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# SELF AND OTHER; SOCIO-EMOTIONAL ASPECTS OF DEVELOPMENT IN CHILDREN WITH LANGUAGE IMPAIRMENT

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# Self and other; socio-emotional aspects of development in children with language impairment

## THESIS FOR DOCTORAL DEGREE (Ph.D.)

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*“There is no such thing as a baby.....if you set out to describe a baby you will find you are describing a baby and someone.”*

Winnicott, 1947



## **ABSTRACT**

The thesis comprises four studies that focus on young children with language impairment (LI). The research focus was different aspects of socio-emotional development.

In Study I visual check back behaviors were investigated in ten pre-school-aged children with LI and in two groups of children with typical development (TD); ten children that were matched with regard to age (AMC) and ten children matched with regard to language level (LMC). Play setting situations were designed to elicit the target behaviors of shared attention, intention and emotion. The children with lower language level (LI and LMC) gave visual check back significantly more seldom than children with a higher language level (AMC).

In Study II, the association between communication and language level, and socio-emotional level was investigated by parent ratings. Pre-school-aged children with LI and children with TD were assessed by their respective parents using The MacArthur Communicative Development Inventories (Swedish version (SECDI) and Greenspan Socio Emotional Growth Chart, (GSEGC). An association between language and socio-emotional development was found. Children with LI were rated similar to the young language-matched children with TD, but significantly lower relative to age-matched TD children, particularly concerning symbolic stages of development.

In Study III, a case study, the capacity to mentalize was explored in a primary-school-aged boy with a history of LI. In play situations, the child was presented story stems that he could complete by play actions or verbally. The mentalizing capacity was analyzed with respect to the organization and the content of his responses, as well as his observable behavior in the situation. The child had difficulties in affect regulation, i.e. self-oriented mentalizing, and his other-oriented mentalizing was limited as well.

In Study IV, parental stress and the parents' perception of their child's behavioral as well as communication and language difficulties were investigated by Swedish Parenthood Stress Questionnaire (SPSQ), Swedish version of Strengths and Difficulties Questionnaire (SDQ-Swe) and the Swedish version of MacArthur Communicative Developmental Inventories (SECDI), in three groups of pre-school-aged children: children with LI, children with more extensive communication difficulties and suspected ASD (COM), and children with TD. Parental experience of stress differed significantly between the groups on total and specific aspects of stress. A significant association was found between parental stress and children's behavioral difficulties in the total group, but not in the clinical groups. Parental stress and children's communication and language difficulties were associated in the group COM with extensive communication difficulties.

## LIST OF SCIENTIFIC PAPERS

The thesis is based upon the following papers. They are referred to in the text by their Roman numeral. Reprints (I and II) were made with permission from the publishers.

- I. **Aarne, P.** & Tallberg, IM. (2010). Visual check back in children with specific language impairment. *Journal of Pragmatics*, 42, 3106-3113.
  
- II. **Aarne, P.**, Almkvist, O., Risholm Mothander, P. & Tallberg, IM. (2013). Parent-rated socio-emotional development in children with language impairment in comparison with typically developed children. *European Journal of Developmental Psychology*, 11, 279-291.
  
- III. **Aarne, P.**, Risholm Mothander, P. , Almkvist, O. & Tallberg, IM. The capacity to mentalize in children with language impairment – a case study. Manuscript.
  
- IV. **Aarne, P.**, Almkvist, O., Risholm Mothander, P. & Tallberg, IM. Parental stress in relation to communication ability and behavior difficulties in children with typical and atypical development. Manuscript.



# CONTENTS

1	INTRODUCTION.....	1
1.1.	Language impairment in children.....	1
1.2.	Behavioral, emotional and social difficulties in children with LI.....	2
1.2.1.	Child-specific perspective.....	3
1.2.2.	Context-specific perspective.....	4
1.3.	Socio-emotional development in children.....	5
1.3.1.	Joint attention.....	5
1.3.2.	Representational capacity.....	6
1.3.3.	Socio-emotional and language development.....	8
2	AIMS OF THE PROJECT.....	9
3	MATERIALS AND METHODS.....	11
3.1	Participants.....	12
3.1.1.	Children with LI and children with TD: Study I.....	12
3.1.2.	Parents of children with LI and children with TD: Study II.....	12
3.1.3.	Child with LI: Study III.....	13
3.1.4.	Parents of children with LI, children with COM, and children with TD: Study IV.....	13
3.2	Methods.....	13
3.2.1.	Experimental study, Play Setting: Study I.....	13
3.2.2.	Quantitative study, Parent ratings: Study II.....	13
3.2.3.	Qualitative case study, Play Narrative Method: Study III.....	14
3.2.4.	Quantitative study, Parent ratings: Study IV.....	14
3.2.5.	Statistical analyses.....	16
3.2.6.	Ethical considerations.....	16
4	RESULTS.....	19
4.1	Study 1.....	19
4.2	Study II.....	19
4.3	Study III.....	20
4.4	Study IV.....	20
5	DISCUSSION.....	23
5.1.	Methodological issues.....	23
5.2.	General discussion.....	24
6	CONCLUSION AND CLINICAL IMPLICATIONS.....	27
7	FUTURE STUDIES.....	28
8	ACKNOWLEDGEMENTS.....	29
9	REFERENCES.....	31

## LIST OF ABBREVIATIONS

AMC	Age Matched Controls
ASD	Autism Spectrum Disorder
CDI	Communicative Development Inventory
COM	Communication disorder
GSEGC	Greenspan Socio Emotional Growth Chart
ICD	International Classification of Diseases
IWM	Inner Working Model
JA	Joint Attention
LI	Language Impairment
LMC	Language matched controls
MLU	Mean Length of Utterance
RIG	Representations of Interactions that become Generalized
SDQ-Swe	The Strengths and Difficulties Questionnaire, Swedish Version
SECDI	Swedish Early Communicative Development Inventory
SES	Socio-Economic Status
SLI	Specific Language Impairment
SLP	Speech and Language Pathologist
SPSQ	Swedish Parental Stress Questionnaire
TD	Typical Development
ToM	Theory of Mind
WPPSI-R	Wechsler Preschool and Primary Scale of Intelligence-Revised





# I INTRODUCTION

The research on language impairment (LI) in children has focused on cognitive and biological accounts in order to disentangle the character of the disorder, as well as the bases of it (e.g. Bishop & Snowling, 2004; Botting, 2005; Weismar, Evans & Hesheth, 1999; Hick, Botting & Conti-Ramsden, 2005). In later years, a number of studies have also recognized the importance of socio-emotional development (e.g. Fujiki, Brinton & Todd, 2012; Lindsay & Dockrell, 2012; Mok, Pickles, Durkin & Conti-Ramsden, 2014). In transactional perspective, as described by Sameroff (2009), the interaction between biological, environmental, cognitive and socio-emotional developmental factors is described. The child's experiences with parents are pivotal, however, the developmental outcomes are also influenced by individual resources and contextual factors related to parents and family circumstances, as well as peer relations. In environmental perspective, pre-school / school, as well as societal services and attitudes with regard to children and families with special needs, influence the child and the family, and the developmental outcomes.

