher-child interaction, namely third-position teacher support, teachers seemed to differentiate between multilingual and monolingual children. Teachers provided more teacher assistance in interaction with multilingual children than with monolingual children. Differences in the individual teacher-child interactions of multilingual and monolingual children might primarily arise in specific situations, such as moments when teachers perceive that children need support from the teacher. In those situations a teacher might (subconsciously) choose to use a certain of type of support for a specific child. These specific choices might disappear when aggregating all teacher-child interactions during one morning.

We expected that teachers would adapt their interactions and the activities they offered depending on a child's characteristics, either because of lower actual or perceived language abilities or because of teacher bias, and therefore we assumed that teachers have

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knowledge of a child's background, regarding, for example, a child's home language (use) and family situation. The importance of knowing your student's background – not only regarding previous knowledge and skills, but also the personal background – is widely acknowledged to be of importance for effective teaching (Labissiere & Reynolds, 2004), but could also lead to teacher bias. Teachers often have lower expectations of children from ethnic minorities, regardless of a child's academic achievement (Agirdag et al., 2013; Wang et al., 2018), which has also been observed in the Dutch educational system (van den Bergh et al., 2010). However, as we collected data on children's language background – both from the teacher and from the parents of the focal children – we found that at least four children we identified as monolingual based on the teacher's information, were actually multilingual (note that even after repeated attempts only half of the parent questionnaires was returned). Potentially, some teachers might not realize that children are multilingual when they do not notice it in interactions with that particular child, because the Dutch language skills are already well-developed. In that case, teachers might inadvertently consider multilingualism to be equal to low language skills in Dutch. The results of our studies, showing few differences in the individual teacher-child interactions of multilingual and monolingual children, in combination with the fact that some teachers were ignorant of a child's multilingual background, do not provide clear evidence for the existence of teacher bias. However, such bias cannot be excluded because it can occur at a more subtle level, for example, in the student's well-being (Wang et al., 2018) or in the teacher's expectations of parental involvement (Bakker, Denessen, & Brus-Laeven, 2007; both topics that were not included in the present dissertation).

Use of home language in the Dutch kindergarten context
In the review study (Chapter 2, i.e. Langeloo et al., 2019) we found that the use of the home language(s) can be an effective classroom practice when supporting multilingual children. However, in our longitudinal study we found almost no evidence that this also happens in the Dutch kindergarten context. Several reasons might explain the absence of this classroom practice in the Netherlands. First of all, it is uncommon in the Netherlands that all multilingual children in one classroom have the same home language (as is often the case in studies from the United States of America, e.g., de Oliveira et al., 2016; Sayer, 2013); instead, children generally have a wide variety of language backgrounds. Hence, it is impossible to have a full bilingual program or qualified teachers for each language (Leseman & Slot, 2014), which complicates the implementation of home language support in the classroom. Second, the use of the home language(s) in the classroom is hindered by policies at the national level as well as the school level. The Dutch government only allows, next to Dutch and Frisian, the foreign languages English, French and German as languages of instruction. This way, the Dutch government sends the message that other languages are less valued and are not desirable for schooling. Furthermore, school boards often implement a Dutch only policy at their schools, in which the use of home languages is

not allowed at school (Jaspers, 2015; Theeuwes, Saab, Denessen, & Admiraal, 2019). In fact, children are sometimes punished for using their home language at school (Agirdag et al., 2013), which can hinder the development of multilingual children as they cannot use their full skill set (including all their languages) to acquire new skills. Given the importance of valuing a child's home language (Gay, 2002), these reasons impair multilingual children in successfully developing in both their home language and the majority language. Dutch education and educational researchers should therefore, in line with previous research, investigate how home languages can be supported in classrooms with multiple languages. This does not have to include teaching the home language, but starts with acknowledging and appreciating a child's full language background (Duarte & Günther-van der Meij, 2018), for example by engaging parents in the educational program (Leseman & Van Tuijl, 2001) and allowing and incorporating home languages in classroom activities (Duarte & Günther-van der Meij, 2018).

Learning opportunities and child outcomes of multilingual and monolingual children

In Chapter 4, we explored the relations between the diverse learning opportunity components and early literacy and executive functioning development. This study showed that the same relations are in play for the early literacy development of multilingual and monolingual children. Both groups benefit the most when they have interactions with their teachers that are both complex and frequent, and when they are engaged in activities in both small and large groups. Furthermore, we observed that although both multilingual and monolingual children showed great improvement over the school year, monolingual children outperformed the multilingual children on Dutch vocabulary at all three time points. Moreover, the achievement gap in vocabulary between multilingual and monolingual children remained the same across the school year. Previous research has shown that multilingual children generally do not fully catch up (i.e., close the achievement gap) in majority language vocabulary in kindergarten (Gathercole & Thomas, 2009; Hoff, 2013; Mancilla-Martinez & Lesaux, 2011). However, the achievement gap can significantly diminish in those years (Thordardottir, 2011). Of course, the Dutch vocabulary development does not show the full picture of the vocabulary development of multilingual children. Their conceptual vocabulary (taking into account the vocabulary in all languages a child knows) is naturally larger than the vocabulary measured only in Dutch (Monsrud, Rydland, Geva, Thurmann-Moe, & Halaas Lyster, 2019). However, as in Dutch education the primary language of instruction is Dutch, it is important that children have a well-developed vocabulary in Dutch – next to the vocabulary in their home language(s) – to participate in the classroom. Therefore, this group of multilingual children with lower Dutch language skills might be in need of different support by the teacher or should be immersed in a Dutch language context for a longer period to accelerate their Dutch language development.

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LIMITATIONS

Next to the limitations discussed in Chapters 2 through 5, there are several limitations to the dissertation as a whole. First, the sample of the longitudinal study (80 children, of which half was multilingual) was rather small for the statistical analyses conducted in Chapters 3 and 4. However, this sample size allowed us to collect micro level data of the learning opportunities, rather than being limited to general measures of learning opportunities. Due to the sample size, the results should be interpreted with caution and considered a first exploration of the diverse learning opportunities that children are exposed to within classrooms. In future research, larger samples could be used to verify and expand our quantitative results, whereas small scale qualitative studies could be used to enrich our micro level analyses.

