Emotions and the psychosocial development of children with and without developmental langauge disorder

Bedem, N.P. van den

General Introduction.

Language is a fundamental tool which enables us to communicate with and learn from others. When children have difficulties to develop language, this impedes their social-emotional development (Dunn, Brown, & Beardsell, 1991; Saarni, 1999; Salmon, O'Kearney, Reese, & Fortune, 2016). Approximately two children in every classroom experience severe problems developing and using their first language, without a clear cause for these language problems (Norbury et al., 2016; Tomblin et al., 1997). These children may have Developmental Language Disorder (DLD) and have an increased risk for the development of psychosocial problems, including social problems (such as victimization and friendship problems), internalizing problems (such as social anxiety and depressive symptoms) and externalizing problems (such as aggression; Durkin & Conti-Ramsden, 2010; Yew & O'Kearney, 2013).

In the current project, we examined the level and development of psychosocial problems in children and adolescents with and without DLD and examined the underlying mechanisms causing these problems. Specifically, we examined whether the severity of communication problems explained higher levels of psychosocial problems, or whether these relations were mediated by children's emotional competence, that is the ability to recognize, understand, regulate and express emotions in socially accepted ways (Saarni, 1999).

Emotions provide us with a sense of urgency to act on situations (Scherer, 2000). However, simply acting out emotions is often not adaptive in our complex social world. Children have to learn to use their emotions in a constructive manner. Therefore, children need to gain control over their impulses, gain understanding of their own and others' emotions and intentions, regulate the level of their emotions and learn to think ahead: what are the consequences of my emotional reaction and how can I reach my goal? This learning process is facilitated by the communication of children with their social environment (Eisenberg, Sadovsky, Spinrad, 2005; Saarni, 1999; Schaffer, 2005). If children experience difficulties in aspects of emotional competence, this is an important risk factor for different psychosocial problems (Gross & Jazaiere, 2014; Fernandez & Johnson, 2016; Rieffe, Oosterveld, Miers, Meerum-Terwogt, & Ly, 2008). When communication problems not only have a direct effect on the development of psychosocial problems, but also an indirect effect through their emotional competence, this has important implications for interventions.

Developmental Language Disorder

Most children develop language without much difficulty if they receive sufficient language input. Children react to the language of people around them and learn to match certain sounds or signs to objects, people, or events. Gradually they start expressing themselves through sounds and signs and soon after through words and sentences. Typically, the understanding of language precedes the production of language. Both language areas develop steadily until children are able to express their needs, wishes, thoughts, and fantasies through language and engage in meaningful conversations with people around them. Throughout childhood and adolescence, the language skills of children further increase. Children learn new words and can

understand and produce increasingly complex sentences, learn to produce a coherent story and understand figurative speech (Gillis & Schaerlaekens, 2000). Language is crucial in the development of children as it is the gateway to understanding the social environment. Language enables people to talk about concrete objects, but also about objects which are not present or events in the past and future. Moreover, language enables us to talk and think about abstract concepts such as thoughts and feelings. Thereby, language broadens our (inner) world.

People use language all day to communicate, think, and learn. Therefore, language difficulties can create a broad range of problems for an individual. When children experience severe difficulties developing or using language, they may be diagnosed with DLD (Bishop, Snowling, Thompson, Greenhalgh, & CATALISE consortium-2, 2017). DLD is a neurodevelopmental disorder characterised by low language proficiency, which is not caused by other neurodevelopmental disorders such as autism spectrum disorder (ASD), hearing loss, or mental disability (American Psychiatry Association [APA], 2013). The prevalence of DLD is around 5 to 7 % of the children in preschool (Norbury et al., 2016; Tomblin et al., 1997). Just as in children without DLD, children with DLD develop their language as they become older. However, they often do not close the gap with their peers without DLD, even after language interventions. When children still have DLD when they start primary education, they tend to continue to have language problems as they become older (McKean et al., 2017; Norbury et al., 2017; Snowling, Duff, Nash, & Hulme, 2016).

Children are typically diagnosed with DLD around the age of four when their language development is well behind the language development of their peers. However, language problems may also go unnoticed until children are (much) older (Poll & Miller, 2013; Snowling et al., 2016). Expressive language problems are more easily detected when children have a small lexicon, or have difficulty making sentences. However, due to the large diversity in the typical language development (Gillis & Schaerlaekens, 2010), children may be thought of as late talkers, instead of language disordered. Receptive language problems are even more difficult to detect (Leonard, 2009). Children may follow simple instructions without understanding the exact phrases, because they follow the example of others or because they know what is expected from them in prototypical situations. However, when situations are out of the ordinary, these children may not know what to do and become frustrated. Moreover, when children become older and the language becomes more complex and abstract, their language problems may become more evident (Dockrell, Lindsay, Roulstone, Law, 2014; Poll & Miller, 2013; Snowling et al., 2016).