A growing body of research indicates that children with LI display behavioral, emotional and social difficulties (BESD), and in a long-term perspective children with LI run an increased risk to develop mental health problems (Fujiki, Brinton & Clarke, 2003; Lindsay et al., 2012; Mok, et al., 2014). Beyond well documented co-morbidity of neuro-psychiatric disorders in LI, (Miniscalco, Nygren, Hagberg, Kadesjö & Gillberg, 2006), it has been proposed that many children with LI actually demonstrate a broader deficit that also involves abilities related to emotional functioning and social competence (Fujiki, Spackman, Brinton & Hall, 2004; Lindsay et al., 2012; Lindsay, Dockrell & Strand, 2007). These difficulties have a negative impact on central developmental areas during childhood, e.g. forming and maintaining peer relations (Mok, et al., 2014). In addition to interpersonal difficulties, children with LI are reported to be at risk for developing poor self-concept and academic performance (Paul, 1996). However, little is known about the socio-emotional mechanisms underlying behavioral, emotional and social difficulties co-occurring with LI.

The overall aim of this thesis is to apply a psycho-dynamic approach to key socio-emotional capacities in children, and the significance of relational factors as well as parenting practices for their development, thus adding a partly new perspective to the cognitively and biologically oriented approaches to LI in children.

## 1.1 LANGUAGE IMPAIRMENT IN CHILDREN

Language impairment is one of the most common developmental disorders during childhood. The estimated prevalence of LI varies between 3-7 % (Tomblin, Records, et al., 1997; Weindrich, Jennen-Steinmetz, Laucht, Esser & Schmidt, 2000), and the prevalence of LI in children and adolescents up to age 16 has been reported to 6%. The prevalence for severe language impairment in children is estimated to 1-2 % (Bishop, 1997; Westerlund, 1994; Westerlund & Sundelin, 2000). The etiology of the disorder is not well known. Based on findings in twin studies, LI has been suggested to be highly heritable (Bishop, North &

Donlan, 1995). The genetic influence has been reported to increase with the severity of the LI (Viding, Spinah et al., 2004). A general environmental factor that is commonly proposed is the family Socio-economic status, SES. Socio-economic disadvantage and low parental education level has been found to be associated with LI (Tomblin, Smith & Zhang, 1997).

In the area of Stockholm, children with language delays are typically referred to speech and language pathologists (SLP) by Child Health Care Centers in connection with the regular check-ups, and occasionally they are referred by pediatricians and audiologists. Children's language difficulties are then assessed by the SLP, and the diagnosis is given in accordance with ICD-10 classification system (2000).

Common features in LI are related to structural aspects of language, e.g. acquisition of vocabulary, grammar, phonology, semantics, as well as the comprehension of language. Additionally, difficulties can be related to pragmatic competence, i. e. adjustments in the use of language in coherence with the context.

The language problems identified as LI in pre-school years commonly persist into school-age and adolescence (Conti-Ramsden, St Clair, Pickles & Durkin, 2012; Hayiou-Thomas, Harlaar, Dale & Plomin, 2010). Receptive language problems (Law, Tomblin & Zhang, 2008) as well as pragmatic problems with language use (Sahlén & Nettelbladt, 1993) have a tendency to persist over time compared to structural aspects of language.

The LI disorder is characterized by its heterogeneity with a high variation in the language profiles between children and subgroups of children with LI. Intra-individual variation is also common, and relates to contextual factors, i.e. the child's language performance is influenced by the conversation partner, as well as the situation (Bruce, Nettelbladt & Hansson, 2006). Furthermore, changes over time in the individual language profile of the child or adolescent are reported e.g. structural language areas may be normalized to a great extent over time, while more persistent language problems with pragmatics remain (Sahlén et al., 1993).

Clinical studies report higher rates of boys with LI, corresponding to a rate of 2:1 or 3:1 (Bishop, 1997; Miniscalco, 2003; Salameh, 2003), which is not confirmed by results in populations based studies that have found small differences in the proportion of boys respective girls with identified LI (Law, Boyle, Harris, Harkness & Nye, 2000).

Language and communication problems can have different etiologies, and similar early symptomatology. LI and autism spectrum disorder (ASD) can have similar early symptoms, deficits in symbolic play behaviors, delayed language onset, as well as receptive language problems (Gillberg, 1999).

## **1.2 BEHAVIORAL, EMOTIONAL AND SOCIAL DIFFICULTIES IN CHILDREN WITH LI**

Several developmental aspects have been discussed in connection with LI in children and BESD (Botting, 2005; Conti-Ramsden, Simkin & Botting, 2006). The complex nature of the inter-actions between different factors, i.e. child-specific, context-specific, as well as factors

related to the developmental processes, has been underlined (Lindsay et al., 2012). While the association between LI and BESD is clear in young children with LI, the relationship is confounded with a variety of factors as children grow older (Lindsay et al., 2012). Nevertheless, longitudinal studies, that have followed individuals with LI from childhood up to early adulthood, have shown that children with LI continue to have raised levels of BESD for a considerable period of time (Lindsay et al., 2012). Long-term consequences for psychosocial outcomes in individuals with history of LI, resulting e.g. in restricted vocational choices, have been reported (Carson, Carson & Klee, 2007).

### 1.2.1. Child-specific perspective

Functional limitations in form of auditory processing limitations (Bishop, 1997), limitations in cognitive functioning (Gilliam & Mesquita, 2004; Brownlie, Escobar, Young, Atkinson, Johnson, Wilson & Douglas, 2004), as well as in symbol play and the use of mental state language (Zeidner, Matthews, Roberts & MacCann, 2003; Valloton & Ayoub, 2009; Hughes & Dunn, 1997) have been discussed as contributing factors to BESD. Auditory processing problems influence not only the general processing capacity but also the child's ability to pay attention to cues beyond the linguistic content, e.g. the affective information included in the prosody, thus influencing the interactions of the child in a negative way. General cognitive processing difficulties are reported in children with LI (Leonard, 1992); Gilliam & Mesquita, 2000; Escobar, Young, Atkinson, Johnson, Wilson & Douglas, 2004). Play behaviors and the development of symbol play skills, as well as use of mental state language are reported to be limited in children with LI (Zeidner, Matthews, Robert & MacCann, 2003; Vallotton & Ayoub, 2009; Hughes and Dunn, 1997).

A number of behavioral and emotional problems tend to persist or even increase over time (Coster, Goorhuis-Brouwer, Nakken & Lutje Spelberg, 1999; Conti-Ramsden & Botting, 2008). Generally, internalizing behaviors, depression, social withdrawal and avoidance are reported to have a tendency to increase in adolescence and early adulthood, while externalizing behaviors, e. g aggressive behaviors and conduct problems, are found to diminish as the child grows older (Redmond & Rice, 2002).