Second, even though we acknowledge and wish to stress that multilingual children differ in many aspects from each other, including socioeconomic status (Calvo & Bialystok, 2014), home literacy environment (Cummins, 1979), and exposure to and proficiency in all their languages (Prevoo et al., 2016; Struys et al., 2015), we treated multilingual children as a homogenous group throughout this dissertation. This is not different from the approach taken in many other quantitative or mixed-method studies (see Chapter 2, i.e. Langeloo et al., 2019). More specifically, it illustrates the trade-off between the aim to render generalizable findings and attend to detail. In order to create more and larger subgroups of multilingual children, for example based on socioeconomic status or age of acquisition of the majority language, one needs a much larger sample to conduct similar analyses as in this dissertation, or one needs to conduct more in-depth qualitative analyses with attention to the individual differences between multilingual children. We took several steps to acknowledge the diversity in the group of multilingual children. First, by distributing an elaborate parent questionnaire on the home literacy environment of the focal children, we gained detailed knowledge of the children's language use in different activities and with diverse family members and friends. Unfortunately, only about half of all parent questionnaires were returned, which limited our possibilities to use this data. Second, in Chapter 5, in which we explored the teacher-child interactions in teacher support sequences, we provided extensive information on the language background of the children (based on the information from the parent questionnaires). However, to incorporate this detailed background information in the results remained challenging and even this chapter concludes with types of third-position support teachers provide to multilingual children as a group, compared to the group of monolingual children, without acknowledging the diversity within the language groups.

Third, one of the main assets of this dissertation is its longitudinal, ecologically valid approach to data collection. This asset, however, represents some drawbacks. Because we were interested in the daily classroom practices rather than specific activities, we did not ask for particular activities to be carried out when we came to the classroom for

observations. As a result, there was a large variation in the types of activities we observed and that influenced the (type of) interactions that teachers had with our focal children. For example, some classes held activities that were out of the scope of our analysis (e.g., long stretches of outdoor play, or activities led by other professionals instead of the teacher), teachers conducted individual developmental assessments during center time, or the class was split up and children worked with separate teachers. Furthermore, teachers knew our study was focused on multilingual children because we asked them to point out the multilingual children in the classroom in the teacher questionnaire. In most cases, teachers knew who the focal children were, as we individually assessed those children at each of the three time points and asked teachers to distribute parent questionnaires to the parents of the focal children. These factors in combination with repeated filming of the teacher might have invoked a Hawthorne effect, in which teachers might have changed their behavior because of the research context, rather than the children they were interacting with (Shadish, Cook, & Campbell, 2002).

Finally, there was a large diversity across classrooms, teachers and children. Classrooms were situated across the Netherlands, in smaller towns and larger cities, and they all had different classroom compositions regarding (combined) grades, language background, and socioeconomic status of the children. Teachers had different educational backgrounds (in 1985 the specific kindergarten teacher training program became part of the general primary school teacher training program; some teachers completed a master's program) and levels of experience in primary education, kindergarten, and with multilingual children. Furthermore, as mentioned previously, both multilingual and monolingual children differed in many aspects from each other. On the one hand this diversity is an asset of this dissertation, because it enabled us to explore the learning opportunities across diverse classrooms, teachers and children. However, on the other hand, the diversity on all these different levels (i.e., classroom, teacher, and child), might also partly explain the findings in this dissertation. For example, previous research on the effects of classroom composition found that multilingual children in highly mixed classrooms (with both multilingual and monolingual children) show more development in early literacy compared to multilingual children in classrooms with mostly multilingual children (de Haan, Elbers, Hoofs, et al., 2013). Furthermore, the experience of a teacher in kindergarten might impact the learning opportunities that are being created in that classroom, with more experienced teachers having more responsive interactions with the children in their classroom (McDonald Connor, Son, Hindman, & Morrison, 2005). Finally, as previously stated, the home literacy environment of a child is known to influence the early literacy (Mayo & Leseman, 2008) and executive functioning development (Verhagen et al., 2017).

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IMPLICATIONS FOR RESEARCH AND PRACTICE

The findings of this dissertation have several implications for research and practice. First, our results show that it is primarily the individual learning opportunity components that predict learning outcomes, rather than the classroom level learning opportunity component. This underlines that future research on the impact of learning opportunities on learning outcomes should, therefore, focus on the within-classroom variation. A predominant focus on general classroom interaction might give a good indication of the quality of the learning opportunities on a classroom level, but likely obscures our understanding of the learning opportunities that individual children in a classroom are exposed to.

Second, in this dissertation learning opportunities were explored through the lens of teacher-child interactions since interactions can be seen as the motor of learning (Bronfenbrenner & Morris, 2007). In education, especially the interactions with the teacher are of interest as their interactions with children are often intentional with the curriculum content and the child's development in mind. However, learning opportunities are not only shaped in interaction with teachers, but also in other classroom experiences, such as peer interaction and during individual free play activities. Those classroom experiences were only minimally touched upon in this dissertation by exploring child engagement in diverse activities and settings. Future research should take into account these aspects of learning opportunities, next to the teacher-child interactions.

Third, although the minimal differences in learning opportunities of multilingual and monolingual children suggests the absence of teacher bias, we did not directly assess teacher bias and it could occur on more subtle levels that we did not take into account. Since teacher bias can have an important impact on a child's well-being and academic achievement (Wang et al., 2018), this is an important topic that should be addressed in future research on the learning opportunities of multilingual children and the relations with child outcomes. Furthermore, teachers should critically reflect on how and why learning opportunities of children are shaped differently. For example, teachers need to become more aware of their own normative framework (Wolcott, 1991) and how it shapes their interpretation of a child's background and abilities, so as to limit potential teacher bias and create optimal learning opportunities for all children.

Fourth, there is a group of multilingual children that remains low(er) in Dutch literacy skills over the course of the school year. It remains unclear what specific learning opportunities, next to the frequent and complex interactions with their teacher, these multilingual children would need to accelerate their Dutch vocabulary development, as to diminish the achievement gap. As we observed large differences in the Dutch vocabulary levels and progress over the school year of the multilingual children, future research should make more detailed comparisons between the learning opportunities of multilingual children that showed large progress over the school year and those who did not. This would

also provide more insight into what teachers could do to support the Dutch vocabulary development of multilingual children. For example, children might show more progress, when teachers are better able to adjust the complexity of the interaction to the child's needs (Mascareño et al., 2017) and offer new vocabulary in meaningful interactions (Carlo et al., 2004).

Fifth, as reflected in our review study, many studies on multilingualism adopt a perspective, focusing on what multilingual children cannot do and what they need to learn, rather than what they can do. This includes the assumption that multilingual children have a smaller vocabulary in the majority language, while they need to learn that language to succeed in education. This is not only the case in research, but also in education. Agirdag and colleagues (2013), for example, showed that Flemish teachers had lower teachability expectations (i.e., the expectations of teachers about their students' capacities and willingness to learn) of ethnic minority children. The teachers explained these lower expectations by the children not properly speaking Dutch. Therefore, they did not allow the children to speak their home language(s) in the classroom. This deficit perspective is further exemplified by the common term and labels, both in research and practice, used to describe this group of children, such as English Language Learner (ELL) and Limited English Proficient (LEP) in English-speaking countries, or Dutch as a second language ([Nederlands als tweede taal]; NT2) in the Dutch context, all focusing on the need to learn the majority language. Even in this dissertation, we could not completely avoid this deficit perspective. For example, we focused on the lower vocabulary scores in Dutch of the multilingual children and discussed the achievement gap that remained after a school year, while we did not measure the vocabulary of the multilingual children in their other language(s). Furthermore, we explained certain findings from a deficit perspective, for example when we suggested that the use of nonverbal communication with multilingual children could be related to their limited understanding of verbal communication in Dutch.