The language problems that children with DLD experience are heterogenic. Children with DLD can have problems in expressive language and/or receptive language. These language problems can be present in the form, function, and use of language (APA, 2013; Bishop et al., 2017; Norbury, Nash, Baird, & Bishop, 2004). The form of language refers to the building blocks of language, that is the phonology, morphology, and syntax. Children with DLD often have difficulties distinguishing the sounds in words (phonology), which makes it more difficult

to discriminate words. This in turn may negatively affect word learning. Additionally, children with DLD have marked difficulties with morphology such as verb inflection and the correct use of affixes and suffixes, for instance to signal plurality. These morphemes change the meaning of words, but are generally not stressed in speech. Therefore, they are more difficult to learn, especially when children have phonological problems (Gillis & Schaerlaekens, 2010). Children with DLD also often have problems with syntax, such as difficulties with word order, and understanding the meaning of complex phrases. Some children experience problems with the processing speed of language, especially with more complex phrases (Bishop et al., 2017).

The function of language refers to the meaning of words and sentences (semantics). Children with DLD not only have a smaller lexicon, but especially know fewer abstract words or have narrower word meanings. Some children with DLD also experience word finding problems. When they want to say something, the correct word seems to slip away, although they do know the word. These children often use vague words in an attempt to confer meaning, and they need more time to formulate a message (Bishop et al., 2017).

The difficulties with the form and function of language often result in difficulties using language in social interactions, that is pragmatics. Pragmatics refer to the meta-level of language. Children have to learn to use language to confer meaning, to structure a story, understand jokes and change their language to match their conversational partner. For instance, we tend to talk differently to a teacher than to a friend and if we want to tell a story we change the message in line with the knowledge and style of the conversational partner. Children gradually gain pragmatic skills through social interaction. For instance, young children typically do not provide context to a story, whereas older children provide necessary information related to the five W's (Who, Where, When, What, Why). When children have language problems, they do not possess the necessary language to provide this information. Additionally, they have had less opportunities to practise their communicative skills in social interactions. This negatively affects their pragmatic skills development. Indeed, approximately 40 % of children with DLD also have severe pragmatic problems (APA, 2013; Bishop et al., 2017; Norbury et al., 2004).

The severity of DLD and the number of difficulties children experience because of their DLD are dependent on the communicative demands of the environment (Dockrell et al., 2014; Redmond & Rice, 1998). When children start primary education, their world suddenly becomes much bigger, resulting in increased demands on their language abilities. Children not only have to communicate with their teachers, but also with their peers. Adults tend to compensate for the communicative difficulties of children by filling in the gabs of a conversation, or correctly repeating what a child tries to say. Other children typically do not have the communicative abilities to help a child with low language proficiency. Therefore, more independence is necessary in communicative exchanges between peers. Additionally, during primary and secondary education, the topics become increasingly more complex and abstract. Children have to learn new words and understand and produce increasingly more complex grammar to

participate in lessons. Therefore, it is possible that children at certain ages do not seem to have much difficulties because of their DLD, but fall short of expectations when the communicative demands of the environment increase (Dockrell et al., 2014).

Heightened risk for psychosocial problems in children with DLD

The communication problems of children with DLD may impede their development in different developmental areas. Especially when the communicative demands of the environment are too high, or when language problems are not recognized, miscommunication is likely to occur (Redmond & Rice, 1998). These communication problems will impede the ability of children to learn from the social environment. Not only the educational progress of children will be hampered, but also their social-emotional development (Dockrell, Lindsay, & Palikara, 2011; Snowling et al., 2016). Indeed, a growing body of research shows that children with DLD are at risk for the development of psychosocial problems (Durkin & Conti-Ramsden, 2010; Yew & O'Kearney, 2013). Vice versa, the majority of children with severe psychosocial problems also have language difficulties, problems which often are not recognized. It is likely that these language problems play a role in the development and maintenance of their problems (Cohen et al., 1998; Gallagher, 1999; Hollo, Wehby, Oliver, 2014).