Also, personal traits, personality, and child characteristics associated with the disorder (e.g. withdrawn communication style) may discourage or contribute to less frequent exchanges with others (Carson et al., 2007). Concerning the co-occurrence of the sub-domain of behavioral difficulties in BESD, different explanations have been proposed. Externalizing behavior difficulties are more common in children with LI with low non-verbal competence (Snowling, 2006). Frustration and experiences of ineffective and less successful communication with others may lead the child to less positive behaviors (Brownlie, Beithmann, Escobar, Young, Atkinson, Johnson & Douglas, 2004). Behavior problems may also interfere with the child's acquisition of relevant language and communication abilities thus accelerating the overall difficulties of the child (Carpenter & Drabick, 2011). Also a hypothesis of a shared etiology of LI and the behavioral problems in children with LI has been proposed (Gilliam & Mequita, 2000). However, in a long-term perspective, a significant

number of children with LI enter adolescence less equipped concerning socio-emotional skills needed to form and sustain peer and friendship relationships (Mok et al., 2014).

### 1.2.2. Context-specific perspective

The quality of the child-parent relationship, the opportunity to establish positive contacts with peers, as well as structural environmental factors that influence the well-being of the family as a whole, have been suggested to contribute in different ways to developmental outcomes for all children. The quality of the child-parent relationship, particularly the caregiver's capacity to reflect upon the child's internal experience, "Parental Reflective Function" defined by Fonagy (Fonagy, Steele, Steele, Moran & Higgitt, 1991) as a crucial factor for the child's developmental outcome (Slade, 2005). However, many families with children who have developmental challenges may face particular difficulties and conditions that can have negative impact on their parenting quality. Parenting behaviors have been suggested to have a greater general impact on children at developmental risk (Paczkowski & Baker, 2007), as positive and supportive parenting practices are found to be more challenging for parents of children with developmental delays, including LI (Carson, Perry, Diefender & Klee, 1999; Irwin, Carter & Briggs-Gowan, 2002; La Paro, Justice, Skibbe & Pianta, 2004).

For parents of children with language problems, comprehension problems seem to be particularly challenging (Moffitt, 1993; Tarter, Hegedus, Winsten & Alterman, 1984), but also children's expressive difficulties are found to put the child-parent synchrony at risk (for less positive and flexible parental responses) (Skuban, Shaw, Gardner, Supplee & Nichols, 2006). Parents' personal traits, personality characteristics, as well as their parenting and communication style, are described to influence the interactional patterns with the child. Furthermore, many families with children who have developmental challenges have been reported to experience elevated levels of parental stress as well as social isolation. Parental stress often contributes to more controlling and intrusive patterns in child-parent interactions thus putting family interactions and the child-parent relationship itself at risk in families with children with LI (Guralnic, Neville, Connor & Hammond, 2003).

Children's pre-school years are typically a period of rapid growth in development of peer relationships and friendships (Rubin, Coplan, Nelson, Cheah & Lagacé-Séguin, 1999). Developing positive and meaningful relationships with peers holds an important developmental significance with regard to the child's self-concept (Bates, Camaioni & Volterra, 1975), as well as to provide opportunities for a variety of social interactions of reciprocal character enhancing pro-social behaviors. Children with LI are reported to socialize less with other children than children with typical development (TD) (Casby, 1997). The process has been depicted as a circle of developmental challenges, where limited social exposure contributes to fewer opportunities to practice and develop the competence in social and language skills needed in a variety of situations, which in turn leads to further disadvantage (Brinton & Fujiki, 2002; Durkin & Conti-Ramsden, 2007; Mok, et al., 2014). Further, social problems in form of bullying, teasing as well as exclusion from play activities or peer contacts, are reported as well (Durkin & Conti-Ramsden, 2010).



Few studies have reported on how different types of pre-school placements influence socio-emotional aspects for the children with LI. Laws, Bates, Feuerstein, Mason-Apps & White (2012) reported that pre-school aged children who had experienced both forms (first a special language unit and later through organizational change, integration in a mainstream pre-school), preferred the integrated mainstream placement, and the children witnessed of positive development concerning peer relations.

In population based studies, children and adolescents are found to be at an increased risk for developing BESD with increasing socioeconomic disadvantage (Green, McGinnity, Meltzer, Ford & Goodman, 2005). Low SES of the family has commonly been presented as one of the major environmental factors also associated with LI in children (Tomblin, Smith & Zhang, 1997).

### **1.3 SOCIO-EMOTIONAL DEVELOPMENT IN CHILDREN**

The pre-verbal socio-emotional development in early childhood focuses on how the infant / child learns to regulate his own attention and emotional state in affective interactions with responsive and regulating caregivers (Greenspan, 2003). The early co-regulated interchanges also contribute to how the child is able to adapt to challenging experiences later (Greenspan & Shanker, 2004). The complexity of the socio-emotional development in children makes it challenging to assess (Greenspan, 2004).

Child observations and child- parent observations have played an important role in exploring socio-emotional aspects of development. Mary Ainsworth's pioneering work in 1950's in Uganda, where she documented parent-child interactions in naturalistic contexts by observations with an exploratory, hypothesis generating approach laid a ground for systematic observations of children and their caregivers. Her observations contributed to significant theoretical and methodological accounts in the developmental theory, the theoretical framework of attachment as a qualitative foundation in child-parent relationships, as well as the assessment method the Strange Situation (Bretherton, 1996). Margaret Mahler's systematic observation studies of child-parent interaction patterns in 1960's in England, contributed to the theoretical account of the separation and individuation process during the child's two first years of life (Mahler, Pine & Bergman, 1975).

#### **1.3.1. Joint Attention**

An early landmark of the child's socio-emotional development is the ability to shared attention focus, i.e. joint attention, (JA). The mutual dyadic attention between the infant and the care-giver in early infancy is typically around six months succeeded by JA involving a triadic structure; the self (the infant), another person, and an object (Reddy, 2005). The JA behaviors comprise the ability to follow the direction of gaze and gestures of others, i.e. responding to joint attention (RJA), as well as the ability to use direction of gaze and gestures such as pointing, showing or giving objects, to direct the attention of others, i.e. initiating joint attention (IJA) (Mundy, Block, Delgado, Pomares, Vaughan Van Hecke & Parlade , 2007).

An essential milestone in the JA development, typically around nine months, is the transition into triangulation or gaze alternation between the object and the other person. This developmental step is characterized by the triadic eye-gaze, a check back behavior to manifest the relational dimension between the self and the other person. The triadic self-other-world relationship is fundamental for the emergence of a sense of multiple perspectives (Eilan et al., 2005; Davidson, 2001; Hobson, 2005), and reflects a complex developmental process. JA in its triadic form contributes to the sense of how experiences can be shared with another person, also considered as “the seed of mentalizing” (Franco, 2005). Hobson (2005) reframes JA as “psychological engagement” and he underlines the aspect of connectedness between the child and another person. The inter-personal co-ordination of attitudes, not merely the co-ordination of actions, forms the critical characteristic of JA (Hobson, 2005). Lack of the triadic form of JA, specifically lack of manifested forms of IJA, has been suggested as early signs of autism spectrum disorder (Mundy & Newell, 2007).

