

Kindergarten teachers' consideration for sensory-motor difficulties in early years

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IV

Abstract

Sensory-motor difficulties are usually considered as a part of larger pictures, such as specific learning disabilities, autism, ADD, ADHD, Down syndrome, cerebral palsy, etc. However, many researchers argue that these difficulties can emerge in child's development on their own as well, and can be identified from the age of 3 and ½ years of the child. However, the official diagnostic manuals have so far accepted only the difficulties in motor areas, referring to e.g. developmental dyspraxia, developmental coordination disorder, or specific developmental disorder of motor function. There are researchers who argue that motor and sensory functioning and development influence each other and consequently other areas as well. Nevertheless, the children with such difficulties need to be identified, regardless what "diagnose" would they get. The diagnosis is not supposed to be a goal, but the help to optimize child's development already in early years.

This way, focusing on the identification of children with sensory-motor difficulties, I chose to contact kindergarten teachers to get answers to my research questions: Are children (from 3 and ½ to 6 years old) with sensory-motor difficulties recognized in kindergarten settings? How are they recognized? How are kindergarten teachers concerned about sensory-motor difficulties in a preschool child? Are kindergarten teachers generally more concerned about a particular type of sensory-motor difficulties? Do kindergartens have any special routines for screening/assessment children for any sensory-motor skills or difficulties?

The survey design of this research used questionnaire research technique, yielding both quantitative and qualitative data. The research was conducted in the capital city of Norway, Oslo. The sample of 31 kindergarten teachers was obtained and analyzed, using statistical measurements.

The collected data shown that the participating kindergarten teachers were generally most concerned about child's anxiety, lack of balance, oversensitivity to touch, noise, temperatures, tastes, hyposensitivity to pain, problems with articulation, orientation, or clumsiness in fine motor activities. They would follow up the children with such difficulties, consult with parents and cooperate with specialists for further assessment. If the child tended to chew on everything (e.g. toys, blankets), the majority of participating kindergarten teachers would think it might be a little problem now, but still thought the child can "grow out of it". And if the child had aversion to certain physical activities (e.g. jumping, walking stairs, hopping,

swinging, spinning, sliding), the majority of these kindergarten teachers would think it was a problem, but didn't think someone can do anything about it. They would most likely work with the child on this issue in their kindergarten, but they would not refer the child for further assessment.

The majority of participating kindergarten teachers has some kind of tests/ assessment methods for gross motor skills, fine motor skills, balance, speech – articulation and anxiety issues. Tests/ assessment routines for posture and sensitivity were less frequent among participating kindergartens. As I explained in data analysis, these data might be biased, with one exception, speech – articulation category. It seemed the majority of participants have a test called TRAS.

Unfortunately, these results are not significant enough to be drawn to entire population of kindergarten teachers in Norway and therefore the main research questions can't be answered.

Keywords: sensory-motor difficulties, specific developmental disorder of motor function, developmental coordination disorder, developmental dyspraxia, neuro-developmental delay, sensory processing disorder, sensory integration disorder, kindergarten teachers

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Content

Abstract.....	V
Acknowledgment.....	VII
Content.....	VIII
1 INTRODUCTION.....	1
1.1 Significance and justification of the study area.....	1
1.2 Statement of the research problem.....	3
1.3 Research location.....	4
2 THEORETICAL FRAMEWORK.....	7
2.1 Approach.....	7
2.2 Terminology and definitions of main concepts.....	7
2.3 Sensory-motor difficulties.....	12
2.4 Other consequential difficulties.....	16
2.5 Identification of sensory-motor difficulties.....	17
2.5.1 Judgment and decision making.....	18
2.5.2 Screenings and other systemic routines.....	20
2.6 Assessment.....	21
2.7 Early intervention.....	22
2.8 Conclusion for this research.....	25
3 METHODOLOGY.....	26
3.1 The nature of the research.....	26
3.2 Research design and technique.....	26
3.3 Population and sample.....	28
3.4 Questionnaire format.....	29
3.5 Pretesting.....	32
3.6 Validity and reliability.....	33
3.7 Ethical considerations.....	35
VIII	

3.8 Methodology of data analysis.....	36
4 DATA PRESENTATION AND ANALYSIS.....	38
4.1 Data collection process.....	38
4.2 Questionnaire section 1.....	39
4.3 Questionnaire section 2.....	40
4.3.1 Data analysis (section 2).....	51
4.4 Questionnaire section 3.....	53
4.5 Conclusions for key research questions.....	56
5 DISCUSSION.....	58
5.1 Results discussion.....	58
5.2 Recommendations.....	60
REFERENCES.....	61
Appendix A: Invitation letter (English version).....	67
Appendix B: Invitation letter (Norwegian version)	68
Appendix C: Questionnaire (English version)	69
Appendix D: Questionnaire (Norwegian version).....	78
Appendix E: Research authorization from NSD.....	87

1 Introduction

1.1 Significance and justification of the study area

Goddard Blythe, Lawrence and Blythe (2009) presented a case of a child from United Kingdom that led me to wonder more about sensory-motor difficulties in child's development and became a foundation for this research. Let me share it with you:

The story begins something like this. A happy child starts school just prior to his or her fifth birthday. The child may have had a series of minor problems in the early years, such as difficulty with feeding, sleeping, frequent ear, nose, or throat infections, or delay in achieving some developmental milestones such as learning to talk and learning to walk, but these signs are rarely considered as possible precursors to the problems that may arise in the classroom in the years to come. Towards the end of the first year of schooling, the teacher may inform the parents that their child is having problems with reading and fine motor skills, attention, ability to sit still, compliance, and social skills. Physical immaturity affects child's posture, freedom from distractibility, and to react appropriately to the body language of others. It may take a further two or three years of education before the child is referred to an educational psychologist for formal evaluation of cognitive strengths, weaknesses, and IQ. Generally, a child must be at least two years behind his or her chronological age in reading before referral to an educational psychologist takes place with subsequent recommendation being made for specific support in the educational setting. In severe cases, referral back to the medical profession may be made with recommendations that further investigation should be carried out to see if a diagnosis of developmental coordination disorder or attention deficit disorder is relevant. By this time, the child is at least eight years of age, and three years of formal education have already passed without anyone investigating whether there might be a physical or neurological basis to the child's educational difficulties. In effect, these children who are not 'bad enough' to qualify for a medical diagnosis, but who are nevertheless delayed in aspects of neurological development, simply fall out the net of services. (p. XIII)

Also Chambers and Sugden (2006) say that given the impact of movement difficulties on the academic achievement and daily lives of children, identifying these children even before their

lives are significantly affected would be ideal, but is not yet common practice and is potentially difficult.

This case enlightens the reality in a net of early intervention services in England. In order to analyze it, it would be proper to take ecological perspective of Bronfenbrenner (1979), since contemporary concept of early intervention is embedded in theories about the role of environment in child's development (Diken & Diken, 2008). The individual child is viewed in connection with his/her environment, influencing and shaping the environment and vice versa. When analysing environment's characteristics that shapes the child's development, one has to look at various levels, namely these systems: a microsystem, a mesosystem, a exosystem and a macrosystem. Here I am explaining each of them, referring to the case mentioned above and the area of sensory-motor difficulties in a child:

The macrosystem is the widest environment, such as culture, knowledge and theories, belief system, lifestyle, patterns of social interaction, socio-economic status and so on. All these factors of macro system influence the way the child develops. Giving the settings in England, it could be said that the fact that majority of children spends their early childhood in day-care services (kindergartens), while parents work is a great macro factor influencing the child. It is a lifestyle factor. This way there is only few adults taking care of larger number of children. And this is possibly of the reasons, why the children with sensory-motor difficulties are not usually recognized in early stages of development.

The exosystem refers to indirect effects of e.g. legislation on national, municipality level (laws, regulations and policies), financial situation of a state, or existence and quality of various services (welfare, social, health, educational services). Regarding the settings in England, Goddard Blythe et al. (2009) mention that physical development of the child is not a major part of teacher training. Some learn something about Piagetian stages of development, but only early years specialists have good understanding of the importance of sensory-motor development to support later cognitive skills. In terms of health care or psychological services, England may lack policies that would screen and recognize potential difficulties in sensory-motor development.