In order to limit the influence of the deficit perspective when studying multilingual children, researchers should critically reflect on and change their designs from the start. This means that instead of only assessing the language skills in the majority language, we should acknowledge the full language abilities by also assessing the skills in the home language(s). The same holds for educators: teachers and schools should create more space for acknowledging a child's full language abilities, as well as create opportunities for the child to use his or her home language(s). Furthermore, the operationalization of multilingualism as a binary variable might be untenable. For example, June and Kevin (introduced in Chapters 1 and 5) are substantially different from each other in terms of their proficiency, use and age of acquisition of their languages; they should and cannot be considered as belonging to one homogenous group of children.

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CONCLUSION

Altogether, our results show that there are substantial differences in the learning opportunities of children within and across classrooms. We found that multilingual and monolingual children benefited most from individual teacher-child interactions that are frequent and complex, and children show the most development when they are highly engaged in the educational activities they take part in during the school day. Moreover, teachers use different types of support in interaction with multilingual and monolingual children. This dissertation shows that to optimize the learning opportunities of all children, the label multilingualism is not a functional distinction. The differences between children are more subtle and complex than the label multilingualism suggests. It is important to adapt learning opportunities to a child's individual needs, but the label multilingual often does not provide enough information to make the appropriate adjustments. Therefore, in early childhood education, there should be more attention to a child's background and needs, including, but not solely, a child's language background.

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Addendum

SAMENVATTING

Meertalige en eentalige kinderen in de kleuterklas

Een verkennend onderzoek naar leerkracht-kind interacties en betrokkenheid als gelegenheid tot leren

June en Kevin, allebei met een meertalige achtergrond, zijn net begonnen bij de kleuters. June is vier jaar. Ze is geboren in Zuid-Korea en ging daar naar een kinderdagverblijf waar ze Engels en Koreaans spraken. Anderhalf jaar geleden is ze met haar ouders en drie zussen naar Nederland verhuisd. Omdat haar ouders geboren zijn in Brazilië spreken ze thuis een combinatie van Portugees, Engels en Nederlands, waarbij Nederlands het minst gebruikt wordt. Kevin is vijf jaar en komt uit een Turkse familie. Hij is geboren in Nederland en is toen hij twee jaar was naar een peuterspeelzaal gegaan waar enkel Nederlands werd gesproken. Thuis spreken Kevin en zijn ouders een combinatie van Nederlands en Turks. Bij het voorlezen gebruiken ze enkel Nederlands, maar bij het televisie kijken en verhalen vertellen gebruiken ze zowel Turks als Nederlands. Als Kevin een spelletje speelt op de computer of de telefoon, gebruikt hij af en toe Engels. June en Kevin zijn geen uitzonderingen in het Nederlandse onderwijs; steeds meer kinderen in Nederland groeien meertalig op. Kleuterleerkrachten staan hierdoor constant voor de uitdaging deze achtergronden mee te nemen in hun onderwijs.

Meertalige kinderen spreken thuis geregeld een andere taal dan de taal van het land waar ze opgroeien. Deze kinderen leren tegelijkertijd twee of meer talen en groeien daarnaast ook vaak op in een diverse sociale en culturele context (García, 2011). Er zijn grote individuele verschillen tussen meertalige kinderen. Zo zijn er verschillen in hoeveel en hoe goed ze hun verschillende talen spreken (Prevoo et al., 2016; Struys et al., 2015), hun socio-economische status, en hun thuistaalomgeving (Cummins, 1979). Meertaligheid – in combinatie met deze factoren – kan deels de ontwikkeling van meertalige kinderen verklaren op sociale, cognitieve en schoolse vaardigheden (Cummins, 1979; van den Noort et al., 2019). Ondersteuning van meertalige kinderen in hun ontwikkeling vraagt daarom mogelijk een andere benadering van leerkrachten dan ondersteuning van eentalige kinderen.

Het is algemeen bekend dat voor- en vroegschoolse educatie een belangrijke rol speelt in het voorbereiden van kinderen op schools leren. Hoge kwaliteit kleuteronderwijs is gerelateerd aan beter ontwikkelde sociale, cognitieve en schoolse vaardigheden (Mashburn et al., 2008; Slot et al., 2015). Eerder onderzoek naar de gelegenheid tot leren van kleuters (zogenaamde '*learning opportunities*') – dit zijn alle kansen die een kind krijgt in de klas – heeft laten zien dat kinderen baat hebben bij leerkrachten die emotionele steun bieden en goede instructie geven in een goed georganiseerde klas (Vitiello et al., 2011). Daarnaast is het belangrijk dat kinderen rijke en complexe interacties hebben, waarbij veel ruimte is voor de input van het kind (Michaels & O'Connor, 2015) en waarbij het kind actief betrokken is (Fredricks et al., 2004). Er zijn echter nog maar weinig studies verricht naar de gelegenheid tot leren van meertalige kinderen in vergelijking tot de gelegenheid tot leren van eentalige kinderen. Dit proefschrift heeft daarom tot doel om (a) de gelegenheid tot leren van meertalige en eentalige kinderen in Nederland te beschrijven en (b) te onderzoeken hoe deze zich verhoudt tot hun ontwikkeling van beginnende geletterdheid en executief functioneren.