In addition to the mutual exchanges and sharing experiences with another person that are made possible as JA skills develop, JA is also suggested to reflect mental processes that facilitate human learning and development in general. JA enhances self-regulation abilities and social competence of the child (Mundy et al., 2007), in addition it also serves a central epistemic function in enabling the infant and the growing child through interactions to learn about the world (Allen, Fonagy & Bateman, 2008). Pointing in JA can have a character of interrogative function for the infant, i.e. requesting relevant information of the object or event that is in focus (Fonagy, Gergely & Target, 2007).

JA entails implicit emotional commenting on objects of mutual interest thus providing the child with emotional information about the world (Eilan, 2005), an aspect that is closely connected to the concept of social referencing. Social referencing implies the infant’s active check of the caregiver’s emotional reaction towards a novel object so as to regulate and adjust his/her own behavior (Moses, Baldwin & Rosicky, 2001).

### 1.3.2. Representational capacity

In child development research, the ability to build mental representations is regarded as one of the cornerstones in socio-emotional development. The concept of mental representations was originally introduced in attachment theory to describe the cognitive process by which the child’s daily experiences of the interactions with the care-givers are transformed into “inner working models” (IWM) of the self and significant others as well as the relationship between them (Bowlby, 1999/1969). Thus IWM reflects the child’s inner models of relationship expectations, and as such they are believed to shape and guide the child’s emotional, behavioral and cognitive responses generally in relationships. IWM of the self and others, formed in the context of the child- caregiver relationship, will thus influence the individual’s relationships across the life span (Bowlby, 1979).

In the theory of inter-subjective development, a corresponding concept is described, “Representations of Interactions that become generalized” (RIG), referring to early

interactional experiences with primary caregivers being stored in the episodic memory capacity (Stern, 1985). In addition, the development of a sense of self is described as the infant's growing awareness of its own specific features, "self-invariants", distinct from the environment, leading to the infant's sense of having a "core self" (2-7 months) (Stern, 1985). The sense of an inter-subjective self, emerging around seven months, builds on the early experiences of a core-self and continuing interactions with primary caregivers. With the sense of an inter-subjective self, the infant's awareness of the distinction between itself and others, the awareness of mental states can also be experienced. The infant's experiences of repeated well attuned interactions with the primary caregivers enhance inter-subjective relatedness which implies that mental states can be bridged over and shared with another person (Stern, 1985).

The child's growing awareness of self and other, and of his own and other's mental states (feelings, thoughts and wishes), characterizes an emerging capacity to mentalize in the child. The capacity to mentalize develops during the four first years of life, but is believed to underlie an individual's interactions throughout lifetime (Fonagy, Gergely & Target, 2007). Its importance for an individual's well-being and satisfaction with her interactions and relationships, is also described as "the immune system of the psyche" (Lecours & Bouchard, 1997), implicating how strong emotions and needs can be made bearable through the modulation provided by the mentalizing capacity.

The concept of the Theory of Mind (ToM) and the concept of mentalizing are sometimes used synonymously. However, ToM understanding of mental states is an externally oriented ability. The awareness of others' mental states serves the goal of being able to predict the behavior of others (Wimmer & Perner, 1983). A frequent way of testing ToM skills is false belief tasks, such as Sally & Anne test (Wimmer et al., 1983; Baron-Cohen, Leslie & Frith, 1988). In contrast to the cognitively and externally oriented concept of the ToM, the mentalizing capacity is, as presented by Fonagy and his collaborators, rather an orientation towards the individual's self, and the intrinsic capacity to reflect on one's own and other's behavior and feelings (Fonagy, Gergely, Jurist & Target, 2004; Fonagy, Gergely & Target, 2007). In sharp contrast to extreme views of ToM development, that argue that ToM is an innate, domain-specific capacity that matures independently of external factors (Leslie, Friedman & German, 2004), the emergence of the capacity to mentalize is considered as a reflection of the quality of the child's early relationships.

A significant arena, that challenges and supports the child's social capacity, is play. Play is viewed as a leading source of development and learning in pre-school years (Vygotsky, 1933/1966), and different types of play during the childhood, construction, symbol play, play based on rules, reflect and correspond to important steps in the child's cognitive development (Piaget, 1962). Play activity itself, and the associated interactions with peers enhance the social development of the child. Winnicott (1981) views play as a transitional space for the child to explore distinctions between the reality and fantasy, the inner and the outer world, as well as the self and others, thereby enhancing the general symbolizing capacity.

### 1.3.3. Socio-emotional and language development

Language and many aspects of socio-emotional development have been reported to develop in a reciprocal way. The association of JA and language development is widely established. The frequency in the engagement in joint attention behaviors is generally related to language acquisition (Mundy et al., 2007). RJA behaviors, as early as at six months, are considered to predict a child's language level at two years of age (Morales, Mundy, Delgado, Yale, Messinger & Schwartz, 2000). Qualitatively, the duration of JA behaviors and the development of vocabulary and expressive abilities in general (Markus, Mundy, Morales, Delgado & Yale, 2000; Morales, Mundy, Delgado, Yale, Messinger, Neal & Schwartz, 2000; Tomasello & Todd, 1983). The inter-subjective relatedness, where the child's and the caregiver's focus of attention is coordinated facilitates language learning (Beuker, Rommelse, Donders & Buitelaar, 2013).

Language skills and the capacity to mentalize are described as developing in a bootstrapping fashion (Allen et al., 2008; Fonagy & Target, 2002). It is suggested that pre-cursors of mentalizing capacity are requested for the acquisition of language skills, and correspondingly, increasingly refined linguistic abilities underlie the full-fledged representational capacity needed in mentalizing (Allen et al., 2008). Strong associations have been found between children's engagement in symbol play and their use of mental state language, representing the mentalizing capacity (Hughes & Dunn, 1997).

ToM skills in children are generally believed to be linked to the child's general language level. Most of the research on ToM has been conducted on children with ASD. Studies that have compared children with TD, children with ASD respectively LI, have shown that ToM in both clinical groups differs from the children with TD. Children with LI perform better than children with ASD, but significantly more limited than children with TD (Gillott et al, 2004).

Language skills and symbolic play activities are reported to support each other, and develop concomitantly (Snyder, 1987). According to Piaget (1962), both symbolic play ability and language reflect the underlying symbolic, an emerging representational ability. Early symbolic play activities are suggested to predict later language development and also identify children at risk for developing language delays (Bruce, Kornfält, Radeborg, Hansson & Nettelbladt, 2003; Colonnaesi, 2010).

## **2 AIMS OF THE PROJECT**

The overall aim of the present project was to expand the perspective on children with LI to include developmental aspects connected to relational and affective processes.

2.1 The specific aims were to:

- Investigate how children with LI manifest intersubjectivity in visual check back behavior in interaction with others (Study I).
- Examine how parents of children with LI view their child's communication and language as well as socio-emotional development (Study II).
- Explore self-oriented and other-oriented mentalizing capacity in a child with history of LI (Study III).
- Investigate parental stress in relation to behavioral difficulties as well as communication and language problems in two clinical groups; children with LI and children with extensive communication difficulties and suspected ASD, compared to children with TD (Study IV).