The mesosystem includes factors like home environment, kindergarten or school. As a trend in many highly developed countries, a kindergarten became a place where a child usually spends majority of his/ her early childhood. For example, National Institute of Child Health

and Human Development - Early Child Care Research Network (2003) states that United States has experienced major changes in childrearing arrangements for young children over the past 25 years. This transformation stems from increased maternal employment associated with changes in the role of women play in society. Today, the majority of mothers in United States return to work after having a child before their child's first birthday. And due to this tendency, it is only logical that kindergarten teachers are the ones responsible for child's wellbeing, upbringing, and development. Therefore, the very characteristics and quality of educational institutions and personnel have impact on child's welfare and development. In the story at the beginning, Goddard Blythe et al. (2009) mentions lack of kindergarten teacher's knowledge about sensory-motor development, which may or may not be derived from the factor in exosystem I mentioned above. Actually, all these systems influence each other.

The microsystem is a relationship between the child and his immediate environment, namely child's interaction with e.g. caregivers, siblings or teachers. This level of interaction is currently considered the critical part of success for any early intervention efforts. It is believed, that taking into account the child's socio-cultural context is essential to get positive outcomes from any services.

These findings in England settings led me to wonder, whether the situation is similar in other countries. Are children with sensory-motor difficulties recognized in their early years of development? I think it is an important question that may point a light on a serious gap in net of early intervention services, teachers' tasks in kindergartens and elementary schools or content of university preparation for relevant professions. And it would be most proper to investigate all levels of the environment, where the child grows up and develops, taking the ecological perspective in consideration.

1.2 Statement of the research problem

This study, however, could not cover all the areas I have just mentioned above. My interest had to be limited on a realistic goal, since I do not have many experiences with social research.

Reflecting Bronfenbrenner's (1979) ecological perspective, I chose to investigate kindergarten teachers' judgment, regarding recognition of the child with sensory-motor difficulties (the microsystem). The reason for that was that I believe that kindergarten teachers

are an essential aspect in the net of early intervention services. Moreover, I also decided to investigate existing screening strategies for sensory-motor difficulties, reflecting meso-, and exosystem.

This research is also focused on early years of a child, namely from 3 and ½ till 6. That is because according to a theory I will describe more closely in following chapter, sensory-motor difficulties may be identified after 3 and ½ years. I decided about the upper limit of 6 years, because I want to investigate if children with sensory-motor difficulties can be identified before school start.

I formulated the key questions of this research as following:

- Are children (from 3 and ½ to 6 years old) with sensory-motor difficulties recognized in kindergarten settings?
- How are they recognized?

In order to rephrase these questions and elaborate on them, I developed following sub-questions:

- How are kindergarten teachers concerned about sensory-motor difficulties in a preschool child?
- Are kindergarten teachers generally more concerned about a particular type of sensory-motor difficulties?
- Do kindergartens have any special routines for screening/assessment children for any sensory-motor skills or difficulties?

1.3 Research location

The research was conducted in Norway. This country is remarkably highly developed in very many areas and therefore, could show positive practice regarding recognition of children with sensory-motor difficulties in early years.

One of the positive sides of Norway is high equality between men and women. According to the Global Gender Gap Report by Hausman, Tyson and Zahidi (2012), Norway was ranked as

one of the world's leading countries in closing the gender gap. This fact associates with the general trend I have described above. The majority of both parents in Norway want to work actively, or they need to do that due to economic reasons. This leads to the reality that majority of children spend their early childhood in day-care centers (kindergartens). This is confirmed by statistics that shows that the request rate for a place in a kindergarten has been steadily increasing during past years (Drugli, 2008). But dealing with increasing number of children requires complex solutions, if the quality of care should continue. The number of kindergarten personnel should increase as well. Fortunately, Kommune-Stat-Rapportering (KOSTRA) [Municipality-State-Reporting] (2012) reported that the number of kindergarten teachers has been increasing. Density of employees is better in municipal kindergartens than in private kindergartens. The number of leader teachers increased by 5% from 2011 to 2012. And this is an optimistic development, because the more personnel there are, the more care and attention the child can receive. And that is an essential aspect, regarding recognition of sensory-motor difficulties in early years.

Other aspects are legislative. According to Lov om barnehager [Kindergarten Law] §2 (2005), kindergarten is a pedagogical establishment and should provide opportunities for play, meaningful experiences and activities for the child. But besides various pedagogical tasks, a kindergarten should provide care. In Rammenplan for barnehagens innhold og oppgaver [Regulations for kindergarten's content and duties] Kunnskapsdepartement [Ministry of Education and Research] (2011) states that a child has a right to care and shall receive care. Kindergarten personnel have professional ethical duty to provide care for all children in the kindergarten. Care is defined as following: Care is closely linked to upbringing, health and safety; and is an important precondition for child's development, learning and upbringing. The duty of care requires from the personnel their attention and openness towards individual and unique characteristics of every single child.

Lov om barnehager [Kindergarten Law] (2005) §17, 18 describes kindergarten's personnel as following: A kindergarten should have a pedagogical leader with higher education as pre-school teacher or different three-years pedagogical education of higher education with extended education in kindergarten pedagogy.

Norway sees a child in holistic perspective and therefore has several social, health and care institutions responsible for children's development. These are helsestasjon [preventive health care services], skolehelsetjeneste [school health care services], pedagogisk-psykologisk

tjeneste (PPT) [pedagogical-psychological services] and barnevern [child welfare services] (Christiansen & Nordahl, 1993). It is municipality's responsibility to provide the services that citizens have right to. A better working cooperation between the named health, social and care services and educational institutions is a current ongoing debate (Andreassen, 2011).

§2 of Lov om barnehager [Kindergarten Law] (2005) says that a kindergarten should respect child's age, level of functioning, gender, social, ethnic and cultural background. But at the same time, §21 describes a kindergarten teacher's duty of referring a child to social, health and care services in a municipality in certain situations. Kindergarten personnel shall be attentive to conditions that should be referred to these services and take initiative to forward the information. The referral is usually given by a head of a kindergarten and always has to be given with agreement of the client, meaning the parents of the child.

This study was limited geographically, considering my research skills and resources. I chose Oslo municipality, the capital city of Norway, because of the size of the area and potential variability within it, regarding assessment practices (the last research sub-question). Oslo municipality has 623 966 citizens according to statistics from 1.1 2013. The municipality is divided in 15 districts: Alna, Bjerke, Frogner, Gamle Oslo, Grorud, Grünerløkka, Nordre Aker, Nordstrand, Sagene, St. Hanshaugen, Stovner, Søndre Nordstrand, Ullern, Vestre Aker and Østernsjø. In total, there are 850 kindergartens, both private and municipal. Out of that, there are 350 municipal kindergartens with more than 35,000 children between 0 and 6 years old. I chose to focus on those, because of my last research sub-question and the fact that the private ones are regulated differently as communal kindergartens (Oslo municipality, 2013).

In the following chapter, I'm describing the theoretical framework connected to sensory-motor difficulties in general and also referring specifically to the Norway settings.

2 Theoretical Framework

2.1 Approach

According to Befring (2001), a medical approach in special needs education is the one, focusing attention on a diagnosis, highlighting problems and weaknesses in the child. An alternative to this is an educational perspective, where the focus is on recourses of the child and learning. This study is taking the medical perspective for several reasons. First, as it will be discussed further in this chapter, there is still confusion and lack of research evidence in the complex area of sensory-motor difficulties. Therefore it is still necessary and meaningful to investigate it more deeply, for the sake of possible treatment. Secondly, there is nevertheless certain scientific foundation for assessment and treatment/ training programs available. However, the problem seems to lie in *early* recognition of the child's difficulties, before they develop even more and start influencing child's everyday life and learning. Thirdly, the recognition of the difficulties may help parents and educators to optimize child's environment to his/her needs. By this, I am not arguing that the *diagnosis* itself is helpful in this sense, but identification of child's *actual difficulties*. With this in mind, a later shift to Befring's (2001) enrichment perspective on learning and inclusive education would be desirable, where a child's resources and existing personal repertoire is in focus.

2.2 Terminology and definitions of main concepts

The very core interest in this research is **child's movement/ motor development**. Movement of a child develops gradually on neural basis of maturation of the central nervous system (CNS). Movement starts with involuntary reflexes before the child is born. There are three main groups of reflexes present in the first three and a half years of life: intrauterine, primitive and postural; each controlled on different level of the brain. Intrauterine reflexes, regulated on spinal level, emerge at five to seven weeks after conception and are characterized by withdrawal reflex which involves motor response of entire body of a child. This is in contrast to later developing primitive reflexes (regulated on brainstem level), which are characterized by differentiated response in a particular part of the body (except the Moro reflex). Primitive reflexes emerge in the womb, beginning with the Moro reflex at 9-12 weeks after conception

and help the child survive first six months. These are also involuntary, based on tactile stimuli, building balance and coordination skills. These reflexes should be inhibited by the developing brain during the first six months of postnatal life of the child (Capute & Accardo, 1991). Primitive reflexes should be transformed into more complex postural reflexes (mediated by midbrain and cortex) in the first years of life. This transition is a result of maturation within lower and higher centers of the central nervous system, but it is also partly environmentally dependent. In this process, primitive reflexes are inhibited to make way for more advanced systems of voluntary movement and postural control. Postural reflexes lay the foundation for automatic reactions needed for the maintenance of posture (righting reactions) and balance (equilibrium reactions), as well as support the control of voluntary movement. These should be inhibited within first three and a half years of a child. Primitive reflexes never entirely desert us, but the process of inhibition puts them to sleep only to be reawakened in disease, accident, or injury results in damage to higher brain centers (Goddard Blythe et al., 2009).