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OPZET VAN DIT ONDERZOEK

In dit proefschrift worden vier studies beschreven naar de gelegenheid tot leren van meertalige en eentalige kleuters. De eerste studie (hoofdstuk 2) is een systematische review van bestaand onderzoek naar de leerkracht-kind interacties van meertalige jonge kinderen. De andere drie studies (hoofdstuk 3-5) zijn allemaal gebaseerd op één longitudinale studie. Deze longitudinale studie bestond uit drie metingen in één schooljaar (oktober 2016, januari 2017, april 2017). Twintig kleuterklassen van vijftien scholen in heel Nederland hebben deelgenomen aan dit onderzoek. In iedere klas werden twee meertalige en twee eentalige kinderen – vergelijkbaar op het gebied van socio-economische status en sekse – geselecteerd als de focuskinderen (80 kinderen in totaal). Bij iedere meting kwamen twee onderzoekers een ochtend in de klas om de data te verzamelen. De eerste onderzoeker filmde de leerkracht de hele ochtend – behalve tijdens het buitenspelen – en de andere onderzoeker observeerde ondertussen de focuskinderen in intervallen van vijf minuten. De video-opnames van de leerkracht werden gebruikt om op een later moment de interacties tussen de leerkracht en de focuskinderen in detail te kunnen analyseren. Tijdens de observaties van de focuskinderen werd genoteerd waar ze zich mee bezig hielden (een combinatie van de activiteit en de groepssamenstelling) en hoe betrokken ze daarbij waren. De volgende dag kwam een van de onderzoekers terug om de taal- en cognitieve vaardigheden van de focuskinderen te meten. Hiervoor moesten de focuskinderen een aantal taken uitvoeren buiten het klaslokaal. Tijdens iedere meting werden dezelfde gegevens verzameld en kwamen zoveel mogelijk dezelfde onderzoekers terug naar de klas, om zo het aantal onbekende gezichten voor de kinderen te beperken.

BELANGRIJKSTE BEVINDINGEN

In hoofdstuk 2 wordt een reviewstudie beschreven om meer inzicht te krijgen in bestaande empirische kennis over de leerkracht-kind interacties van meertalige jonge kinderen in de klas. We vonden 31 studies die onderzoek hadden gedaan naar de leerkracht-kind interacties van meertalige kinderen, slechts vijf hiervan maakten een directe vergelijking met de leerkracht-kind interacties van eentalige kinderen. De meeste studies focusten vooral op meertalige kinderen met een lage taalvaardigheid in de instructietaal. Veel van de beschreven klassenpraktijken in de gevonden studies zijn bekende strategieën voor hoge kwaliteit leerkracht-kind interacties met eentalige kinderen, zoals kinderen stimuleren een actieve rol in te nemen in de interactie, het opbouwen van een warme leerkracht-kind relatie en het creëren van consistente klassenroutines. Daarnaast lieten sommige studies zien dat leerkrachten specifieke strategieën gebruikten voor meertalige kinderen, waaronder het gebruik van de thuistaal en -cultuur. Meerdere studies wezen echter ook op schadelijke klassenpraktijken, zoals beperkte ondersteuning in de taalontwikkeling

en minder stimulerende gelegenheid tot leren in de klas. Dit hoofdstuk ondersteunt de hypothese dat de gelegenheid tot leren er voor meertalige kinderen anders uit kan zien dan die van hun eentalige klasgenoten. In sommige gevallen kan dat voordelig zijn, soms echter ook schadelijk. Het feit dat er maar vijf vergelijkende studies tussen de interacties van meertalige en eentalige kinderen werden gevonden onderstreept het belang om een directe vergelijking te maken in de gelegenheid tot leren van meertalige en eentalige jonge kinderen, zoals we hebben gedaan in dit proefschrift.

In hoofdstuk 3 hebben we profielen geïdentificeerd op basis van de individuele leerkracht-kind interacties en betrokkenheid van meertalige en eentalige kinderen. Dit hield in dat we homogene groepen hebben geïdentificeerd van kinderen die dezelfde soort interacties hadden met de leerkracht of op dezelfde manieren betrokken waren. Op deze manier creëerden we meer ruimte voor de heterogeniteit bij jonge kinderen en kregen we een duidelijker beeld van hoe de gelegenheid tot leren er voor individuele kinderen uitziet. Daarnaast hebben we gekeken of de taalachtergrond van de kinderen voorspellend was voor tot welk profiel zij behoorden. We hebben vijf profielen geïdentificeerd voor leerkracht-kind interacties. Deze profielen verschilden in het gebruik van betekenisvolle gebaren, mate van complexiteit van de prompts en follow-ups van de leerkracht en de antwoorden van de kinderen en de hoeveelheid interactie. In tegenstelling tot wat we verwacht hadden op basis van de resultaten in hoofdstuk 2, hadden meertalige kinderen geen andere interacties met hun leerkracht dan eentalige kinderen. We identificeerden ook vijf profielen voor betrokkenheid, waarin we verschillen zagen tussen kinderen in hun betrokkenheid in verschillende groepssamenstellingen (zoals activiteiten met de hele klas, activiteiten in een kleine groep met de leerkracht en activiteiten in een kleine groep zonder de leerkracht). Meertalige kinderen behoorden iets vaker tot de profielen met lage betrokkenheid in verschillende groepssamenstellingen. Daarnaast vonden we dat eentalige kinderen die hoge kwaliteit interacties hadden met hun leerkracht, ook vaak meer betrokken waren in de klas. Dit suggereert dat kinderen die door leerkrachten worden gestimuleerd om mee te doen in interacties, vaak ook meer betrokkenheid laten zien met de activiteiten in de klas.

In hoofdstuk 4 onderzochten we hoe de verschillende componenten van gelegenheid tot leren – individuele leerkracht-kind interacties, betrokkenheid en algemene klasseninteractie – de ontwikkeling van beginnende geletterdheid en executieve functies (d.w.z., de hogere cognitieve vaardigheden) van meertalige en eentalige kinderen voorspelde. We zagen substantiële verschillen in de relaties tussen de componenten van gelegenheid tot leren en de leeruitkomsten voor meertalige en eentalige kinderen. De individuele leerkracht-kind interacties waren de sterkste voorspeller voor de leeruitkomsten van zowel een- als meertalige leerlingen. Net als in eerder onderzoek (Hoff & Naigles, 2002; Wasik et al., 2006) vonden we dat het hebben van frequente en complexe interacties belangrijk was voor de ontwikkeling van beginnende geletterdheid van kinderen in beide taalgroepen en voor de ontwikkeling van executief functioneren voor eentalige kinderen. Doordat

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meertalige kinderen continu hun executieve functies trainen door te wisselen tussen hun talen en de ene taal te onderdrukken om de andere te kunnen spreken, is de kwaliteit van de individuele leerkracht-kind interacties voor hen mogelijk minder van belang voor de ontwikkeling van executief functioneren.

We zagen dat zowel meertalige als eentalige kinderen met hoge betrokkenheid in alle groepssamenstellingen betere beginnende-geletterdheidvaardigheden hadden dan kinderen die gemiddelde betrokkenheid lieten zien in de klas. Logischerwijs laten kinderen die hogere betrokkenheid tonen in alle groepssamenstellingen ook meer betrokkenheid zien in interacties en leren ze daardoor ook meer van deze interacties. We vonden geen relaties tussen betrokkenheid en executief functioneren noch voor meertalige, noch voor eentalige kinderen.