### 3 MATERIALS AND METHODS

In the present project semi-structured observations (Play Settings and Play Narrative Approach) and parent ratings of different developmental areas (the child's communication and language, socio-emotional development, behavioral difficulties, and parental stress) were used for data collection.

The intention with the construction of semi-structured observations (Play Settings) in Study I, was to create a naturalistic frame which contained both everyday play attributes, as well as specific procedures aimed at eliciting the target behaviors (shared attention, intention and emotion), thus accounting for ecological validity of the observations. The design increased the possibilities to control for external conditions in the play situation.

The Play Narrative Approach, based on McArthur Story Stem Battery, used in Study III, builds on the tradition of psychoanalytic play therapy (Slade & Wolf, 1994), and projective techniques (Wolf, 2003). The Play Narrative approach allows an observation and understanding of a course of the child's behavior in the face of strong feelings and interpersonal dilemmas (Emde, 2003).

A qualitative approach as in the case-study (Study III) provides opportunities to in-depth-analysis of the observations. In addition to the analysis of the observable behaviors, the aim was to explore subtle aspects in the interpersonal processes that could be captured.

Parent ratings (Study II and IV) are a frequent method used in examining various developmental areas in children and adolescents. Since the character of socio-emotional development hinders direct examination, parent ratings can provide indirect knowledge of the development as reflected in child behaviors. Parent ratings contribute also to knowledge on parental perceptions of the child's development. When studying small children and children with delays, parent ratings may play a specifically important role as they are based on parents' perception of a variety of situations, the child faces (Fenson, Dale, Reznick, Bates, Thal & Pethick, 1994). Parent ratings are an indispensable tool in large population-based studies.

The parent ratings used in the present project are in earlier research reported to be valid and correlate with other measures within the specific developmental area. The rating of communication and language (SECDI) correlates with more objective clinical measures of communication and language skills. The perception given by parents with regard to the child's strengths and difficulties (SDQ) correlates with other measures of the child's behavior, e.g. teacher ratings. The socio-emotional rating (GSEGC) has been reported to have good validity in studies carried out in the US.

An overview of the four studies is provided below (Table 1). The presentation order of the studies in the thesis reflects the analysis procedure. Study I connects to Study III, while Study II connects to Study IV.

Table 1. Overview of study designs, samples and methods used in each study.

Study	Design	Sample (n)	Methods
I	Semi-experimental study	LI (10) AMC (10) LMC (10)	Play settings experiment designed to elicit behaviors related to JA, shared intention and shared emotion
II	Comparative study	LI (19) AMC (17) LMC (14)	Parent ratings of communications and language development (SECDI), and socio-emotional development (GSEGC)
III	Case study	LI (1)	Story Stems designed to elicit self-oriented and other-oriented mentalizing behaviors (McArthur Story Stem Battery)
IV	Comparative study	LI (9) COM (9) TD (13)	Parent rating of experienced stress (SPSQ), rating of the child's behavior (SDQ-Swe), and the child's communication and language development (SECDI)

### 3.1. PARTICIPANTS

#### 3.1.1. Children with LI and children with TD: Study I

All children with LI (n=10) were recruited from special preschool language units in the county of Stockholm. The children with TD (n=20) were recruited from main stream preschools in the same area. No non-responders.

#### 3.1.2. Parents of children with LI and children with TD: Study II

All families with children with LI were recruited from Speech and Language clinics in the county of Stockholm. The children with TD were recruited from main stream preschools in the same area. No information was available from SLPs or pre-school



teachers of how many parents were invited to participate in the study, therefore the amount of non-respondents is unknown.

### **3.1.3 Child with LI: Study III**

The child with LI was included in Study I. Eight of the ten children that participated in Study I were followed up two years later. One case (a video-tape) was later selected for further analysis. The participant boy had displayed difficulties with the non-verbal communicative behaviors in Study I. His language comprehension had been normalized during the treatment period in a special pre-school language unit.

### **3.1.4 Parents of children with LI, children with COM, and children with TD: Study IV**

All families with children with LI and COM were recruited from the Department of Speech and Language Pathology, Karolinska University Hospital in Stockholm. The families with children with TD were recruited from pre-schools, Child Health Care Centers, and among informed volunteering parents in the county of Stockholm. In total, 24 parents with children with LI or COM were invited to participate in the study. Two families were excluded through incomplete responses. In LI group, four families declined participation in the study. In total, 30 families were invited to participate in the control group. Sixteen families did not reply to the invitation, and one child was excluded through low scores in the parental rating of the child's communication and language skills, indicating a potential developmental delay. Thus, in total 18 families remained in the two clinical groups, and 13 in the TD group.

## **3.2 METHODS**

### **3.2.1. Experimental study, Play Setting: Study I**

Three play settings were designed to elicit target behaviors connected to shared attention, intention, and emotion. To the child familiar play materials were used, books and personal diaries with photos, puzzles and blocks, to construct the Play Setting situations.

### **3.2.2. Quantitative study, Parent ratings, SECDI and GSEGC: Study II**

*Swedish Early Communicative Development Inventory, SECDI*, is the Swedish version (Eriksson & Berglund, 1999; Berglund & Eriksson, 2000b) of The MacArthur Communicative Development Inventories, CDI (Fenson, Marchman, Thal, Dale, Reznick & Bates, 1993). SECDI was used for parent rating of the child's communication and language development. The instrument consists of two inventories, Words and Gestures (8-18 months) and Words and Sentences (16-30 months), and covers six aspects of communication and language, word comprehension, sentence comprehension, early and later word production, grammar, gestures and pragmatics. Following the manual, the total score for each of the six aspects of communication and language was obtained by summarizing the scores. The reliability and validity of the

SECDI have been investigated thoroughly (Berglund & Eriksson, 2000a; 2000b) and have been found to be satisfying.

*Greenspan Socio-Emotional Growth Chart, GSEGC*, for parent rating of the child's socio-emotional development consists of 35 items corresponding to six stages in socio-emotional development for the age zero to 42 months. In accordance with the manual, the total score for GSEGC was obtained by summarizing all the 35 items. The total score was transformed to socio-emotional developmental level by relating the total score to the child's chronological age. The developmental level was determined according to the manual as full mastery, emerging mastery, or possible challenges.

GSEGC is a validated norm-referenced measure based on a sample of 456 children in the United States (Greenspan, 2004b). The reliability has been considered satisfying for the age group 15 to 42 months (.90-.94), and adequate (.83-.88) for the lower age group (Greenspan, 2004b). The validity of the instrument has been reported to have a moderate capacity to discriminate between groups in a clinical sample as shown by Cohen's  $d=.56$  (Greenspan, 2004b). Since GSEGC had not been previously used in Sweden, a translation and minor adaptations of the protocol were performed.