Perception is another key concept in this research, connected with movement/ motor functioning. Perception is a sensory system of human body, and a part of the nervous system responsible for processing sensory information. Perception involves vestibular sense, auditory sense, tactile sense, visual sense, senses of taste and smell, the proprioceptive sense (sense/ awareness of own body scheme, posture) and the kinesthetic sense (Macintyre & McVitty, 2004). The most important sensory systems to acquisition of skilled movement are visual, tactile and kinesthetic sense (sense of movement, spatial orientation). Hearing sense is important, but not as important as aforementioned senses. Vestibular system (sense of balance) is closely connected with vision and proprioceptive system. A person who has a problem with proprioception can still maintain balance by using vestibular function and vision. In the Romberg test, the patient is stood up and asked to close his eyes. A loss of balance is interpreted as a positive Romberg sign. According to a study, children with sensory-motor difficulties had problems with visual memory (memorizing modeled movement) or sensitivity (Chambers & Sugden, 2006).

Very different terminology has been applied to the area in focus in this research, drawing attention to a common feature of immaturity of child's movement development. These are several examples: specific developmental disorder of motor function, developmental coordination disorder, developmental dyspraxia, clumsy child syndrome, sensory processing

disorder, sensory integration disorder, or more recent one, neuro-developmental delay (Henderson & Barnett, 1998, Goddard Blythe et al., 2009). One of the reasons for this diversity is a different assumption about the underlying nature of such functional limitation. Unfortunately, this situation has led to confusion both in research and practice areas. In the research field, the loose usage of overlapping terms, or usage of very different sets of test items, have led to inevitable consequence that different studies cannot be compared and it is currently problematic to conclude a holistic theory. In practice area, Missiuna and Polatajko (1995) have pointed out that usage of particular terms correlates with the assessment instrument chosen and the form of therapy ultimately selected. For example, a child diagnosed as suffering from sensory-integrative dysfunction will usually turn out to have been assessed on a test battery stemming from the work of Ayres (1972), and is likely to be treated by means of Ayres' therapeutic methods. This form of assessment and treatment is very different from that favored, for example, by Laszlo, Bairstow, Bartrip and Rolfe (1988). The latter use the term kinesthetically blind to describe their “clients” and offer a form of treatment directed exclusively towards the improvement of the child's kinesthetic sensitivity.

International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) (World Health Organization, 2010) uses a term **specific developmental disorder of motor function** (code F82) and includes terms **developmental coordination disorder**, **developmental dyspraxia** and **clumsy child syndrome**. It is defined as “*a disorder in which the main feature is a serious impairment in the development of motor coordination that is not solely explicable in terms of general intellectual retardation or of any specific congenital or acquired neurological disorder. Nevertheless, in most cases a careful clinical examination shows marked neurodevelopmental immaturities such as choreiform movements of unsupported limbs or mirror movements and other associated motor features, as well as signs of impaired fine and gross motor coordination.*” In Norway, ICD-10 and a term **spesifikk utviklingsforstyrrelse i motoriske ferdigheter** [specific developmental disorder of motor function] is used officially in clinical praxis. In various norwegian literature, following terms are used: **barn med usikker motorikk** [a child with insecure motor function], or **barn med motoriske vansker** [a child with motor difficulties] (Tytlandsvik, 1999, Brände, E. & Halvorsen, 2003, Haugstvedt, 1996).

Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) (American Psychiatric Association, 2000) uses a term that is also included in ICD-10 – **developmental coordination**

disorder (DCD) (code 315.4) and defines it in 4 criteria. Criterion A states that *“performance in daily activities that require motor coordination is substantially below that expected given the person’s chronological age and measured intelligence.”* Criterion B says that *“the disturbance in criterion A significantly interferes with academic achievement or activities of daily living.”* Criterion C describes that *“the disturbance is not due to a general medical condition (e.g. cerebral palsy, hemiplegia or muscular dystrophy) and does not meet criteria for a pervasive developmental disorder.”* Criterion D explains that *“if mental retardation is present, the motor difficulties must be in excess of those usually associated with it.”* According to a study in United Kingdom by Lingam, Hunt, Golding, Jongmans and Emond (2009) there was prevalence of 18 children out of 1000 at mean age of 7.5 years that had developmental coordination disorder. In Norwegian literature or praxis (e.g. among occupational therapists), you can come across with a terms: **barn med DCD** [a child with DCD], **koordinasjonsvansker** [coordination difficulties] (Zuiden, 2008).

Here I would like to compare ICD-10 and DSM-IV-TR terminology. As for semantics, Henderson & Barnett (1998) state that to practitioners in this area, the terms motor function (ICD-10) and coordination (DSM-IV-TR) are interchangeable, but not synonymous. Coordination has more limited meaning as the term function, which can describe purposeful action in everyday life. As for criterion A: The motor core, both ICD-10 and DSM-IV-TR specify that chronological age and general intelligence should be considered in the process of diagnosis, but only the ICD-10 specifies a distinguishing point for motor impairment in relation to age. Moreover, the two manuals differ radically in the way they deal with intellectual ability. DSM-IV-TR may give the diagnosis even if mental retardation is present. However, the signs have to be in excess to those usually connected with it. As for pervasive developmental disorders, the individuals with attention deficit hyperactivity disorder (ADHD) may for example fall, bump into things, knock things over, but this is usually due to distractibility and impulsiveness rather than to a motor impairment.

However, there are authors, who admit the link between motor and sensory area. Portwood (2000) says that **developmental dyspraxia** is the term used to describe youngsters and adults who have coordination difficulties but who also, in the majority of cases, show significant perceptual problems. Confusion arises when the word dyspraxia is taken in its literal sense. The Dyspraxia Foundation describes dyspraxia as follows: “It is an impairment or immaturity in the organisation of movement. Associated with this there may be problems of language,

perception and thought.” In Norway, unofficially following terms are used (e.g. in kindergartens, occupational therapists): **dyspraxi** [dyspraxia], **motorisk forsinkede barn** [motor-delayed child] (Zuiden, 2008).

Sensory processing dysfunction / disorder (formerly known as **sensory integration dysfunction**) are not a recognized diagnosis in DSM-IV-TR or ICD-10. The founder of this concept is considered occupational therapist and neuroscientist A. Jean Ayres (1972). Compared to the developmental coordination disorder (DSM-IV-TR) and specific developmental disorder of motor function (ICD-10), the definition is wider, including symptoms of sensory/ perception area, that emerge on the basis of primary motor development impairment. Ayres (1972) understands sensory and motor area in close inter-connection in development of a child. The nervous system receives messages from the senses and turns them into appropriate motor and behavioral responses. Sensory processing dysfunction is a condition that exists when sensory signals don't get organized into appropriate responses. Ayres (1972) and her followers like Goddard Blythe et al. (2009) argue that the nature of these problems lies in prevailing primitive and postural motor reflexes in later stages of child's motor development.

Referring to the same area, Goddard Blythe et al. (2009) prefers a term **neuro-developmental delay** than sensory processing disorder, stressing that the nature of symptoms are wider than just sensory. Even though, the sensory processing disorder refers to the same wide spectrum. Goddard Blythe is a consultant in Neuro-Developmental Education and a director of the Institute for Neuro-Physiological Psychology in England. She explains in detail the process of development of motor skills, posture and balance and how exactly the delay emerges. A child is usually born equipped with series of primitive reflexes to help him survive the first few weeks and months of life. These reflexes are connected into brainstem. They are active for the first six months, but from the moment of birth, they start a gradual process of inhibition by higher centers in the brain. As primitive reflexes are inhibited, the postural reflexes emerge and gradually take over many of the functions of primitive reflexes. Postural reflexes take up to three and a half years of age to be fully developed. Goddard Blythe et al. (2009) define the term neuro-developmental delay as *“the continued presence of primitive reflexes above six months and underdeveloped postural reflexes above the age of three and a half. This provides evidence of immaturity in the functioning of CNS and will influence the development of posture, balance and motor skills.”* The concept that abnormal primitive and postural reflexes

can persist in the general population (in the absence of identified pathology), is currently problematic due to lack of supportive research. However there *is* an increasing body of evidence to support this theory.