Children with DLD seem particularly at risk of social problems. From an early age on, they are less popular with their peers, are more often rejected or bullied and have less friendships than their peers without DLD (Andrés-Roqueta, Adrian, Clemente, & Villanueva, 2016; Botting & Conti-Ramsden, 2004; 2008; Durkin & Conti-Ramsden, 2007; Knox & Conti-Ramsden, 2003; Redmond, 2011; Wadman, Durkin, & Conti-Ramsden, 2011a). Additionally, internalizing problems are reported in children and adolescents with DLD such as depressive symptoms, social anxiety, and psychosomatic complaints (Beitchman et al., 1996; Botting, Toseeb, Pickels, Durkin, & Conti-Ramsden, 2016; Conti-Ramsden & Botting, 2008; Gregl et al., 2014; Maggio et al., 2014; Van Daal, Verhoeven, & Van Balkom, 2007; Wadman, Durkin, & Conti-Ramsden, 2011b). Finally, higher levels of externalizing problems are reported in children with DLD such as anger outbursts, or aggression (Conti-Ramsden, Mok, Pickels, & Durkin, 2013; Lindsay, Dockrell, & Strand, 2007; Maggio et al., 2014; St. Clair et al., 2011; Timler, 2008; Van Daal et al., 2007; Winstanley, Webb, & Conti-Ramsden, 2018).

Overall, longitudinal studies indicated that internalizing problems of children with DLD were higher during the primary school years, but decreased during adolescence (St Clair, Pickles, Durkin, & Conti-Ramsden, 2011). Externalizing problems showed more diverse developmental trajectories in different longitudinal studies, with some studies reporting higher but decreasing levels (St Clair et al., 2011), whereas another study found higher and increasing levels of externalizing problems in the same age range (Lindsay & Dockrell, 2012). Conversely, social problems of children with DLD tended to increase during the primary and secondary school years (Lindsay & Dockrell, 2012; St Clair et al., 2011). However, recent reanalyses of the social and internalizing problems of one of these studies indicated different developmental

trajectories within the group of children with DLD (Conti-Ramsden et al., 2018). Some children experienced high persistent problems in social and internalizing problems (26%), whereas others had increasing problems in these areas during their adolescence (16%). However, there were also children who experienced increasing peer problems only, whereas the internalizing problems remained low (22%); or vice versa children with decreasing internalizing problems and low social problems (24%). Finally, there were children with stable low problems in both areas (11%). These findings show that there are substantial individual differences in the level and development of psychosocial problems in children with DLD (Conti-Ramsden et al., 2018). In order to prevent the development of these problems, examination of the underlying mechanisms that cause these diverse developments is necessary. Moreover, it is important to gain better understanding of specific problems children with DLD experience. Most longitudinal studies to date used an aggregated questionnaire which measures different types of social, internalizing, or externalizing problems together. We can gain better understanding of the vulnerabilities of children with DLD when we differentiate these problems.

To date, most studies have attempted to explain the individual differences in psychosocial problems of children with DLD by examining the severity or type of children's communication problems. Although some relations have been found, the associations between the severity of communication problems and the psychosocial problems of children with DLD are inconsistent and generally not strong (Andrés-Roqueta et al., 2016; Beitchman et al., 1996; Botting et al., 2016; Charman, Ricketts, Dockrell, Lindsay, & Palikara, 2015; Conti-Ramsden et al., 2013; Hart, Fujiki, Brinton, & Hart, 2004; Lindsay & Dockrell, 2012; Maggio et al., 2014; Van Daal et al., 2007). The direct effects of the severity of the communication problems on psychosocial problems are unclear; this is particularly the case for older children. Only pragmatic problems were found to be an important risk factor for social and internalizing problems, whereas relations with receptive and expressive language problems were mixed (Charman et al., 2015; Helland & Helland, 2017; Law, Rush, Clegg, Peters, & Roulstone, 2015; St. Clair et al., 2011; Sullivan et al., 2016; Wadman et al., 2011b).

Because language is a fundamental tool in social learning, it is likely that communication problems also have indirect effects on the development of psychosocial problems in children with DLD (Beitchman et al., 1996; Hart et al., 2004). Therefore, it is important to examine developmental areas which are highly dependent on social learning and, in turn, are protective of the development of psychosocial problems, such as children's emotional competence. Below, we will discuss emotional competence and its development in children through social learning. Next, we will turn to the emotional competence of children with DLD and the importance of emotional competence in the development of psychosocial problems. Finally, we will propose a model which describes the interrelations between these developmental areas, which will be central to this thesis.