In tegenstelling tot wat we verwachtten op basis van eerder onderzoek (Bratsch-Hines et al., 2019), vonden we bijna geen relaties tussen de kwaliteit van de algemene klasseninteractie en leeruitkomsten. Dit zou kunnen komen doordat, over het algemeen, de geobserveerde leerkrachten veel emotionele steun gaven, de klas goed georganiseerd hadden, maar relatief lagere kwaliteit instructie gaven. Hierdoor was de variatie tussen klassen vrij klein, terwijl er wel grote variatie was in de ontwikkeling van de beginnende geletterdheid en executieve functies van de kinderen. Het enige effect dat we vonden was een negatieve relatie tussen de organisatie van de klas en de ontwikkeling van beginnende geletterdheid van meertalige kinderen. Mogelijk steken leerkrachten in klassen met veel meertalige kinderen met lage taalvaardigheden meer tijd in het goed organiseren van de klas zodat kinderen makkelijker kunnen deelnemen aan de activiteiten en dus meer gelegenheid tot leren hebben.

In hoofdstuk 5 keken we tenslotte hoe leerkrachten reageerden als zij niet tevreden waren met de reactie van een kind op hun vraag en daarom probeerden de gewenste reactie te ontlokken (derde-positie support). We vonden vijf manieren waarop leerkrachten derde-positie support boden: het toewijzen van de beurt aan een ander kind, beperking van de antwoordkeuzes, het geven van een hint, het creëren van gemeenschappelijk begrip en direct voordoen (modellering). We vonden daarnaast ook een manier van derde-positie support specifiek voor meertalige kinderen: (het toestaan van) het gebruik van de thuistaal. Deze manier van derde-positie-support zagen we ook al in hoofdstuk 2 als een veel gebruikte strategie. Er leken wat verschillen te zijn in hoe leerkrachten derde-positie-support gebruikten met meertalige en eentalige kinderen. Leerkrachten leken beperking van de keuzes meer te gebruiken met meertalige kinderen en hints meer met eentalige kinderen. Over het algemeen zorgt beperking van de keuzes in vergelijking met het geven van hints ervoor dat een kind vervolgens met minder moeite de beoogde reactie kan geven. Mogelijk zijn leerkrachten hiertoe eerder geneigd vanwege de al dan niet ten onrechte veronderstelde lagere taalvaardigheden van meertalige kinderen.

REFLECTIES OP DE BEPERKINGEN VAN DIT ONDERZOEK

Er zijn een aantal beperkingen in dit onderzoek waar rekening mee gehouden moet worden bij het interpreteren van de resultaten. Allereerst is dit onderzoek bij slechts 80 kinderen uitgevoerd. Dat is een relatief kleine groep voor de statistische analyses die zijn uitgevoerd; de resultaten moeten daarom voorzichtig geïnterpreteerd worden. Daarnaast hebben we dit onderzoek een ecologische valide benadering genomen, dit betekent dat we onze gegevens hebben verzameld in gewone klassen op gewone dagen. We hebben de leerkracht niet gevraagd iets speciaals te doen, maar wilden de alledaagse gang van zaken zien. Dat is een van de sterke punten van dit onderzoek, maar dit heeft ook een aantal nadelen. Er waren bijvoorbeeld grote verschillen tussen de klassen, bijvoorbeeld in de samenstelling of de ervaring van de leerkracht, maar ook in de activiteiten die in de klas plaatsvonden tijdens de observaties. Deze verschillen kunnen deels de gevonden resultaten verklaren. Zo lenen sommige activiteiten zich bijvoorbeeld meer voor voortgezette interacties van hoge kwaliteit dan andere activiteiten. Er waren ook grote verschillen tussen meertalige kinderen, onder andere op het gebied van socio-economische status, thuistaalomgeving en gebruik van en bekwaamheid in de verschillende gesproken talen. Ondanks die verschillen beschouwden we meertalige kinderen toch als een homogene groep in onze analyses. Hoewel deze analytische keuze gangbaar is, zowel in kwantitatief als in kwalitatief onderzoek (hoofdstuk 2, Langeloo et al., 2019), betekent het niet dat het de beste keuze is. Hiermee wordt de heterogeniteit binnen de groep meertalige kinderen immers miskend. In het bijzonder illustreert dit de wisselwerking tussen het doel om enerzijds generaliseerbare uitkomsten te hebben en anderzijds aandacht te schenken aan details. Om meer vergelijkingen te maken tussen (subgroepen van) meertalige kinderen, bijvoorbeeld op basis van socio-economische status, is een veel grotere steekproef nodig of moeten meer diepgaande kwalitatieve analyses worden uitgevoerd met aandacht voor de individuele verschillen tussen kinderen. In dit proefschrift hebben we al enkele stappen ondernomen om de diversiteit in de groep meertalige kinderen te erkennen. Zo lieten we de ouders van de focuskinderen een uitgebreide vragenlijst invullen over het gebruik van verschillende talen thuis. Daarnaast is in hoofdstuk 5 uitgebreid de achtergrond van de kinderen aan bod gekomen, gebaseerd op de informatie uit de oudervragenlijst. Het bleek echter ingewikkeld om deze informatie ook te verwerken in de analyses en zo maakten we uiteindelijk toch een vergelijking tussen meertalige en eentalige kinderen, zonder de diversiteit in deze groepen te erkennen.

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IMPLICATIES VOOR ONDERZOEK EN PRAKTIJK

De resultaten van dit proefschrift hebben verschillende implicaties voor onderzoek en praktijk. De resultaten laten zien dat met name de individuele componenten van

gelegenheid tot leren van belang zijn voor leeruitkomsten. Daarom zou onderzoek zich in de toekomst meer moeten richten op de variatie in gelegenheid tot leren binnen de klas; enkel focussen op de algemene klasseninteractie schiet te kort. Daarnaast richtten wij ons in dit proefschrift enkel op gelegenheid tot leren door leerkracht-kind interacties. De interacties met medeleerlingen of de ervaringen die een kind opdoet tijdens individueel werken zijn echter ook van belang voor de ontwikkeling van jonge kinderen en zouden daarom ook meegenomen moeten worden. Verder vonden we dat veel studies naar meertaligheid het gangbare, maar problematische, '*deficit perspective*' hanteren, waarbij de aandacht uitgaat naar wat meertalige kinderen *niet* kunnen, in plaats van op wat ze *wel* kunnen en hoe meertaligheid een pluspunt kan zijn. Als meertaligheid geproblematiseerd wordt, ligt de nadruk vaak op de kleinere woordenschat van meertalige kinderen in de instructietaal en het belang van beheersing van die instructietaal voor leren en ontwikkeling. Dit zien we ook terug in het onderwijs, waarbij leerkrachten vaak lagere verwachtingen hebben van meertalige kinderen, dan op basis van hun potentieel gerechtvaardigd is, omdat ze de instructietaal niet goed spreken (Agirdag et al., 2013). Als we de negatieve impact van zo'n *deficit perspective* willen voorkomen dan moeten zowel onderzoekers als onderwijzers zich bewust worden van hun positie ten opzichte van meertaligheid. Zo zou er niet alleen gekeken moeten worden naar de taalvaardigheden in de instructietaal, maar ook in de thuista(a)l(en). Daarnaast is het operationaliseren van meertaligheid als binaire variabele niet houdbaar, want daarvoor zijn de verschillen tussen meertalige kinderen te groot. Neem bijvoorbeeld June en Kevin (geïntroduceerd aan het begin van dit hoofdstuk): zij verschillen zoveel van elkaar op het gebied van de vaardigheid en het gebruik van hun talen dat zij niet beschouwd kunnen worden als behorend tot eenzelfde, homogene groep kinderen.