Sensory processing dysfunction or neuro-developmental delay are rarely clinically diagnosed as a “stand alone” disorders, but are typically described within another diagnosis (larger picture): autism spectrum, ADD, ADHD, specific learning disabilities, Down syndrome, cerebral palsy, traumatic brain injury, fragile X syndrome, mental retardation, obsessive-compulsive disorder, reactive attachment disorder, fetal alcohol syndrome, Angelman’s syndrome, or bipolar disorder (Emmons & Anderson, 2005). However, there researchers like Ayres (1972), Macintyre and McVitty (2004) or Goddard Blythe et al. (2009) argue that a child may develop sensory-motor difficulties only. These cases are not rare and therefore a separate diagnosis and treatment should be recognized in official manuals like ICD-10 or DSM-IV-TR. Sensory Processing Disorder Foundation (2013) is currently appealing the committee that is preparing a new revision of DSM-V, coming in 2015, to include this "novel diagnosis in need for further research." Even though, the diagnosis is not so novel.

From this, it is apparent that it is hard to find “the right diagnosis” for a child. But a diagnosis should not be the goal at all. The goal needs to be to help a child, to optimize the environment for his/ her development to learn and to grow. For the purposes of this research, I chose use terms **sensory-motor difficulties** referring to mutual signs of all the previously mentioned concepts: specific developmental disorder of motor function/ developmental coordination disorder/ developmental dyspraxia/ clumsy child syndrome/ sensory processing disorder/ sensory integration disorder/ neuro-developmental delay. The reason behind is that I chose to address the research questionnaire to kindergarten teachers and I considered the term sensory-motor difficulties would be more understandable and feasible in educational environment than the clinical terms.

2.3 Sensory-motor difficulties

A great heterogeneity of the difficulties in sensory-motor area has been experienced by children. Wright and Sugden (1996) note that not only are the differences in children revealed in their range, but also pervasiveness of the problems. For some children, the difficulties they experience may be evident in fine motor tasks or gross motor tasks. For some, the difficulties

they experience may be due to the environment, in that it limits the child's movement opportunities. For other children, their lack of motor control is evident in every area and variability of severity is evident in this situation also. These difficulties may arise from difficulty in task execution, poor planning of motor tasks, a lack of understanding, or a cognitive difficulty with the task and how it fits with other movements. The basic fundamental skills of sitting, standing, walking, running, reaching and grasping always emerge even though they may be delayed or the quality of their performance may be lower. The authors refer to definition of developmental coordination disorder and synonymous definitions.

According to the theory of neuro-developmental delay, developmental dyspraxia and sensory processing disorder, a child may manifest difficulties both in sensory and motor area. This differs from diagnostic criteria of DSM-IV-TR, where the signs of impaired sensory functioning would be linked to different diagnoses (e.g. easy distractibility - ADHD). Portwood (2000) is giving a long list of possible observable behaviors in children with developmental dyspraxia:

- Up to the age of three: persistent feeding difficulties (food intolerance, a child will only accept certain consistence – e.g. pureed), sleeping difficulties, uncoordinated movements, unsteady walking, falls easily, move with wide gait, unable to pedal a tricycle and prefers using sit-astride toys which do not require hands and feel to be coordinated simultaneously, difficulties with fine motor skills (playing with pegs, avoiding scribbling and using crayons and pencils), high levels of activity, sensitive to high levels of noise or changes in light intensity, delayed toilet training, avoidance constructional toys, delayed language development, difficulties with articulation rather than comprehension, highly emotional, very limited concentration.
- Between 3 and 6 years: Insecurity (problems separating from adult), high level of motor activity, high level of excitability (often loud, temper tantrums for no apparent reason), problems with coordination (walking on tiptoes with poor balance and hands waving, dislikes climbing activities, anxious with heights, bumping into objects and falling over, movements in the hands when feet are moving, hands flap when the child is running or jumping), difficulties pedaling, lack of sense of danger – estimation problems (jumping from inappropriate heights), feeding difficulties persist (pickiness – sensitivity problem, prefers using fingers than tools – coordination issues), avoids

constructional toys, poor fine motor skills, lack of imaginative play, peer group isolation, laterality not established, delayed acquisition of language skills, sensitive to sensory stimulation (dislikes noise, to be touched, wearing particular clothes, dislikes usual smells – e.g. new washing powder for clothes), limited response to verbal instructions (problems with auditory sequencing), limited concentration.

Emmons and Anderson (2005) use term sensory dysfunction and give the following list of observable behaviors: overly sensitive/ under-reactive to touch, movement, sight, or sounds, activity level that is unusually high or low, difficulties with coordination, delays in speech and language skills, problems with motor skills, academic achievement, poor self-concept, difficulties with executive functioning, challenging behaviors. And more specifically for a pre-school child: unusually anxious, high/ low tolerance of pain, sleep pattern, bothered by tags/ clothing/ textures, very picky eater (certain temperatures/ tastes/ textures of food are aversive or craved, does not know when s/he is full, vomits or gags easily, very sensitive/ oblivious to noise or confusion surrounding him, craves or aversion to certain physical activities, proprioceptive difficulties (when jumping, stairs, hopping, lifting heavy things), vestibular issues (when swinging, spinning, rocking, sliding), tactile oversensitivity (hates to be touched, or has hands all over everyone and everything, insists on certain textures), persistent drooling, strong preference for or aversion to specific playground equipment, chew on things very often, clumsy with fine motor activities (when eating, drinking, using writing utensils), clumsy with balance and coordination (difficulty riding and using age-appropriate toys like big wheel, tricycle, pull toys, tracking balls, kicking balls), lack of hand dominance, difficulty crossing midline, hypotonic (poor posture), instability (lack of balance, falls out of chairs easily)

Naturally, there are behaviors observable in later years, but since this research is focused on early years, I will not give more details.

However, Goddard Blythe (2004, 2005), Goddard Blythe et al. (2009), Ayres (1972), Berg and Kippe (2006) explain in detail, how particular prevailing primitive and postural reflexes (prevailing after 3 and a half years of a child) influence child's development and cause particular sensory and motor difficulties that could be noticed in early years. Here I give several examples:

- Sensory and motor difficulties associated with a retained Moro reflex may be following: delay in the establishment of head control, voluntary sitting and other developmental milestones (e.g. walking, crawling); hypersensitivity and overreactivity to specific or sudden stimuli (e.g. to sound - unexpected noise, loud noise, specific frequencies of sound); vestibular-related problems such as motion sickness, which continues beyond puberty; gravitational insecurity; poor balance and coordination (e.g. hand-eye coordination - difficulty catching a ball - processing rapidly approaching visual stimuli); immature eye movements and visual perceptual abilities (e.g. inability to ignore irrelevant visual information within a given visual field). These difficulties can result in difficulty sustaining attention and increased distractibility (Ayres, 1972, Goddard Blythe, 2004, 2005, Berg & Kippe, 2006, Goddard Blythe et. al. 2009).
- Tonic labyrinth reflex in later years of a child may be connected with insecure balance, postural and coordination problems (e.g. gross motor skills like catching, throwing, kicking, running, jumping, hopping), clumsiness (e.g. dropping objects, bumping into furniture, tripping), hyper-/ hypo-tonus, vestibular-related problems (gravitational insecurity, motion sickness, vertigo, and spatial problems), visual problems, vestibular-cerebellar-related problems (sequencing, time orientation), toe walking, articulation problems (Ayres, 1972, Goddard Blythe, 2004, 2005, Berg & Kippe, 2006, Goddard Blythe et. al. 2009).
- Asymmetrical tonic neck reflex, when retained, leads to difficulties in development of laterality, bilateral coordination or crawling milestone (Ayres, 1972, Goddard Blythe, 2004, 2005, Berg & Kippe, 2006, Goddard Blythe et. al. 2009).
- Effects of residual symmetrical tonic neck reflex are in issues in coordination of upper and lower body parts (rolling, swimming), hypo-tonus, eye-movement problems (Ayres, 1972, Goddard Blythe, 2004, 2005, Berg & Kippe, 2006, Goddard Blythe et. al. 2009).
- Retained palmar grasp reflex causes poor manual dexterity (e.g. while cutting, coloring, painting, writing), poorly developed pincer grip (problems with feeding, using tools), palm of the hand may remain hypersensitive to tactile stimuli, mouth and hand movements do not become independent (speech and manipulation problems – e.g. involuntary hands are involuntary active while speaking) (Goddard Blythe, 2004, 2005, Berg & Kippe, 2006, Goddard Blythe et. al. 2009)..