Emotional competence

Emotional competence is the ability to use emotions adaptively in social interactions (Denham, Caverly, & Schmidt, 2002; Saarni, 1999). Three important functions of emotions have to be acknowledged. First, emotions help an individual to recognise that something important is going on in a situation. The emotion alerts the individual that a goal is at stake and needs attention. Second, the emotion tends to activate the individual, which enables him or her to protect their goals in the situation. Third, emotions have a communicative function. They not only alert an individual that a goal is at stake, but emotions also show others that something is important. The other person can use this knowledge to alter their behavior (Frijda, 1986; Scherer, 2000). For instance, when a friend notices that a joke is not appreciated, he is able to apologize or make a joke at his own expense to save a positive exchange.

Although emotions are functional, emotional expressions sometimes are not. Our social world has become increasingly complex. Therefore, elemental emotional reactions (fight or flight reactions) are no longer functional. Children need to learn to adapt their emotional expressions to socially accepted levels by asserting cognitive control (using executive functioning) over their emotions and learn different emotion regulation strategies to deal with different types of stressors (Fields & Prinz, 1997; Joormann & Stanton, 2016). For instance, a boy who is frightened for the dentist and a girl who is afraid to speak her mind to a bossy friend, both have to try to regulate their anxiety to deal adaptively with a situation. However, for the boy it may be more adaptive to distract himself to undergo the necessary procedures at the dentist, whereas the girl should try to think of a good argumentation to convince her friend.

Additionally, children have to use knowledge of what others are thinking and feeling (Theory of mind) and how others are likely to react and use this knowledge to plan reactions tactical to reach goal achievement in a given situation (Gross, 1998; 2015). When children react excessively in a situation, they may not reach their goals because their reaction is not in line with socially accepted norms. Alternatively, they may achieve their short-term goals, but in the process lose their long-term goals. A child who is playing soccer, for instance, may become mad at a friend because he never passes him the ball. If the child becomes very angry with his friend, he might reach a short-term goal (being passed the ball), but loses a long-term goal (playing soccer with a friend), because the friend may not be his friend anymore after an excessive anger outburst. However, if the child ignores his emotion and does not show his annoyance to his friend, it is likely that the situation continues, resulting in no goal achievement as well. Moreover, when the situation endures because a child does not react to an emotion, the emotional experience may become stronger. This build up in the emotional experience increases the change of an unregulated reaction later on. Therefore, children have to learn to use their emotions adaptively in social interactions (Saarni, 1999). In order to do this, children need to be aware of their own and other's emotions, recognize and understand the causes of different emotions, learn different strategies to regulate their emotions, and communicate emotions in socially acceptable ways. These four elements of emotional competence develop through social

interactions, in which language plays an important role (Eisenberg et al., 2005; Saarni, 1999; Schaffer, 2005).

Emotional competence develops through social learning

Children are born with a basic, but very effective, emotional repertoire. When they are comforted, they are relaxed and happy, whereas when they are hungry, tired, or scared, they start crying. They also recognise positive and negative affect in people around them. When their parents have a positive expression, babies will start to explore, whereas when a parent frowns, they will freeze or start to cry. As children develop, they learn to differentiate and regulate their own emotional expressions and increasingly recognise different emotional expressions in others (Schaffer, 2005). However, this development is dependent on the experiences of a child and the interactions with their caretakers (Denham & Auerbach, 1995; Dunn, Brown, & Beardsell, 1991; Rieffe, Dirks, Van Vlerken, & Veiga, 2016). For instance, a child who is hungry will first continue crying until the food is within reach, whereas some weeks later, the child will have learned that the preparation of food means that the problem is almost solved. Therefore, preparation of the food is enough for the crying to stop. In this way, children learn to associate different feelings with different situations and solutions. Additionally, parents tend to talk while they are comforting or caring for their child. Thereby, children learn to associate certain words with the events and associated feelings. The language used by caregivers provides children with an extra modality through which they learn to understand their world and slowly become able to communicate their own needs, wishes and feelings (Denham & Auerbach, 1995; Dunn et al., 1991; Schaffer, 2005).