CONCLUSIE

Samenvattend kunnen we concluderen dat er verschillen zijn in de gelegenheid tot leren van meertalige en eentalige kinderen tussen en binnen klassen. In lijn met eerder onderzoek vonden we dat zowel meertalige als eentalige kinderen vooral baat hebben bij individuele leerkracht-kind interacties die frequent en complex zijn en dat kinderen zich sneller ontwikkelen als ze betrokken zijn bij alle activiteiten waaraan ze deelnemen gedurende een schooldag. Het onderscheid dat leerkrachten maken tussen meertalige en eentalige kinderen is met name te zien als in detail naar leerkracht-kind interacties gekeken wordt, zoals onze analyses van de manier waarop de leerkracht een kind helpt om tot het gewenste antwoord te komen. Dit proefschrift laat daarnaast zien dat om de gelegenheid tot leren van alle kinderen te optimaliseren, enkel het label meertaligheid nauwelijks functioneel onderscheidend is, omdat de verschillen tussen meertalige kinderen erg groot zijn en meertaligheid niet een-op-een samenhangt met vaardigheid in de instructietaal. Het is belangrijk om de gelegenheid tot leren aan te passen aan de

behoeften van een individueel kind, maar het label meertalig geeft niet genoeg informatie om op basis hiervan aanpassingen te maken. Daarom zou er in het kleuteronderwijs meer aandacht moeten zijn voor de achtergrond en behoeften van kinderen. De taalachtergrond van een kind is hierbij een belangrijke factor, maar niet de enige factor.

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Appendices

APPENDIX A: TRANSPARENCY CHECKLIST

	Yes	No	Comments
Aims			
Is there a clear statement of the aims and/or research questions of the study?			
Methods			
Is there sufficient information on the participants of the study?			
Data collection: Is the research explicit on: How data is collected?			
What is measured with the collected data?			
The followed procedure for data collection?			
Analysis: Is there an in-depth description of the analysis process			
Results			
Is there a clear statement of findings?			

Note. Every time a question is answered with NO, an explanation should be written down in the comment section.

Explanation Checklist

Aims

Was there a clear statement of the aims and/or research questions of the research?

HINT: Consider:

- What was the goal of the research
- Why it was thought important
- Its relevance

Methods

Is there sufficient information on the participants of the study?

HINT:

- Is the research explicit on the characteristics of the participants involved in this study (e.g., age, grades, language background, teacher information, N)?
- Does the research give enough information to replicate the study?

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Data collection: Is the research explicit on:

a) *How data is collected?*
HINT:
- In the case of a quantitative study: is the research explicit on with which instruments variables are measured?
- In the case of a qualitative study: is it explicitly mentioned what data is collected and how this is being coded?

b) *What is measured with the collected data?*
HINT:
- Is the research explicit on what they are aiming to measure with the collected data? (i.e., variables)

c) *The followed procedure for data collection?*
HINT:
- Does the research describe which steps have been taken to collect and code the data?
- Does the research make explicit in what context data has been collected (e.g., how often, role of researcher; in what situation/type of activity)?
  Analysis: Is there an in-depth description of the analysis process
HINT: Consider
- If sufficient data are presented to support the findings
- If the research is explicit on the analysis steps that have been taken? How did the research get from data to results?

Results
Is there a clear statement of findings?
HINT: Consider
- If the findings are explicit
- If there is adequate discussion of the evidence both for and against the researcher's arguments
- if the findings are discussed in relation to the original research question

APPENDIX B: CODING SCHEME FOR INDIVIDUAL TEACHER-CHILD INTERACTIONS

Subcategory	Description	Example
Communication channel		
Verbal	Utterance is spoken and does not include any meaningful nonverbal gestures.	*T: Yes, A block*
Verbal and gesture	Speech is combined with a meaningful gesture. A meaningful gesture is any gesture that makes it easier to understand what someone is saying.	*T: ((nods)) A block*
Nonverbal	All utterances that are not verbal at all.	*T: ((nods))*
Type of utterance		
	Prompting	
Open question	Open questions can be description/definition questions which have a bigger array of alternatives to build an acceptable answer.	*T: **What do you want to tell about the weekend?***
Closed question	Closed questions are questions that can be answered with either a single word or a short phrase. The answer is often predetermined, or constrained by and known to the questioner.	*T: **Ludwig, where do you hear R in guitarrr?** / Ludwig: in front*
Directive (T)	The teacher asks the child to do something This varies from performing an activity, giving instructions, redirect misbehavior, etc.	*T: **June, you can take a close look at the mushrooms.***
Request floor/ attention (C)	A child nonverbally or verbally tries to get the attention or the floor. This can be through hand raising, walking towards the teacher, or by asking for it verbally.	*T: Well, who wants to tell something? / **June: ((raises her hand))***
Turn giving (T)	The teacher gives the floor to one of the children in the circle or in a small group.	*T: Well, who wants to tell something? / **June: ((raises her hand)) / T: June?***
	Informing	
Statement	Statements are used to describe something in the world.	June: Need to pee.
	Response	
Response	The actor provides a verbal or non-verbal answer or response to a question, directive or statement.	*T: What are you drawing? / **Maxime: a door***
	Follow up	
Elaboration (T)	Teacher provides extra information to complement or elaborate the previously existing one.	*T: What did they do?/ Keesje: pour! / **T: They poured juice in the glass.***
Hint (T)	Teacher gives a suggestion or an extra piece of information in order to prompt the child to the correct answer.	*Ludwig: ((forgot his glasses)) / **T: You are missing something. Your… ((makes glasses with her hands))***
(Dis)approval (T)	The teacher indicates that the response of the child is either confirmed (accepted) or falsified.	*June: ((points at her drawing)) stalk / **T: yes.***
Evaluation (T)	Teacher provides a remark that clearly stresses the quality of the outcome (response), the effort exerted, or the child's ability.	*Ludwig: ((distributes the scissors)) / **T: well done.***