- Residual plantar reflex leads to hypersensitivity in feet area of a child, toe walking, gravitational instability (difficulties with posture and balance) (Goddard Blythe, 2004, 2005, Berg & Kippe, 2006, Goddard Blythe et. al. 2009).
- Rooting reflex, when retained, causes hypersensitivity to tactile stimuli around lips and the mouth, dribbling, articulation problems (Goddard Blythe, 2004, 2005, Berg & Kippe, 2006, Goddard Blythe et. al. 2009).
- Sucking reflex influence child's sensitivity to foods that require chewing (the child might dislike or avoid some usual food consistence), immature swallow pattern, continued desire for oral stimulation (chewing on clothes, toys, sucking a finger) (Goddard Blythe, 2004, 2005, Goddard Blythe et. al. 2009).
- Retained spinal Galant reflex causes that a child might experience difficulty sitting still, be generally restless, have issues with maintaining attention and concentration, bed-wetting (Goddard Blythe, 2004, 2005, Berg & Kippe, 2006, Goddard Blythe et. al. 2009)..

It should be stressed again that the heterogeneity of sensory-motor difficulties. Every child is different and the difficulties they experience differ in range, level of severity and in persistence over time.

2.4 Other consequential difficulties

Previously mentioned sensory-motor difficulties may have other consequential impacts. According to International Classification of Functioning, Disability and Health (ICF) (World Health Organization, 2001) and ICD-10 definition, a child with specific developmental disorder of motor function may experience difficulties not just on body functions/ structures level, but also on participation levels. According to a research by Causgrove Dunn and Dunn (2006), children sensory-motor difficulties, participate less during motor activities during school breaks, and spend less time engaged in assigned activities during physical education classes and spend more time engaged in off-task behaviors. This significantly interferes with activities of daily living or academic achievement. Emmons and Anderson (2005) add that the child might develop gradually poor self-concept or challenging behavior. Child's self-esteem and self-concept is shaped by child's environment in the early years. Therefore parents and all professionals should strive to enhance the self-esteem of children in their care, especially if

the children are more sensitive, vulnerable or consider themselves “different” in any negative way. Difficulties in motor-sensory in a child can significantly contribute to misunderstandings among peers and become a cause for social exclusion of the child or other ways bullying. Children who seem vulnerable in some way are usually at risk of becoming a target of bullying. In early years, that might refer to children with sensory-motor difficulties, because skills like running, jumping or ability to kick a ball during free play are highly valued among children. In early years following patterns of bullying could be observed: sustained taking toys, physical attacks (pushing, biting), name-calling, in later years (5-6) threats to cause hurt (Macintyre & McVitty, 2004).

Sugden and Chambers (2006) argue that there are studies that have shown that developmental coordination disorder may co-exist with some of the developmental disorders, like developmental dyslexia, ADHD, autistic spectrum disorder or specific language impairment. Emmons and Anderson (2005), Goddard Blythe (2005, 2009), Ayres (1972) propose a closer connection between sensory-motor difficulties and specific learning difficulties. They emphasize that forenamed prevailing reflexes are not present in *all* children with specific learning difficulties and behavioral or emotional problems, and that the etiology of these disorders is multi-factorial. Nevertheless, they argue that physical readiness has a great impact on learning. For example, reading skills involve development and control of smooth eye movements to send an orderly flow of sequential information to the brain. Also developed hand-eye coordination, ability to sit still and pay attention, requiring postural control, balance and orientation are skills involved in reading process. The mentioned areas are rooted neuro-physiologically and the reflexes play a crucial role in supporting and flexibility of these skills.

2.5 Identification of sensory-motor difficulties

According to Diken and Diken (2008), the concept of early intervention is currently embedded in theories about the role of environment in child’s development. It depends of various environmental factors whether child’s emerging difficulties in sensory-motor functioning would be identified. Bronfenbrenner (1979) divided the environment into 4 dimensions, systems that need to be considered regarding identification of the child with sensory-motor difficulties: A microsystem is a pattern of activities, roles and interpersonal relations experienced by the child in a given setting with particular physical and material characteristics. A mesosystem comprises the interrelations among two or more settings in

which the child actively participates (the relations at home, school, and neighborhood peer group). An exosystem refers to one or more settings that do not involve the child as an active participant, but in which events occur that effect, or are effected by, what happens in the setting containing the child. A macrosystem refers to consistencies that exist at the level of subculture or the culture as a whole, in the form and content of lower-order systems (micro-, meso-, and exosystem). For example, intrasocietal contrasts, socioeconomic, ethnic, or religious differences, belief systems, lifestyles.

Reflecting the microsystem (Bronfenbrenner, 1979), child's sensory-motor difficulties may be recognized during interaction (shared activity) at home by parents/ caregivers, at the pre-school age by kindergarten personnel, the health visitor or by general practitioner during regular health check-ups. Occasionally the child's difficulties may be noticed in free time playground by other present adults and mentioned to the caregivers. Following identification of sensory-motor difficulties, the child may be referred to a paediatrician who may then refer the child and his/ her parents for specialist advice or placement in the local child development centre (Boon, 2001). On this ecological level, identification of sensory-motor difficulties depends particularly on quality of adults' judgment and decision making process.

Regarding meso- and exosystems, identification of sensory-motor difficulties depends on e.g. existence of screening routines in early years, or content of regular check-ups in health services. This level reflects regulations and practice on various levels of educational and health institutions. In educational settings, there may be different system procedures regulated by e.g. a particular kindergarten, a district, a municipality or state.

2.5.1 Judgment and decision making

Whether the child with sensory-motor difficulties would be recognized, depends on adults' judgment and decision making, as to what action would they choose to help the child.

Judgment is a cognitive evaluative process and is closely connected with many factors like knowledge, emotions, attitudes, level of stress, or age. (Neumann, Förster, & Strack, 2003).

According to Weekley and Ployhart (2006), judgment is influenced by cognitive ability, personality, experience and knowledge. Hardman (2009) states following general characteristics of human judgment:

- People are inconsistent in judgment and decision making.

- People sometimes rely on information that they think is relevant, but actually has little or no bearing on the thing they are trying to assess.
- People may consider relevant information, but weight it in the wrong way, when making a judgment.
- When receiving additional information, people are more prone to identifying individual cases as exception to the rule.
- Individuals working in particular domain may also be exposed to a skewed sample of events.
- When making a judgment, people may be influenced by recent experience or by irrelevant variations in the way a task is described.
- People's judgment may be affected by fatigue or boredom.
- When people are uncertain about how to judge an event, they attach to these events as they were assessing likelihood.
- People's perception about their knowledge about the domain in the question is in play.

As for educational (kindergarten) settings of this research, kindergarten teachers' knowledge of sensory-motor development of a child is an essential aspect of judgment, decision making process, and eventually identification of the child with sensory-motor difficulties. In Norway, according to Rammenplan for førskolelæreutdanning [Curriculum for pre-school education] regulated by Utdannings- og forskningsdepartementet [Ministry of Education and Research] (2003), a kindergarten teacher shall:

- have knowledge of child's physical and sensory-motor development and its meaning for child's learning and whole development.
- have knowledge of how various types of physical activities influence child's sensory-motor development and physical and psychical health.
- have knowledge of how to adapt outdoor activities for children.
- have an insight into causes of sensory-motor difficulties and be able to adapt physical activities for a child with a need for special support and help.
- be able to observe and assess child's physical activity and sensory-motor development and adapt activities for all the children.
- be able to organize a movement play and justify it.

This means that kindergarten teachers in Norway are supposed to acquire relevant knowledge of sensory-motor development and difficulties in early years of a child and that could be a

positive aspect regarding identification of these children. However, as it was mentioned, the judgment process is complex and depends on more aspects than knowledge. Therefore, it is still meaningful to investigate kindergarten teachers' judgment in this area more.

2.5.2 Screenings and other systemic routines

In England, there may be a screening procedure at school entry, in some Local Educational Authorities, which aims to identify children with delays in various areas of development. In East Kent there is a screening procedure developed to identify children with sensory-motor difficulties, using a checklist completed by teachers, which was followed up by using the Test of Motor Impairment. There are also other screenings used among schoolchildren and some of the schemes cover also physical development (Boon, 2001). Chambers and Sugden (2006) developed a checklist for teachers, parents and other professionals to identify and assess motor performance of children between 3 and 5 years old.