As children become older, their social world also extents. This provides the child with new experiences and also more complex emotions. Children first learn to differentiate different basic emotions, such as happiness, anger, sadness, fear and disgust, which often times have clear observable causes (Pons, Harris & De Rosnay, 2004; Westby & Robinson, 2014). Caregivers often comment on the emotional experiences of a child and their causes (Denham & Auerbach, 1995; Dunn et al., 1991; Zeegers et al., 2018). Additionally, they may help a child to calm down by modelling different emotion regulation strategies, such as going to another room or taking a deep breath to calm down, or by providing social support when a child does not dare to do something (Hughes & Leekam, 2014; Schaffer, 2005). Moreover, when a child misunderstands the intentions of someone else, caregivers can help children to gain insight in the thoughts and intentions of other people by explaining what others think, want and feel (Dunn et al., 1991; Hughes & Leekam, 2014; Yuill & Little, 2018). Additionally, caregivers can use causal language, in which they explain why someone acts in a certain way or what the consequences are of (non) adaptive emotion expression (Yuill & Little, 2018). In these conversations, children not only learn emotion words to talk about emotional experiences, but also gain insight in the internal world of themselves and others and the consequences of

emotions and behaviors (Denham & Auerbach, 1995; Dunn et al., 1991; Eisenberg et al., 2005; Hughes & Leekam, 2014; Yuill & Little, 2018). These mentalizing abilities are an important prerequisite for adaptive emotion expression. Because when children understand what the other is feeling and why, they can use this knowledge to plan a reaction, while foreseeing the response of the other (Denham et al., 2003; Eisenberg, Fabes, & Spinrad, 2006).

Soon after the basic emotions, more subtle or complex emotions also start to emerge, such as shyness, jealousy, nervousness, shame or pride (Westby & Robinson, 2014). Children gradually learn to differentiate these more complex feelings through interactions with caregivers and increasingly with peers. Especially interactions with peers provide new learning opportunities. Because children are similar in their communicative and emotional competencies, these interactions provide other learning opportunities than interactions with adults (Hartup & Stevens, 1999). Children have to negotiate each other´s wishes and feelings and, in the process, gain insight in the thoughts and feelings of others and practise adaptive reactions (Banerjee, Watling, & Caputi, 2011; Barry & Wentzel, 2006; Cutting & Dunn, 2006; Dunsmore & Karn, 2004; Von Salisch, 2018; Von Salisch, & Zeman, 2017; Schaffer, 2005).

Emotional competence development is impeded in children with DLD

The development of emotional competence is largely dependent on social learning and thus on the language abilities of a child (Schaffer, 2005). Conversations explaining emotions, thoughts, and behavior by caregivers are only accessible for children when they have sufficient language abilities. When children have difficulties understanding language, they gain less knowledge through these explanations (Brinton & Fujiki, 2011; Dunn et al., 1991; Hughes & Leekam, 2004; Netten et al., & 2015). Moreover, children with DLD gain less emotion knowledge if they express their own emotions to a lesser extent through language. When children start describing their own feelings and wishes, other people can react on them and provide more detailed or nuanced information or provide support (Dunn et al., 1999; Hughes & Leekam, 2004; Denham & Aucherbach, 1995). In these conversations, children can gain more sophisticated emotion knowledge and at the same time learn strategies to regulate or express their emotions. In addition, children also gain emotion knowledge through observing interactions between others. However, this incidental learning is dependent on the language ability of children (Brown & Dunn, 1996; Denham & Aucherbach, 1995; Netten et al., 2015). When children cannot understand conversations between others, they only see the emotional expressions, but gain less understanding of reasons behind the emotions and possible solutions. Therefore, the language problems of children with DLD negatively affect the quantity of social learning opportunities.

Moreover, not only the quantity of learning opportunities differs between children with and without language problems, also the quality of interactions becomes lower. When children have less language skills, caregivers tend to adjust their language to the abilities of the child by making sentences short, simple, and more directive (Conti-Ramsden, 1990; Conti-Ramsden,

Hutcheson, Grove, 1995; Hammer, Tomblin, Zhang, & Weiss, 2001). These adaptions have the positive effect that the child is better able to follow the conversation. However, as a consequence more abstract and sophisticated information is omitted from the conversation (Brinton & Fujiki, 2011; Yuill & Little, 2018). This again deprives children with DLD of social learning opportunities.

Indeed, research on children with DLD shows a delayed development of different elements of emotional competence. Children and adolescents with DLD had more difficulty recognizing emotions in others (Botting & Conti-Ramsden, 2008; Creusere, Alt, & Plante, 2004; Taylor, Maybery, Grayndler, & Whitehouse, 2015), understanding other's emotions (Yuill & Little, 2018), had a smaller emotion lexicon (Bakopoulou & Dockrell, 2016; Rieffe & Wiefferink, 2017; Spackman, Fujiki, & Brinton, 2006), and experienced more problems regulating their emotions compared to peers without DLD (Fujiki, Spackman, Brinton, & Hall, 2004). Moreover, children with DLD made fewer references to the thoughts and feelings of a protagonist while telling a story (Boerma, Leseman, Timmermeister, Wijnen, Blom, 2016) and their perspective taking abilities (Theory of Mind) have been found to be delayed (Nilsson & Jensen de López, 2016).