### **3.2.3. Qualitative case study, Play Narrative Approach: Study III**

*MacArthur Story Stem Battery, MSSB* (Bretherton, Oppenheim, Buschsbaum, Emde & The MacArthur Narrative Group, 1990) is a projective play narrative method in which the child is presented with story stems, and then asked to complete the story verbally and/ or by play-actions. Doll family and props are used in enacting each scenario in the story stems. The story stems are emotionally charged and of everyday nature so as to facilitate the child's identification with the scenarios. They are assumed to activate the child's emotional strategies in coping with interpersonal situations. The responses are analyzed in relation to self-oriented and other-oriented mentalizing. MSSB consists of 14 story stems with different themes. The sets of story stems as well as coding approach can vary, and are adapted to the research questions in focus (Bretherton & Oppenheim, 2003), as the MSSB was not developed as a standardized method (Bretherton & Oppenheim, 2003). A subset of three story stem situations was selected for the purpose of the study.

### **3.2.4. Quantitative study, Parent ratings, SPSQ, SDQ, and SECDI: Study IV**

*Swedish Parenthood Stress Questionnaire, SPSQ* (Östberg & Hagekull, 1997) is modeled after Abidin's Parenting Stress Index, PDI (Abidin, 1990), but constructed to focus exclusively on the parental domain. The instrument contains 34 questions that correspond to five subscales, Depression, Restriction of Role, Sense of Incompetence, Social Isolation, Relationship to Spouse, and Parent Health. Total score is obtained by adding the responses. The validity and reliability have been found to be good for the instrument (Östberg, Hagekull & Wettergren, 1997).

*The Strengths and Difficulties Questionnaire, SDQ-Swe* (Smedje, Broman, Hetta & Knorrning, 1999) is based on the original The Strengths and Difficulties Questionnaire (Goodman, 1997) and contains 35 questions corresponding to five subscales, Emotional Symptoms, Behavior Problems, Hyperactivity / Concentration Problems, Problems with Pro-Social Behavior and Peer Relations. The ratings are summarized in a total score according to the manual. In addition, there is a Supplement Score for rating of the degree and the persistence of the problems as well as parental concern and interference with family life and activities. The instrument has been found to have good properties with regard to reliability and validity (Goodman & Goodman, 2009).

*Swedish Early Communicative Development Inventories, SECDI* (please, see the description under Study II).

### **3.2.5. Statistical analyses**

In studies I, II and IV, descriptive statistics as mean, standard deviation, range from minimum to maximum values, were calculated. For all the analyses the level of statistical significance was set at p-value <0.05.

Study I: Three groups of children (children with LI and two groups of children with TD matched with regard to age respectively language level) were compared with regard to check back behaviors as dependent variable using two-way ANOVAs concerning the effect of play situation (three situations) and group of children (three groups) as independent variables.

Study II: One-way analysis of variances (ANOVAs) were performed separately on children's communication and language development (SECDI) and socio-emotional development (GSEGC) as dependent variables to examine possible differences between three groups of parent ratings (parents of children with LI, and two groups of parents of children with TD matched with regard to age respectively language level). The effect of group, gender, as well as interaction between group and gender were analyzed by two-way ANOVAs with regard to SECDI and GSEGC. Post-hoc Scheffe's test was performed to analyze possible group differences. The relationship between language and socio-emotional development was calculated by the Spearman rho correlation coefficient.

Study IV: The possible differences between three groups (parents of children with LI, suspect autism spectrum disorder, and TD) was analyzed by one-way ANOVAs on total stress (total score on SPSQ) as well as sub-scales of stress experience. Further, group comparisons using one-way ANOVAs, were performed with regard to parent ratings of the child's behavior (total score on SDQ), and the subscales of behavioral difficulties in children, as well as the child's communication and language difficulties. Post-hoc pair wise group comparisons (Scheffe's) were carried out as well. Moreover, group comparisons were performed concerning the relationship as estimated by correlation analyses (Pearson correlation coefficient) between parental stress and the child's behavioral difficulties respective language problems.

### **3.2.6. Ethical considerations**

The population of children with language impairment and communication difficulties is limited in the area where the major recruitment of the families into the studies in the doctoral project was carried out - a factor that demands extra care in order to protect the identity of the individual participants. Therefore information and details about the participants were omitted and/or changed in a way that made recognition and identification of the participants impossible. Special care was also needed considering the young age and the communication problems of the participating children. Also, the special situation of the families with children with identified developmental delays was considered. The procedures, play-situations and parent questionnaires, were expected not

to cause the participants any concern or risk. The Regional Ethics Board at Karolinska Institutet, Stockholm approved the studies in the doctoral project: Dnr 241/03 (study I and III), Dnr 2014/5:2 (study IV).



## 4 RESULTS

### 4.1 STUDY I

**Aim** The aim was to investigate how children with LI use referential eye gaze in comparison with language matched and age matched peers with TD. Referential gaze is related to early language learning and the development of inter-subjectivity.

**Method** Play setting situations were designed to elicit visual check back communication behaviors shared attention, shared intention and shared emotion. The cluster of the behaviors forms fundamental dimensions of inter-subjectivity underlying reciprocal communication and pragmatic development in children. Three groups of children participated, children with specific language impairment (SLI), age-matched and language-matched children with typical development (TD).

**Results** Children with SLI performed significantly less frequent check back behaviors than age-matched children with TD. Furthermore, the check back behaviors were significantly slower in children with SLI when compared to age-matched and language-matched children with TD.

**Conclusions** Children with SLI displayed a deviant pattern of visual check back. Reduced and slow referential gaze could be a subtle sign of SLI comprising difficulties related to social-cognition and socio-emotional aspects of development.

### 4.2 STUDY II

**Aim** The aim was to examine how parents of children with LI view their child's communication and language as well as socio-emotional development.

**Method** Children with language impairment (LI) and children with typical development (TD) were assessed by their respective parents by using The MacArthur Communicative Development Inventories (Swedish version SECDI) and Greenspan Socio Emotional Growth Chart (GSEGC).

**Results** The results indicate a clear association between language and socio-emotional development. Children with LI were rated similar to the younger language-matched children with TD, but significantly lower relative to age-matched TD children, particularly concerning symbolic stages of development.

**Conclusions** The association between language level and socio-emotional development indicates a potential problematic area, e.g. peer relations and play, as the result suggests a socio-emotional functioning far beneath the age-level for children or sub-groups of children with LI.

### 4.3 STUDY III

**Aim** The aim was to study self-oriented and other-oriented mentalizing capacity in a child with history of LI.

**Method** The mentalizing capacity was analyzed with respect to the organization and the content of the child's responses given to emotionally laden story-stem situations. In particular the child's other-oriented and self-oriented responses were focused, as well as his observable behavior during the presentation of story-stem situations.

**Results** The child displayed difficulties in self-oriented mentalizing capacity which was reflected in his affect regulation. His other-oriented mentalizing capacity was limited, and he was not able to complete all the stories. Intermittently, between the story-stems the child was able to regain his balance.

**Conclusions** Affect regulation and other-oriented mentalizing are crucial for subjective well-being as well as for social interactions. The study underlines the importance of including emotional processes in the study of children with LI.