In Norway, every child must participate on several general check-ups at pediatrician since being born. Majority (11) of them happens until 18th month. Later there are check-ups in 2, 4 and 5 years, before school start. This research is focused on a child from 3 and ½ till 6. Therefore I'll give closer description of check-ups in 4 and 5 years. Both of them have similar content. A child is examined thoroughly: practical aspects (e.g. whether the child can get dressed and use toilet), social aspects (e.g. whether the child can easily interact with other children), development of speech, cognition and other psychological aspects (but only if the doctor is suspecting difficulties in child's development), hearing sense, child's height and weight, heart and lungs function (stethoscope), child's walking style and posture (Sosial- og helsedirektoratet [Social and health directory], 2004, Berg, 2000). This way some of the sensory-motor difficulties may be identified.

A child may also be identified at the age of 6 in the process when s/he is transferred from a kindergarten to a school. The kindergarten's leader teacher with parents' and the child's cooperation fill up a form about the child's development,. The form is specifically focused on speech (understanding, expression, articulation). Other functioning areas are meant to be covered in a general question: Are there situations or areas where the child needs special care of follow up? (Oslo commune, 2013)

2.6 Assessment

A pediatrician may recommend the child to the local child development centre (helsestasjon [preventive health care service] in Norway), where there is number of specialists available: physiotherapists, occupational therapists, speech and language therapists, social workers and educational psychologists. If the professionals working with the child feel that s/he needs extra provision or a special school placement when s/he reaches school age, they will start a procedure that may eventually mean the child receives a statement of special educational needs (Boon, 2001).

According to Henderson and Sugden (1992), there are numerous problems relating to the assessment of sensory-motor difficulties in children that are yet to be solved. At first, there is absence of a “gold standard,” equivalent to the role of the Wechsler Intelligence Scale test (WISC) in the cognitive domain and with its supportive data base accumulated from very extensive usage. Although the Movement Assessment Battery for Children, Test of Motor Impairment (Stott et al., 1984) and the Bruininks–Oseretsky Test of Motor Proficiency (Bruininks, 1978), together with the Southern California Sensory Integration tests of Ayres (1989) probably comprise the most frequently used standardized tests, none enjoys the status of the WISC.

Another issue that remains unresolved is the question of what a fully comprehensive assessment of sensory-motor impairment should contain. Although we lack an agreed taxonomy of motor skills, common sense and clinical experience has led to some consensus. Manuals usually mention a range of everyday life skills which may be broadly categorized as either requiring “gross motor control” (e.g. walking, running, or hopping), or “fine motor control” (e.g. bead threading or cutting with scissors). For many of these skills, performance can be fairly easily quantified and age norms are available. Other skills which children with sensory-motor difficulties find exceptionally complicated to acquire are remarkably hard to measure. “Self-help” skills such as tying shoe laces, fastening buttons and using a knife and fork are good examples. They can be examined qualitatively with good reliability but without some knowledge of the child's past experience at home and school; it may be difficult to interpret failure when it occurs. Especially among younger children, an inability to fasten buttons or put on a sweater may simply be due to the fact that the child is cared for by a minder who does everything for him/her. Similarly, a child's handwriting is difficult to

evaluate unless one knows how the child has been taught in school and whether s/he has additional literacy problems. Finally, some aspects of performance such as the control of eye movements and vocal articulation have traditionally been treated separately from other aspects of motor functioning. Despite the fact that these aspects are often impaired in children with sensory-motor difficulties, they are not included in standardized assessment instruments. In sum, although they vary in their coverage, the assessment instruments that are commonly described as functional, share two useful characteristics. They offer a reliable way of determining whether a child's performance is below that expected for his/her age and provide some information on the range and severity of the child's movement difficulties. Such tests play a crucial role not only in the identification of children with difficulties, but also in the subsequent decision making about service provision. Whenever we move beyond this level of analysis, however, to consider treatment, the issue as to what should be assessed becomes more complex (Henderson & Barnett, 1998).

In Norway, a neurological assessment includes following elements that are tested:

- general examination (speech, orientation, consciousness, neuro-psychiatric examination – intelligence, emotions, behavior, memory, perception, social skills, and danger awareness), brain nerves, collum (neck), spine, reflexes,
- walking – balance, turning around, tiptoe walking, heel walking,
- motility – muscle tone, tempo, power, flexion, posture,
- coordination – eye lid movements, finger-nose test, knee-heel test. Lack of coordination skills are considered as *soft signs*, requiring further examination before deciding about diagnoses.
- sensitivity – senses, light touch and pain, proprioceptive sense,
- reflexes – are always tested, but primitive reflexes are tested only when there is a suspected cognitive weakness or dementia (Fuller, 2008, Douglas, Nicol & Robertson, 2009).

2.7 Early intervention

Any concern for the development of a child may naturally bring a worry to parent and from a professional point of view to a teacher or pediatrician. This automatically leads to a desire to remediate the difficulty as quickly as possible. However, even though it is known that early intervention is usually beneficial, caution is advised. First, early identification of any

difficulty can lead to fixed views about the child and his/ her difficulties, and might be actually incorrect. There are multiple variables that have effect on child's development and these can change. Thus any view on the child should not be fixed and early identification should not be early "prediction". Secondly, there are various reasons why a child may not be following the usual course of development and a child need to be seen in holistic, ecological perspective, in context of environment. As a first step, a child needs to have an opportunity to participate in the motor activities and experiences one normally sees in the developing two to seven-years-old. In many cases, a child's difficulties can be traced to a lack of exposure to the full range of expected movement situations (Chambers & Sugden, 2006).

One of the early intervention methods is "low level experiential" intervention. It should be aimed to the needs of the child, but at the same time as little intrusive as possible, beginning the intervention in the classroom settings, among child's usual peer group. Only lack of effect of this method should be a reason for a child to be withdrawn for special attention. A child may be referred to a pediatric occupational therapist or physiotherapist, who should not only assist the child in therapy sessions but should also provide guidelines as to what parents can do on a daily basis at home. In educational system, the situation is slightly different. A teacher should discuss the issue with parents and suggest some form of intervention which can be done in the classroom or through a visiting professional such as a physiotherapist or occupational therapist. Parents and teachers have an advantage when working with a child, because they see the child on daily basis and follow the golden principle of early intervention: a little and often. That is, it is more beneficial for the child to engage regularly activities for a short period of time rather than for one or two longer sessions over a protracted period. On the other hand, specialists have the obvious advantage of knowledge and skills in the area. The ideal situation is for both parents and teachers and specialist professionals to work together, empowering parents and teachers by giving proper guidelines (Chambers & Sugden, 2006).

On the contrary, Kurtz (2003) don't consider it constructive, if e.g. pediatricians believe that the child will "outgrow" motor coordination difficulties and advise parents to withhold formal testing or intervention until the child is older or is showing significant functional limitations. This "wait and see" approach is often not in the best interest of the child or the family who must cope with s/he's frustration. The purpose of the early assessment is not to make a medical diagnosis, or child's developmental potential, but to determine whether a child might need extra provision of services. And as theory of learning and development by Vygotsky

(1978) argues, the adult needs to reflect actual level of mastery of the child and estimate the nearest point of s/he's development. The gap that the child would be about to reach is called the zone of proximal development. This means that no matter if a child has or has not the medical diagnosis, a set of actions in order to help the child move forward from the actual point of his development is desirable.

The concrete treatment programs offered by specialists differ based on the theory of the nature of underlying causes of sensory-motor difficulties or the theory of development they hold. Most therapists use a developmental frame of reference to guide therapy evaluate the child's current level of motor development and anticipate what should be the next step in the typical developmental sequence. Next, the therapist attempts to identify any biological or environmental factors that might be corrected or modified to enhance the child's potential for success in the next small stage of motor development. Activities are planned in order to pose a small developmental challenge, and to be motivating and fun for the child (Kurtz, 2003).

There are also a number of specialized approaches to therapy for children with sensory-motor difficulties that are commonly practiced by occupational therapists or physical therapists. The most popular are sensory integration therapy and neurodevelopmental therapy. Here, experimental psychologists or neurologists refer to highly specific processing deficits. For instance, one theory states that an impairment of sensory integration underlies poor coordination; while another holds that poor kinesthetic acuity is the cause. Yet another favors a deficit in visual perception. However, none of these theories have shown valid and reliable evidence of efficiency of their treatment programs (Henderson & Barnett, 1998, Hyatt, Stephenson, & Carter, 2009).

Nevertheless, there is various literature available, offering strategies for promoting sensory-motor fundamental skills (e.g. body awareness, motor planning, bilateral motor integration, visual tracking skills, balance skills, fine motor coordination) and specific motor skills, independence daily living skills (e.g. dressing, mealtimes, personal hygiene). There are strategies and accommodations to be taken in educational environment, regarding seating, positioning the child, handwriting skills, organizational skills, how to foster positive self-image of the child that is at risk, how to encourage child's relationships among his peers (Kurtz, 2003).