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	Flow	
Flow	These are utterances that support the flow of the interaction.	*T: What is it about? / Maxime: About counting / T: About counting / **T: Right** / T: Are you a good counter already?*
Repetition	Utterances that are (almost) exactly the same as the utterance before.	*T: What was the color of your ice cream? /* *June: Ehm… / **T: What was the color of your ice cream?***
	Residual	
Inaudible/invisible	Utterances that are inaudible or invisible.	**Ludwig: ((does not say anything in response to the teacher and is not in view of the camera))**
Other	Utterances that do not belong to any of the previous types	
Cognitive complexity *(only coded for teacher open questions, closed questions, and directives, and for child responses)*		
Literal	Includes all prompts and responses to prompts that are concrete and do not need inferencing about the available information. These are utterances about information that is perceptually available, or that offers concrete choices.	**T: Can you distribute the scissors?**
Inferential	Includes all prompts that require the child to infer about the available information. This can be prompts about non-present objects, or past and future events. Comments and questions move beyond concrete discussion of what is immediately (or has just recently been) perceptually present.	**T: Do you have the letter R in your name?** *Keesje: ((is arranging the mushrooms))* **T: remember, from small to large**

Note. (T) indicates codes that can only be used for teacher utterances. (C) indicates codes that can only be used for child utterances

APPENDIX C: HOME LITERACY ENVIRONMENT OF THE FOCAL CHILDREN

In the present study we selected four focal children in each classroom and observed their support sequences with the teacher. Below we give a detailed description of the home literacy environment and early literacy development of the focal children. The information provided is based on the teacher and parent questionnaires and the three assessments of early literacy skills during the school year.

In the teacher questionnaire, the teacher was asked to provide information for each child in her classroom on date of birth, socioeconomic status (based on Dutch school funding policy), and language background. The parent questionnaire focused on the language background and home literacy environment of the focal children. It asked about country of birth, language use previously in day care, and language use in the home environment (i.e., languages spoken to and by the focal child and languages used in literacy activities, such as book reading, dinner conversations, television watching). The early literacy assessment consisted of three subtests on productive vocabulary and phonological awareness of a standardized Dutch early literacy test (Aarnoutse, Beernink, & Verhagen, 2016).

Class A

Monique. Monique is a girl with a monolingual background: she was born in the Netherlands and went to a Dutch speaking day care from 2 years onwards. At home they only speak Dutch. Sometimes they might listen to or sing songs in English. Her early literacy skills were above average on all measurement points throughout the school year. She mainly showed a steady increase in her phonological awareness skills.

Janno. Janno is a boy from a monolingual family: he was born in the Netherlands and went to a Dutch speaking day care when he was 2 years old. His family was Dutch speaking and occasionally used English in music, television, and electronic devices (such as computer games). Janno performed among the worst scoring children in the full sample on early literacy at the first and second time point, but made a steep increase in the second half of the school year and performed on average at the last measurement point.

Lieve. Lieve is a girl born in Poland and came to The Netherlands with her family when she was 3 years old (i.e., 1.5 years before the study). Lieve shortly visited a Dutch-speaking daycare (only a few weeks) before entering kindergarten. At home Lieve speaks a combination of Dutch and Polish. Her parents and sister speak Polish to her. The early literacy scores of Lieve were among the lowest of the full sample at the start of the school year. She showed some improvement in the first half of the school year, but still performed below average. Her early literacy skills showed a steep improvement in the second half of the school year and she performed well above average at the end of the school year.

Kevin. Kevin is a boy and was born in the Netherlands as part of a Turkish family. Kevin went to a Dutch-speaking day care when he was 2 years old. At home and in the

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neighborhood both Kevin and his family speak a combination of Turkish and Dutch. Book reading and music only happens in Dutch, whereas other activities, such as watching television, telling stories, dinner time conversations and playing happen in both Dutch and Turkish. Kevin often used English when using electronic devices (e.g., computer games). Kevin showed a steady development of early literacy during the school year. He started below average, but improved to a score above average by the end of the school year.

Class B

Jean. Jean is a boy and was born in the Netherlands and went to a Dutch speaking daycare since he was a baby. He and his family spoke a combination of Dutch, Papiamento, and English at home. Dutch was the most prominent language, followed by Papiamento and English. In the neighborhood Jean would also speak those three languages. At home Dutch was used in all sorts of literacy activities, whereas Papiamento was only used on the smartphone and the computer, in music, and during playing. English was primarily used on the smartphone and the computer, but also when watching television. Jean's early literacy skills were just below average at the start of the school year. He showed good improvement in the first half of the school year and performed above average at the second measurement point. He neither showed improvement, nor decline in the second half of the school year.

Kyra. Kyra's parent questionnaire was not returned, so background information is limited. Kyra is a multilingual girl according to the teacher. The teacher did not indicate which language Kyra spoke at home. Kyra's early literacy skills improved from below average to above average in the first months of the school year. In the second half of the school year her early literacy skills did not change, which resulted in about average early literacy skills.

Evita. Evita was initially included as a monolingual focal child, as indicated by the teacher. However, according to the information in the parent questionnaire Evita should and will be considered multilingual. She is a girl and was born in the Netherlands. From age 2 and onwards, Evita went to a Dutch-speaking daycare. Evita mainly spoke Dutch at home, but sometimes used Albanese. Her family used a combination of Dutch and Albanese. In the neighborhood Evita only used Dutch. Although Dutch was the most prominent language at home, Albanese was sometimes used in a wide variety of literacy activities at home. At the start of the school year Evita's early literacy skills were low and although she showed consistent improvement throughout the school year, she still below average low early literacy skills at the end of the school year.

Jasper. Jasper is a boy and was born in the Netherlands, went to a Dutch speaking daycare and only interacted in Dutch at home and in the neighborhood. Jasper's early literacy skills were below average at the start of the school year. He did not show any change in the first months. In the second half of the school year he showed great improvement and performed just above average by the end of the school year.

Class C

June. According to the information provided by the parents, June was born in South-Korea and has been living in the Netherlands for one-and-a-half year. She is a girl and went to Korean- and English-speaking daycare in South Korea. June's parents are from Brazil and, therefore, at home they speak a combination of Portuguese, English, and Dutch. Although Dutch is the least prominent. June, as well as her family, both speak a combination of the three languages. June showed no improvement on early literacy skills throughout the school year. She performed among the lowest scoring children on all time points.