### 4.4 STUDY IV

**Aim** To investigate parental stress in relation to behavioral difficulties as well as communication and language problems in two clinical groups; children with LI and children with extensive communication difficulties and suspected ASD, compared to children with TD

**Method** Parental stress and parents' perception of their child's behavioral as well as communication and language difficulties were investigated in three groups of children; two clinical groups: children with language impairment (LI) and children with more extensive communication difficulties and suspect autism spectrum disorder (COM), as well as children with typical development (TD).

**Results** The results showed that the parental experience of stress differed between the groups on total and specific aspects of stress (Sense of Incompetence and Social Isolation). The relationship between stress and children's behavioral difficulties was significant in the total group, but not in the clinical groups (LI and COM). Parental stress was significantly associated with the child's communication and language ability in the COM group of children. Difficulties with peer relations and concentration / hyperactivity were rated similarly in both clinical groups.

**Conclusions** Children in both clinical groups were rated significantly higher in behavior problems concerned with peer relations, concentration/ hyperactivity than children with TD. High variation appeared in the results of the LI group both in parental stress and children's behavioral difficulties.



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## **5 DISCUSSION**

In this project, socio-emotional aspects of development were focused in children with LI.

The main findings were, that children with LI a) performed visual check back behaviors more seldom and qualitatively less accurately and slower than children with TD, b) were rated corresponding to their language level, and thus significantly beneath their age concerning socio-emotional functioning, by their parents, c) displayed difficulties in affect regulation as well as other-oriented mentalizing, and d) displayed behavioral concerns related to concentration/ hyperactivity and difficulties with peers as rated by their parents. The association between the behavioral difficulties and parents' experience of stress could not be confirmed.

### **5.1. METHODOLOGICAL ISSUES**

Socio-emotional development in children presents a methodologically complex area to investigate as it cannot be directly measured or examined. Studies on children with LI have previously mainly used teacher ratings, and focused on socio-emotional abilities as they are expressed in various behaviors (Fujiki, Brinton & Todd, 2012). Visual check back behaviors in relation to inter-subjective abilities and pragmatic foundation in children with LI have not been focused previously. To our knowledge, projective methods, like the Play Narrative Approach in Study III, have not been applied previously in the context of LI in children.

#### **5.1.1. Participants**

The heterogeneous character of children with LI presents a methodological dilemma in terms of representativeness. Strictly selected samples are more homogeneous with regard to language profiles, while broader inclusion criteria may better reflect the conditions in LI. Consequently, the samples and the diagnostic criteria used in the four studies may have included several sub-groups of children with different types and degrees of LI. In addition, with regard to participants included in the studies, a possibility of co-occurrence of neuro-psychiatric disorder, albeit undiagnosed, cannot be excluded.

Low response rate increases the risk for selection bias, which could be the case in Study II and Study IV. Study II and Study IV rely on parents' view of the child's general development. Therefore the lack of formal cognitive and intellectual assessment in Studies II-IV could be a drawback.

A general drawback is the low statistical power due to small sample sizes. This is a concern in Study IV in particular.

#### **5.1.2. Play settings**

Play setting situations in Study I were semi-structured situations aimed at eliciting the target behaviors in order to facilitate the exploration of the research questions. The situations provided security for the child concerning the test environment (the child's pre-school), the

materials (common play material), as well as the person conducting the experiment (the child's pre-school teacher). The intention was to avoid a test situation to increase the child's motivation, and the probability that the child would perform at his usual, representative level. The factors that were assumed to provide security for the child however led to difficulties in controlling the conditions where the experiment took place. These conditions were related to the test-leader, the particular physical setting at the pre-school, as well as external distracters that were difficult to control for. All the test-leaders received the same information with regard to the procedure, however, their personal communication style and personality characteristics were factors that may have influenced the child's performance. The physical setting varied between the pre-schools, as well as the play materials. A major drawback in the study is that the experiment included only one trial of each target behavior.

### **5.1.3. Parent ratings**

Parent ratings were used in Study II and IV. Generally, parent ratings that were used in these studies are considered to provide valid information. Parental responses can be assumed to reflect a multitude of situations in the child's everyday life. However, parent ratings require an active participation from the part of the parents. Parental participation can be strained by factors that relate to family circumstances, parents' work load, experiences of stress in the life situation, as well as linguistic skills. Difficulties of any kind with the questionnaires could result in low response rate which in turn increases the possibility of selection bias. Furthermore, concerning Study II, cognitive assessment of the included children would have been an advantage, as well as information about the families' SES. A major drawback concerning Study IV is the limited sample size and lack of information concerning SES.

### **5.1.4. Play Narrative Approach**

Study III aimed at exploring socio-emotional abilities through a window provided by the projective character of the Play Narrative Approach. The method allows in-depth-analysis of behavioral observations. The major drawback in the study was the lack of information based on a structured assessment of the child's intellectual capacity. Further, no information was available about the parents' SES or family circumstances.

## **5.2. GENERAL DISCUSSION**

The overall aim of the thesis was to illuminate socio-emotional developmental aspects in children with LI, a perspective that has not been specifically focused in previous research. Socio-emotional difficulties as well as the whole domain included in BESD have been reported in this group of children and adolescents. However, few accounts have been made to disentangle potential mechanisms underlying the difficulties. In the present project, an attempt was made to explore some of the fundamental abilities involved in socio-emotional development, i.e. the ability to relate on an inter-subjective level and the capacity to mentalize. The association between language and socio-emotional development, as well as

the impact of contextual factors, such as parental stress, were focused. The findings are discussed in relation to different contexts; the care-giver – child context, the peer context, and the environmental context, as well as in relation to protective and risk factors.

#### *Parent- child context*

The typical pattern, where children's communication behaviors elicit parental responses that support and facilitate the child's development, are assumed to be easily challenged in families with children who have communication and language problems. The underlying mechanisms can according to Yoder, Warren and McGathern, (1998) be related to child-specific, parent-specific as well as contextual characteristics that discourage further exchanges. Parent ratings in Study II indicated a substantial delay in relation to the chronological age in the socio-emotional abilities concerning specifically the symbolic phases in children with LI. A child's socio-emotional functioning that corresponds to a significantly younger age level can be assumed to require substantial adaptations from the part of the care-givers as well as peers.

Study I indicated the importance of the visual check back behavior in interactions. For the functioning of the child-parent dyad, the manifestations of reciprocity by visual check back behavior may be too vague to encourage the care-givers to longer sequences of interactions with the child. Processing limitations, previously suggested in studies on children with LI (Bishop, 1997) may be a contributing factor to the slow check back behavior. However, the consequences of slow processing and reduced visual check back behavior may challenge the synchrony of the child-parent interactions, as well as child-peer interaction.

On the other hand, parental behaviors are suggested to be particularly important for children with developmental delays including LI (Paczkowski et al., 2007). Parental stress (Study IV) represents a potential risk factor in the family context for a child with LI, as it often leads the parent to use less supportive and more directive and intrusive parenting and communication patterns (Guralnic et al., 2003). The results of Study IV included families with children with LI and children with more extensive communication difficulties and suspected ASD as well as children with TD. The results indicated on a general level an association between increased parental stress and parents' perception of behavioral difficulties in the child.