Emotional competence as a risk factor for psychosocial problems: a vicious circle

When children have diminished opportunities to learn from their social environment, this negatively effects their emotional competence, which in turn can be a strong predictor of psychosocial problems (Rieffe et al., 2016). Research in children without DLD, shows that problems in emotional competence are a risk factor for different psychosocial problems (Gross & Jazaiere, 2014; Fernandez & Johnson, 2016; Rieffe et al., 2008). Therefore, emotional competence is thought of as a transdiagnostic factor, as it is an important underlying factor of different social, internalizing, and externalizing problems (Wicks-Nelson & Israel, 2015). As such, the relation between emotional competence and the development of psychosocial problems is an important area to explore in children with DLD.

To date, only a small number of studies have examined the relations between various aspects of emotional competence and the psychosocial problems of children with DLD. Bakopoulou and Dockrell (2016) found that the emotional competence of children with DLD between 6 and 11 years old was related to their level of psychosocial problems, whereas the severity of receptive and expressive language problems was not. Similarly, Botting and Conti-Ramsden (2008) found that fewer emotion recognition skills related to lower friendship quality in adolescents with DLD, also after receptive language problems were controlled. The findings to date give a first indication that emotional competence plays an important role in the development of psychosocial problems of children with DLD over and above their communication problems.

To summarize, research to date suggests that emotional competence may be an important mediating factor in the relationship between communication problems and the

development of psychosocial problems of children with DLD. As is illustrated in Figure 1, language problems of children with DLD might not have a direct effect on the development of psychosocial problems, but interfere with the social interactions of children with DLD instead, which negatively effects children's social learning opportunities, resulting in less emotional competence. Problems in emotional competence in turn put children at risk for the development of increased psychosocial problems.

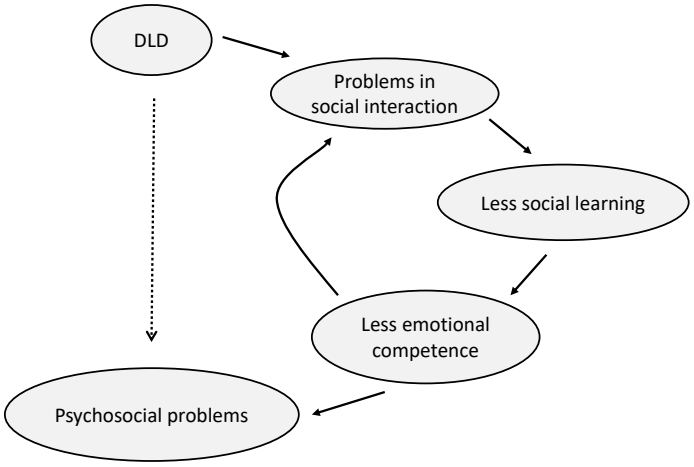


Figure 1. Reduced social learning in children with DLD negatively affects emotional competence, which in turn may explain their psychosocial problems.

Problems in emotional competence also negatively affect new social interactions. When children have difficulties regulating their emotions, or understanding the intentions of others, they are more often rejected by other children (Cook, Wiliams, Guerra, Kim, & Sadek, 2010). Social rejection among peers negatively influences the development of emotional competence (Banerjee et al., 2011; Fink, Begeer, Peterson, Slaughter, & De Rosnay, 2015). Thus, as illustrated in Figure 1, problems in emotional competence may increase the social problems of children with DLD, which can further diminish their opportunities to develop emotional competence resulting in a vicious circle of reduced social learning experiences. In this way, problems in emotional competence may start to overshadow the effect of the initial communication problems. If communication problems of children with DLD become less severe across time, problems in emotional competence and the independent effect of emotional competence on social interactions, may prevent decreasing psychosocial problems.

Recent studies

In the current thesis, a longitudinal study on the social-emotional development of children with DLD is described. We examined the extent to which different indices for

emotional competence could explain the development of psychosocial problems of children with DLD over and above their communication problems. To this end, we examined the psychosocial development, emotional competence and communication problems of 114 children with DLD and 214 children without DLD. This project contributed to the existing literature in several ways.