Maxime. Maxime is a boy and was born in Thailand and has been living in the Netherlands for one year. He did not visit any daycare. Maxime only speaks Dutch at home and in the neighborhood, but his parents and brother speak Dutch, Thai, and Isan at home. His father indicated that Maxime had not been speaking Thai or Isan in the past year.

Ludwig. Ludwig is a boy, was born in the Netherlands and went to preschool at age 2. They only spoke Dutch at home and they never do book readings. Ludwig performed at same level on the first and third time point. He started above average, showed a dip in his early literacy skills on the second time point, but ended among the average scoring children.

Keesje. We did not receive Keesje's parent questionnaire, so background information about Keesje is limited. Keesje is a girl and was monolingual Dutch speaking according to the teacher. Keesje showed the same score on early literacy on the first and second time point, at both occasions far above average. She showed a substantial increase in the second half of the school year and performed among the highest scoring children at the end of the school year.

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APPENDIX D: TRANSCRIPT NOTATIONS

[text overlapping speech; point at which an ongoing utterance is joined by another utterance

:   extension of preceding sound

((text)) description of a phenomenon, of details of the conversation not captured in talk.

( )   transcriber could not understand the stretch of talk.

(text) transcriber is in doubt about the accuracy of the stretch of talk.

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Dankwoord

Zonder de hulp en steun van een grote groep collega's, vrienden en familie, zou dit proefschrift er niet geweest zijn. Graag wil ik ze hiervoor bedanken.

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Ik wil ook graag mijn begeleiders aan de zijlijn bedanken. Maaike, in mijn eerste week bij het GION kreeg ik te horen dat zowel Mayra als Marjolein met zwangerschapsverlof zouden gaan. Wat fijn dat jij toen bent ingesprongen en hebt meegeholpen met de opzet van het hele project en ook daarna nog betrokken bent gebleven. *Jennifer, thank you for having me at CASTL. It was a great opportunity to experience the American college life.*

Ik had dit onderzoek niet uit kunnen voeren zonder de medewerking van alle scholen, leerkrachten, leerlingen en ouders. Wat fijn om te ervaren dat er zo veel scholen waren die het belang van dit onderzoek ook zagen en hun deuren openzetten om mij mee te laten kijken in hun klassen.

Al die scholen had ik niet kunnen bezoeken zonder de hulp van een klein legertje studenten, zowel in Groningen, als in Nijmegen: Annika, Babette, Berber, Gabriela, Jorien, Lotte, Mala, Michelle, Moniek, Monique, Nadine, Nikolai, Suzanna, Suzanne, Tessa, Tessa en Yanine. Bedankt voor jullie hulp bij het programmeren van de executieve functietaken, de dataverzameling, de uitvoer van de review en het transcriberen en coderen van de interacties!

Mijn tijd op het GION was nooit zo fijn geweest, zonder een heleboel fantastische collega's. Lieve promovendi, bedankt voor de toffe uitjes, de gezellige congressen, mijn afscheidspicknick en vooral bedankt dat jullie gek genoeg waren om ieder jaar weer met mij mee te doen aan de Cityleague. *Dear 205 girls, I thoroughly enjoyed our years together in room 205. Fabiola, after meeting you at my job interview (thank you for giving me the job), you regularly checked in on me—the maybe not so shy new colleague—during my first week. Ever since you have been my super enthusiastic friend. You always made time to answer my early childhood, executive functioning, and, most definitely, statistics/Mplus-related questions (or for a not so PhD-related chat).* Sanne, wat was het fijn om zo'n lieve en betrokken kamergenoot te hebben. De nuchterheid zelve stond jij altijd klaar om mee te denken over (op het eerste oog) onoplosbare problemen, daar heb je menig crisis mee verholpen. Marlies, het afgelopen jaar hebben we samen onze proefschriften afgerond. Samen hebben we alle laatste hobbels genomen, geschreven, gewist en geklaagd! Jouw enthousiasme en positiviteit maakten dat ik met plezier weer naar het GION kwam om verder te schrijven. Jouw bruiloft, het ontwerp van onze proefschriften en het organiseren van GION-borrels zorgde voor de broodnodige afleiding. Ik kan me dan ook geen beter iemand voorstellen om straks naast me te hebben staan tijdens de verdediging.

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Ook buiten mijn directe collega's om zijn er een aantal mensen die ik graag wil bedanken. Claire, we leerden elkaar kennen tijdens de werkcolleges Onderwijskunde in het eerste jaar in Nijmegen. Wie had er toen kunnen bedenken dat jij ruim 10 jaar later naast mij zou staan tijdens mijn verdediging! Wat was het tof dat onze phd's qua onderwerp zo dicht bij elkaar lagen dat we de afgelopen jaren geregeld samen naar een congres konden (met Barcelona als hoogtepunt!) en zo ondanks de afstand Groningen-Nijmegen toch steeds contact hielden. Ik hoop dat dat zo zal blijven, ook nu we elkaar waarschijnlijk niet vaak meer op congressen tegen zullen komen.

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About the author
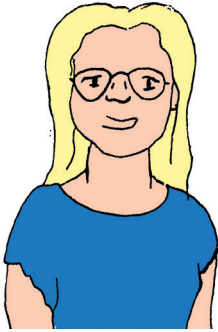
Annegien Langeloo (Tiel, May 26, 1991) obtained her gymnasium diploma in 2009. Thereafter she moved to Nijmegen to start her bachelor's in Pedagogical and Educational Sciences at the Radboud University. After a three-month internship, as part of the university's Honours program, at the Victoria University in Wellington, New Zealand, she continued her studies with a Research Master in Behavioural Science. During this master's program her interest in the field of multilingualism developed. As a research assistant she participated in an international project on multilingualism in children with developmental disorders. Furthermore, she wrote her Master's thesis on the relations between executive functioning, vocabulary and phonological awareness in monolingual and multilingual kindergarteners. After obtaining her Research Master degree with Honours she spent several months in Ghana as a volunteer on a project with abandoned children with disabilities. After returning to the Netherlands she moved to Groningen to start her Phd research at the University of Groningen. She conducted research on the learning opportunities of multilingual and monolingual kindergarteners. Annegien received a Fulbright scholarship to visit the Center of Advanced Study of Teaching and Learning at the University of Virginia in the United States of America. During her visit she worked together with Jennifer LoCasale-Crouch on Chapter 3 of her dissertation. Next to her Phd-research, Annegien also worked as a teacher and supervisor of students in the bachelor program Educational Sciences of the University of Groningen. Annegien is currently working at the Alfa-college in Groningen. At this school for vocational education she conducts practice-oriented research on early school drop-out.

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416. Cuyvers, K. (28-08-2019), Unravelling medical specialists self -regulated learning in the clinical environment. Antwerp: University of Antwerp

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