#### *Peer context*

Establishing and maintaining peer relations during childhood holds an important developmental function. Joint activities with peers and formation of friendships provide support and opportunities to rehearse both socio-emotional and language skills. Peer and friendship relations also have important implications for the child's self-esteem and well-being. Lack of close friendship relations during childhood and adolescence is associated with risk of loneliness and stress (Whitehouse, Watt, Line & Bishop, 2009).

Various factors may affect the child's efforts in establishing peer and friendship relations. As communication and language skills are essential in initiating and maintaining relationships, peer relations in general and friendships in particular are a vulnerable area of functioning for

children with LI (Mok et al, 2014). Related to the findings in Study II, limitations in age-appropriate socio-emotional functioning could be a factor that presents disadvantage for children with LI in peer relations. In the study (II), the socio-emotional functioning of the children with LI corresponded to the significantly younger language-matched children with TD, thus indicating that children with LI followed a delayed timeline in their socio-emotional development, as rated by their parents. The perspective of the peers and their perception of children with LI as potential play-mates and friends is of importance as well. Children with LI are not typically preferred play-mates (Guralnic et al., 1996), but peer acceptance has generally been found to be associated with the child's language profile as well as the socio-cognitive skills (Laws, Bates, Feustein, Mason-Apps & White, 2012). Play activities require a good capacity to both regulate one's own mental states, and a capacity to appreciate other's mental states. In Study III, the child with history of LI displayed behaviors that reflected substantial difficulties with regulation of his own affect. His other-oriented mentalizing capacity was limited as well. Language is suggested to play a role as a mediator in the development of executive functions in general, and self-regulation in particular (Barkley, 2001). The regulatory function of language enables the child to monitor his behavior and activities in more controlled way, provided that the child's behavior initially has been regulated by others (Luria & Yudovich, 1972; Vygotskij, 1986). Language is then believed to support the shift from externally guided to internalized behavior, inner speech that is directed towards the self, supporting the maturing child's behavior and actions.

The story stems in Study III contained emotional conflicts or dilemmas. Conflict solving in naturalistic situations has been found to be particularly challenging for children with LI. Previous studies have reported that children with LI displayed insurmountable difficulties with conflict resolution with peers, which resulted in aberrant behaviors in children with LI (Horowitz, Westlund & Ljungberg, 2010). It seems that children with LI were not able to compensate their linguistic limitations by using non-verbal conflict resolving or comforting behaviors towards the antagonist, and the situation turned rapidly into something uncontrollable. Mentalizing capacity in its self-oriented dimension plays an essential role subjectively for the individual child, as it helps the child to modulate mental states, e.g. strong feelings and needs. Conflict resolution represents a particularly strenuous form of social interaction. However, conflict resolution strategies with peers, similar to the hypothetical conflict in the story stems (Study III), and perhaps all forms of social interactions with peers, may be assumed to build not only on the other-oriented mentalizing capacity, but in as much on the self-oriented mentalizing, i.e. the regulation of one's own affects.

### *Environmental context*

In study IV, the parental stressor, Social Isolation, was on a general level found to be associated with children's behavioral difficulties, indicating the significance of social network and support outside the family context. Previous research has underlined the key role of social support in mediating parental stress, and generally in terms of parents' well-being (Oelofsen & Richardsson; Pipp-Siegel, Sedey & Yoshinaga-Itano, 2002). On a societal level, parental stress in form of social isolation, relates to attitudes and resources directed towards families with children who have special needs.

The children with LI in Study I and III were enrolled in a special pre-school language unit. Children with LI in Study II and IV were placed in mainstream pre-schools. The placements of the children were naturally based on the individual families' decision. However, also the availability of resources with regard to special language units may play an important role. Typically, in the county of Stockholm, the opportunities to get a placement in a special language pre-school unit are scarce, if that would be the first choice of the family. Mainstream pre-schools have small possibilities to support and guide children with LI without additional resources.

The present project underlines the importance of expanding the perspective on children with LI to include socio-emotional developmental factors. In terms of identifying protecting and supporting factors, and also factors that may involve risks for the child's development, socio-emotional account may contribute valuable information. Generally, considering child-specific and context-specific factors, many of them may infer that children with LI are at disadvantage. Deeper understanding of the interpersonal relationships, and the difficulties that are associated with them, may facilitate prevention of serious forms of BESD. It is important that protecting factors in form of supportive family communication, peer and friendship relations, and varied play activities that promote and mediate functions connected to socialization and mentalizing capacity, are focused and enhanced.

## **5 CONCLUSION AND CLINICAL IMPLICATIONS**

This thesis addressed socio-emotional developmental aspects in children with LI, thus expanding the perspective that is typically applied on children with LI. Some of the findings raise new research questions, and some of the results have important clinical implications.

Considering the results of the studies, it could be hypothesized, that the primary difficulty in the context of LI in children, is related to a general representational deficit irrespective of the modality, linguistic symbols, representation of mental states, and symbol play - ideas that have previously been pointed out (Leonard, 1998; Rice & Kemper, 1984). This may have implications for speech and language therapy. Furthermore, in addition to interventions directed towards the child, interventions that involve parents seem crucial.

The pre-school aged children with LI, that participated in Study I displayed a deviant pattern of visual check back behaviors. As this type of referential gaze is associated with socio-

cognitive and socio-emotional development in children, reduced and slow referential gaze may reflect subtle difficulties within these areas. It is relevant to include non-verbal communicative behaviors, independent of the child's age or linguistic competence, in the assessment and therapy procedures. (I)

The association between language level and socio-emotional development indicated potential difficulties with peer relations and play behaviors, as the results suggested a socio-emotional functioning far beneath the age level in children with LI. (II)

Affect regulation as well as other-oriented mentalizing were challenging for a boy with history of LI. Both domains of mentalizing capacity play an important role in social interactions as well as for the child's general well-being. However, it is important that the capacity to mentalize is explored further in a larger scale study. (III)

Children with LI and children with more extensive communication difficulties were rated by their parents significantly higher with regard to behavior problems related to peer contacts and hyperactivity / concentration problems. There was also a general association between experiences of parental stress and behavioral difficulties in children. Parental stress may involve a risk for less supportive parental communication with a child with LI, and should be considered and addressed e.g. by family or parent-based interventions. The findings nevertheless, need to be confirmed in a larger scale study. (IV)

## **6 FUTURE STUDIES**

Affect regulation presents an interesting and important area of future research. As a first step the difficulties with affect regulation as well as the other-oriented mentalizing capacity that were indicated in the case study (Study III) of a school aged boy with a history of LI, need to be verified in a larger scale study where more parameters, cognitive and intellectual level of the child, family SES and other conditions, are accounted for.

Experience of parental stress, that may indirectly have a negative impact for the developmental outcomes for children with LI, should be investigated in a larger scale study. It would be interesting to investigate possible differences in parental stress in mothers and fathers. Additional variables related to family conditions could be added, e.g. the relationship between the spouses.



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