2.8 Conclusion for this research

Theoretical foundation about sensory-motor difficulties varies among health scientists. Different categorization and terminology are used, different assessment and treatment methods applied, but this is not the issue of this research. Not the diagnosis, but the child's actual difficulties. The key issue seems to be actual identification of the children with emerging difficulties in sensory-motor development. And that lies in quality of adults' judgment of how they evaluate and judge the situation, if they see the child meets sensory-motor difficulties and how they choose to respond to it. Would they choose the "waiting" strategy until the child develops the issues even more, or address the emerging issues right away, contacting a specialist to help them understand child's difficulties? Have national and local health or educational authorities cooperated and developed screenings or other systemic routines for assessing sensory-motor functioning of every child in early years? These are questions of this research.

3 Methodology

3.1 The nature of the research

The philosophical approach of this research was postpositivistic. Gal (1996) defines postpositivism as *“epistemology that assumes an objective reality, but that this objective reality can only be known imperfectly. According to postpositivism, theories about objective reality cannot be validated in an absolute sense, but their validity can be strengthened through their resistance to research efforts to refute them.”* Postpositivistic epistemology of educational research provides a different, critical perspective on existing literature and research on the topic.

3.2 Research design and technique

In order to address the research questions, the most appropriate research design I considered **survey design**. The reason was that the research questions were formulated in order to search for an overview of a situation and to seek a possibility to make generalizations about the reality in a population. And that is the nature of the survey design according to De Vaus (2002). Other research techniques like a qualitative interview or observation. These are intensive research designs, providing rich data about real life people and situations. However this way, the data are so detailed it becomes especially difficult to compare the data among the cases (Gall, Gall & Borg, 2007). Therefore, survey quantitative design was the best choice in this research project. De Vaus (2002) defines a survey research design as a process of gathering structured and systematic data. Information about the same variables or characteristics is collected from at least two cases and end up with a data grid. Since the same information is collected for each case, the cases are directly comparable. And that is the distinguishing feature of surveys. Survey seeks an understanding of what may cause some phenomenon by looking at variation in a variable across cases, and by looking for other characteristics which are systematically linked with it. The aim is to draw inferences and then search for reasons behind the phenomenon. However the causal links has to be treated carefully. Simply to claim that two things are connected together does not prove a causal link. In this study, I was focused on acquisition of **quantitative** data. Even qualitative data in open-ended questions were coded to give quantifiable information. It provides certain types of

factual, descriptive information – the hard evidence. However, quantitative survey design is sometimes seen as being sterile and unimaginative. Gall, Gall and Borg (2007) say that the use of quantification to represent and analyze features of social reality is consistent with positivistic epistemology, because it assumes that features of social reality have constancy across time and settings, a particular feature can be isolated and it can be conceptualized as a variable. These values can be expressed as a numerical scale.

De Vaus (2002) argues that in survey research design the technique by which we generate data about the cases can vary between surveys. We might collect information by giving a questionnaire to each person, interviewing or observing each case, by extracting information from records. I chose **questionnaire research technique**, because it collects data about phenomena that are not directly observable: for example inner experience, knowledge, opinions, values, interests and the like. I was collecting data about individuals' judgment and factual information about their knowledge in a way.

Questionnaire research technique has several **advantages** and those were also reasons why I chose this technique. Questionnaires are highly structured and provide straightforward answers. In this way, it is more convenient way than for example observation. Also it is more efficient when dealing with sample located over a wide geographic area, regarding cost of travel and time. This study was conducted in the capital city of Norway, Oslo. The sample of 267 people was scattered around all districts of Oslo. Therefore I considered questionnaire as the best option for this study. However, questionnaire research technique has also **limitations**. Looking at it from postpositivistic perspective, the collected data might be inaccurate and biased by human factor. It is unavoidable. Another limitation is that questionnaire does not enable researcher to probe deeply into respondents' belief, attitudes, etc., comparing for example with a qualitative interview research technique (Gall, Gall, & Borg, 2007).

Once, decided that a survey was the appropriate methodology for investigating the research problem, the next question was a decision about what data collection method was most advantageous. According to Czaja and Blair (1996), there are three survey approaches: mail, telephone, and face-to-face. De Vaus (2002) adds also web and email questionnaires. Combinations of these are also possible. There is no "best" survey method, because all have strengths and weaknesses.

I decided to conduct **email questionnaire** for its efficiency, regarding financial aspect, time and the geographical area I wanted to cover. According to De Vaus (2002), email questionnaires are powerful research tools, but they have costs and limitations. The researcher needs to have access to a web server and be able to use it; and so the respondents. The researcher has to be able to use specialized software to design the questionnaire, to process the incoming data, to guard against data-security breaches and multiple submissions from the same respondent or submissions from individuals not in the sample. I carried out this study using web-based software **Nettskjema**, provided by University of Oslo. I developed the questionnaire format on my personal account protected by a password. No one else had access to it. I found Nettskjema easy to understand and use. In settings option, I could decide that I want the form to be answered only by invited respondents and that maximum number of submissions per person is one. I was able to use form builder easily, collect responses and follow results data. Respondents could contact me on my university email.

3.3 Population and Sample

In a survey design, the case by data grid is also called a unit of analysis according to terminology of De Vaus (2002). It is the object about which we are collecting information. The units of analyses in this research were kindergarten teachers.

The target population must be carefully defined in any survey design. A sampling frame is a subcategory that lists that population and sampling procedure is the actual process of how population members are selected for the particular research project. The point is that the data acquired for the sample are supposed to be possible to be generalized to the population (Czaja & Blair, 1996).

The **population** for this research were all kindergarten teachers in Norway. However, the last research sub-question “Do kindergartens have tests or other assessment methods for any of sensory motor skills?” brought me to a decision to narrow down the research geographically. Therefore, **purposeful sampling** method was chosen. After an interview with a physical therapist in Oslo, who pointed out that there might be an interesting variation in usage of assessment methods throughout different districts of Oslo, I decided to carry out the research there. The possible variation was supposed to be anticipated on a communal and district level; therefore, I focused on communal kindergartens in various districts of Oslo. I chose to contact

one kindergarten teacher per a communal kindergarten. This way I came up with a number of **350 kindergarten teachers** as my ideal **sample**.

3.4 Questionnaire format

The process of constructing a questionnaire starts with clarifying concepts of the theory, developing indicators and evaluating indicators (De Vaus, 2002). The concepts of this research are defined in the previous chapter. Sensory-motor issues is the key concept. Based on the theory I have developed list of sub-concepts (gross motor skills/ coordination, fine motor skills/ coordination, balance, speech – articulation. anxiety, posture, orientation and sensitivity) and their representing indicators.

According to Czaja and Blair (1996), questionnaires are usually divided into sections that follow some logic. Most questionnaires start with introduction, substantive questions, background or demographic questions. It is common practice in survey questionnaires to obtain some information about e.g. gender, age, race, education, marital status, income. There is no standard about the questions.

Conducting a web questionnaire, I placed my introduction in an invitation text in the email sent to each participant, with a link to the questionnaire in Nettskjema. The invitation text contained basic information about who I was and what was the topic of this survey, information about estimate time to fill out the form and ethical decisions, I'm describing in a separate section in this chapter. A copy of the invitation letter both in English and Norwegian language are included in Appendix A and B.

The questionnaire had three sections. **The first section** contained general questions about gender, age and level of education of participants; and a question about the location of a kindergarten where the participant worked, namely which district out of 15 districts of Oslo the kindergarten belonged to. The questions were close-ended, so the participants could choose one of the options from provided list of answers. Only the question about the age had the possibility to type in the answer. All these questions were set as obligatory in Nettskjema, so that participants could not continue answering the form until they filled out theses questionnaire items.