First, we examined different areas of the social-emotional development of children separately instead of using aggregated measurements. This approach enabled us to gain better insight in which problems are and which are not problematic for children with DLD.

Second, a longitudinal design was used in order to compare the development across time of children with and without DLD. Therefore, children with and without DLD between 8 and 16 years old were followed across 18 months. The children and their parents filled out questionnaires three times, with 9 months in between each measurement. We chose this age range, because social and hormonal changes during this age range make children increasingly sensitive to the opinions of their peers. At the same time, children try to become independent and develop their identity (Crone & Dahl, 2012). This makes this an important developmental area where children become more vulnerable to the development of psychosocial problems (Dahl & Gunnar, 2009).

Third, we examined the extent to which the level and development of different indices for emotional competence could explain the severity of psychosocial problems in children with and without DLD across time. When growth in emotional competence would explain decreasing levels of psychosocial problems, these areas would be important to focus on in interventions.

Fourth, we examined whether problems in emotional competence mediated the relations between the severity of communication problems of children with DLD and their psychosocial problems (Figure 2). If emotional competence indeed mediates the relation between the severity of communication problems and psychosocial problems, emotional competence needs special attention in interventions in addition to language.

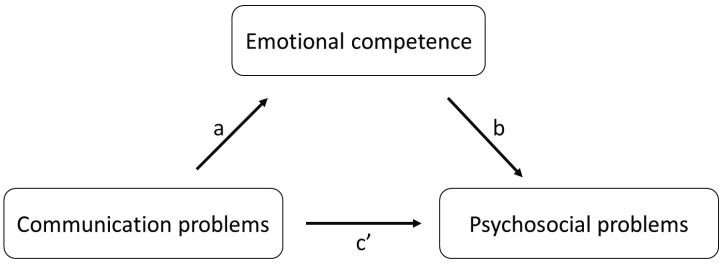


Figure 2. Emotional competence as a mediator of the relation between the severity of communication problems of children with DLD and their psychosocial problems.

Thesis structure

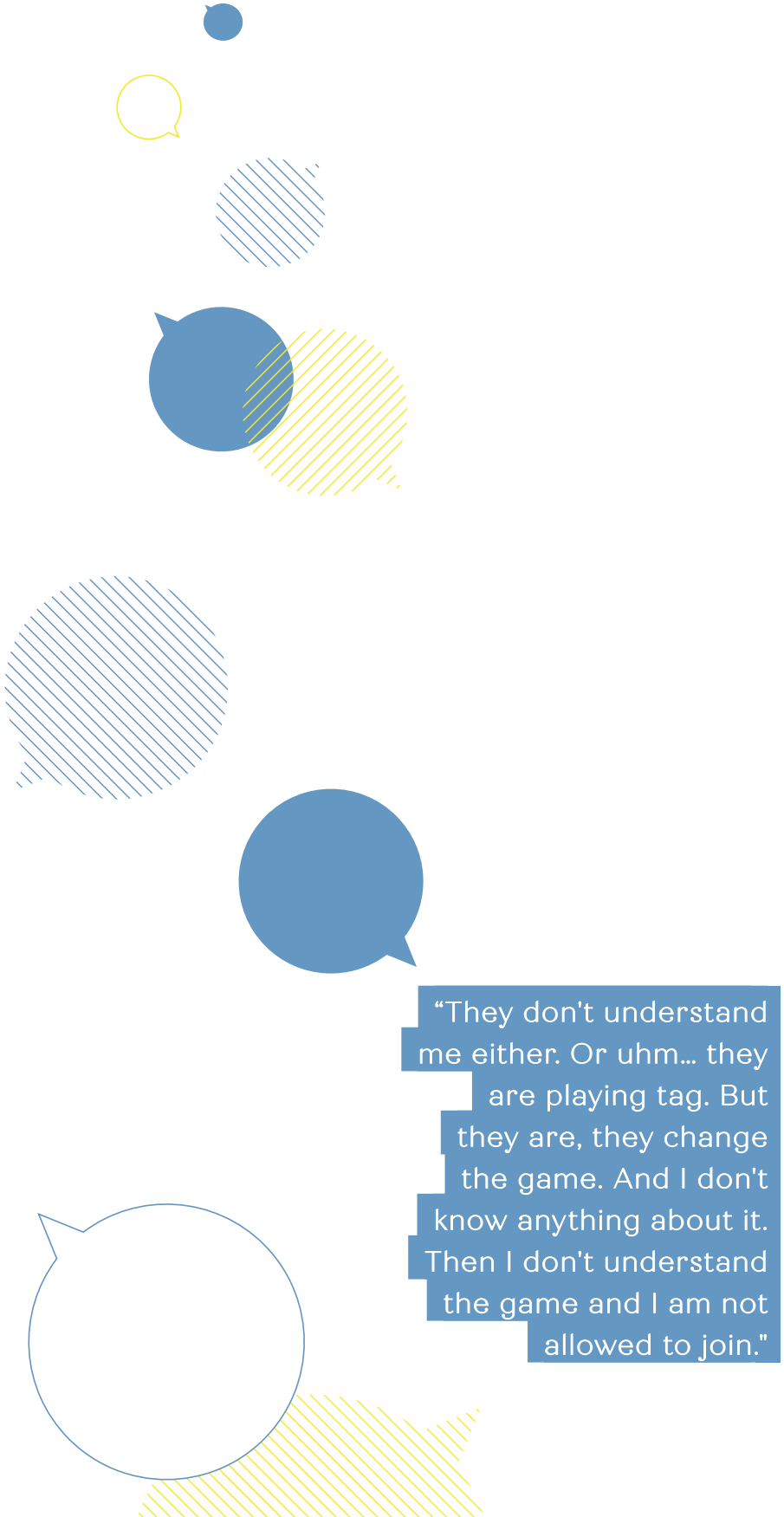
In chapter 2 and 3, social problems of children with DLD are examined. In **chapter 2**, we focused on victimization and bullying of children with and without DLD and examined whether understanding one's own emotions and the level of negative emotions contributed to the prediction of victimization and bullying across time. Additionally, we examined whether the communication problems of children with DLD contributed to the level of victimization and bullying in addition to both indices for emotional competence. In **chapter 3**, the development of friendship quality of children with and without DLD was examined and related to their empathy development. Empathy reflects the abilities to feel (affective empathy), understand (cognitive empathy) and the urge to respond to other's emotions (prosocial motivation; Hoffman, 1990), and is an important prerequisite for positive social interactions, such as friendships (Denham et al., 2003; Rose-Krasnor, 1997). Moreover, empathy is also thought to develop through social learning in positive peer interactions (Eisenberg et al., 2006; Schaffer, 2005). Therefore, we examined the longitudinal relations between empathy and friendship quality in children with and without DLD and examined whether DLD impeded this social learning process.

In chapter 4 and 5 we examined different internalizing problems. In **chapter 4** the levels of social anxiety and somatic complaints were examined and longitudinally related to children's emotion awareness (emotion understanding and bodily unawareness of emotions) and happiness. Additionally, we examined whether the relations between the severity of children's communication problems and both internalizing problems were mediated by children's emotional competence. Social anxiety and somatic complaints were only included in the second and third measurement. Due to attrition, the number of participants is lower in this study (With DLD: 104, without DLD: 183). In **chapter 5** we focused on depressive symptoms of children with and without DLD. We examined whether different emotion regulation strategies explained the level of depressive symptoms across time. Additionally, the mediating role of emotion regulation strategies in the relation between communication problems and depressive symptoms was examined.

In **chapter 6**, different externalizing problems were examined. Externalizing problems can be categorized in reactive and proactive problems (Crick & Dodge, 1996). We examined whether these different externalizing problems were explained by children's emotion recognition and emotion regulation as reported by the parents. Additionally, the mediating role of emotional competence in the relation between the communication problems and externalizing problems was examined. In this study, only children for whom the parents filled out the questionnaires were included (with DLD: 89, without DLD: 156). Table 1 presents an overview of the topics in the different chapters. Finally, in **chapter 7** the outcomes of the different studies and the implications for interventions for children with DLD are discussed.

Table 1 Overview of the psychosocial and emotional topics included in the different chapters.

Chapter	Psychosocial development	Element of emotional competence
2	Bullying and victimization	Emotion understanding and level of negative emotions (anger, sadness, fear)
3	Friendship quality (positive and negative)	Empathy (Affective empathy, cognitive empathy and prosocial motivation)
4	Social anxiety and somatic complaints	Emotion awareness (Emotion understanding and bodily unawareness) and level of happiness
5	Depressive symptoms	Emotion regulation strategies (Approach, avoidant externalizing and worry)
6	ODD symptoms, reactive and proactive aggression	Emotion recognition and anger dysregulation (Parent report)


“They don't understand me either. Or uhm... they are playing tag. But they are, they change the game. And I don't know anything about it. Then I don't understand the game and I am not allowed to join."