The second section of the questionnaire format began with a note typed in larger font, stressing that the questions were focused on a child above three and 1/2 years old. This part included 17 situational judgment questions formulated similar way. For example: *“If you have noticed that a child is unusually anxious, what would you think?”* or *“If you have noticed that a child seems clumsy with balance, what would you think?”* The questions were built on the indicators/ constructs, based on the theories described in the theory chapter. The indicators within some categories of sensory-motor areas were following:

- gross motor skills and coordination (the child has aversion to certain physical activities, e.g. jumping, walking stairs, hopping, swinging, spinning, sliding; the child seems clumsy with coordination using age-appropriate toys, e.g. tricycle, pull toys, kicking a ball),
- fine motor skills and hand eye-coordination (the child seems clumsy with fine motor age-appropriate activities; the child often breaks things when manipulating),
- balance (the child has unusually bad balance and seems clumsy),
- speech – articulation (the child has problems with articulation),
- anxiety (the child is anxious),
- posture (the child has poor posture),
- orientation (the child has problems to orientate in the kindergarten, e.g. when finding his/ her closet, usual bed, towel, exit door),
- sensitivity
 - sensitivity to pain (the child has high tolerance of pain),
 - tactile sense (the child is evidently bothered by some materials, e.g. clothes; the child hates to be touched; the child needs to chew everything, e.g. toys, blankets),
 - sensitivity to temperature (the child has evident aversion to usual temperatures, e.g. does not eat ice because it is cold),
 - sense of taste (the child has aversion to usual tastes),
 - hearing sense (the child is very sensitive to noise around him/ her, e.g. often covers his ears; the child speaks generally too quiet or too loud).

The same pattern of formulating questions was supposed to make it easier for participants to answer. This way, participants could go through the questions quicker and this was the strategy for increasing the response rate (De Vaus, 2002).

These questions were not obligatory in Nettskjema and the participants could choose whether they will answer or not. The questions were close-ended, because the respondents were given a list of provided responses (Czaja & Blair, 1996). The pattern of answer options was also the same for all 14 questions:

- *I would think it is a problem. I would consult it with parents and refer the child for further assessment.*
- *I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.*
- *I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.*
- *I would not think it is a problem at all.*
- *Most likely, I would not notice that.*
- *Something else:*

The answer options 1 – 5 expressed gradually a degree of concern of participants and what action would they choose to deal with it. Answer 1 was the strongest judgment/ reaction, 5 the least. I allowed an open-ended answer option, where the participant could type in his own answer, if s/he could not identify himself/ herself with other options. I used the same pattern of answer options in order to make it easier for the participant to go through the all questions. That was a strategy to increase the answer rate.

However, the listing of the answer options in the order from the strongest to the least strong judgment/ reaction could be a limitation. The respondents may estimate what the intentions of this research was and therefore bias their answers, in order to give positive response, socially desirable answer (De Vaus, 2002). The reason for listing the answers this way was that I considered the answer options very long and time-consuming to read through. I wanted to make it easier for participants and avoid non-response effect (De Vaus, 2002).

These 17 situational judgment questions were presented with realistic, hypothetical scenarios and asked the participants to identify with the most appropriate response or provide their own response, that wasn't available in the answer options. Situational judgment questions tend to determine behavioural tendencies, assessing how a participant would behave in a certain situation. Situation judgment tests are quite widespread and the purpose of them is to obtain a valid picture of characteristics that predict job performance. They highly correlate with personality traits, cognitive abilities, knowledge and experience (Weekly & Ployhart, 2006).

These questions were organized randomly, so that the main concept behind the indicators is more hidden and less obvious. Such strategy is supposed to increase reliability. The less clear the goal of the survey is, the less probability, that the respondents would convey their answer for social desirability reasons, there is (Czaja & Blair, 1996).

The third section of the questionnaire started with a covering question typed in larger font: “*Are any of the following categories included in tests/ assessments of children in your kindergarten?*” A list of eight sensory-motor areas/ difficulties followed: anxiety, balance, posture, orientation, sensitivity (to pain, various materials, temperature, tastes, sounds, and touch), gross motor skills (e.g. jumping, running, swinging), fine motor skills (e.g. use of scissors) and speech – articulation. The questions were closed-ended again, the participants could choose from three options: *yes, no and I don't know*. After each item of the list I asked the participants to give as many details about the test/ assessment method as they can (the name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist). This part of the question was open-ended.

When building the questionnaire, I considered the length of it. According to De Vaus (2002), there is a widespread view that long questionnaires should be avoided. The reasoning is that long questionnaires increase the burden on respondents and this leads to increased reluctance to participate and thus leads to non-response. I tried to follow that advice.

The questionnaire format was first developed in English language and afterwards translated and distributed to participants in Norwegian language. Both versions are enclosed in Appendix C and D.

3.5 Pretesting

According to Czaja and Blair (1996), pretesting can be done in a number of ways and steps, formally and informally. In early phases I was given feedback on the questions and on individual questionnaire items by my professors and fellow students in Special Needs Education program. In later stages, after I had been given a supervisor, and had built the full questionnaire form in Nettskjema with invitation text; I tested the survey procedure, by sending the form to the supervisor. The process went flawlessly. The form was delivered,

answered and I was able to see the results in Nettskjema. I removed these data, so that it would not interfere with results obtained for the sample of kindergarten teachers later on.

3.6 Validity and reliability

Inaccuracies can be introduced into a research project at any stage. Therefore, the validity and reliability standards are relevant to be applied (Kumar, 2005).

A validity standard of a measurement shows whether the used research technique measures, what it is intended to measure (De Vaus, 2002). In this case it shows, whether the developed questionnaire form measures firstly, kindergarten teachers's judgment of sensory-motor difficulties in a child in early years (from 3 and ½ to 6 years old) and secondly, existence of screening methods in kindergarten settings. According to Kumar (2005), there are two ways of how to establish the validity of a research instrument: logical and statistical evidence. Establishing validity through logic implies justification of each question in relation to the objectives of the study, whereas statistical procedures provide hard evidence by way of calculating the coefficient of correlations between the questions and the outcome variables. There are three types of validity of an instrument: 1. face and content validity, 2. concurrent and predictive validity, and 3. construct validity.

1. Face validity is establishment of the logical link between questions and the objective. Construct validity is established if items and questions cover the full range of the issue being measured (Kumar, 2005). Regarding this, establishing validity for the gender, age, education level and location of kindergarten was simple in the questionnaire form of this research, because the logical link between wording of questions and measured concept is clear. However, section two was more difficult, but the wording questions in the way "If you have noticed that....., what would you think?" is a question of a person's judgment, in my rationale thinking. And therefore, I consider it valid. Also the individual indicators, I've developed, are valid, in my opinion, because they are all examples extracted from theories connected to the sensory-motor difficulties, described in previous chapter. The third section of the questionnaire starts with a common question worded as "*Are any of the following categories included in tests/ assessments of children in your kindergarten?*", which I consider logically correct and simple. The indicators used are, again, extracted from the theories about sensory-motor difficulties and therefore, valid. Face validity should therefore be fulfilled. However,

content validity may not be established, since I didn't include all categories that the complexity of sensory-motor difficulties may contain. The reason for that was my consideration for the length of my questionnaire. If I included all possible categories, the questionnaire would be prolonged considerably and that might lead to increased non-response effect (De Vaus, 2002).

2. Predictive validity is a form of criterion validity, that predicts whether the test predict future outcome. Concurrent validity is judged by how well an instrument compares with a second assessment concurrently done (Kumar, 2005). According to Burns (as cited in Kumar, 2005), it is usually possible to express predictive validity in terms of the correlation coefficient between the predicted status and the criterion. Such a coefficient is called a validity coefficient. The nature of this research is descriptive, not causal. Therefore this kind of validity is not used.

3. Construct validity is based on statistical procedures. It is done by using statistical procedures to establish the contribution of each construct/ indicator (identification of e.g. balance difficulties, posture difficulties or articulation difficulties) to the total variance (identification of sensory-motor issue) (Kumar, 2005). This research is made on nominal and ordinal level of measurement. Therefore, it is not possible to calculate variance and this validity.

According to De Vaus (2002), a reliable measurement is one where we obtain the same results on repeated occasions. If people answer a question the same way on repeated occasions, then it is reliable. Regarding the questionnaire research technique there were several threats to reliability anticipated. For example, bad formulation could cause participants to misunderstand of questions. This way, participants could answer such questions differently on different occasions. Also asking questions on difficulties about which people have no of have insufficient information can lead to rough-and-ready answers. In order to increase reliability of my questionnaire, I used multiple-item indicators and provided "I do not know", "Something else" answer options. I tried to word the questionnaire items as careful as possible. I also worked out a system of coding of qualitative data into countable form, which I present in the data analysis chapter (De Vaus, 2002).

In order to analyze statistical validity of my conclusions, I will use validity system developed by Cook and Campbell (as cited in Lund, 2002). This system includes 4 quality requirements:

1. statistical conclusion validity, 2. internal validity, 3. construct validity and 4. external validity. These determine whether connections and tendencies are statistically significant and reasonably strong. A survey has:

- a good statistical validity if one can make a solid conclusion about that connection between independent and dependent variable or the tendency is statistically significant and adequately strong,
- a good internal validity if the tendency or connection is causal,
- a good construct validity if dependent and independent variable measure the relevant constructs in the research problem, and
- a good external validity if one can generalize to and beyond relevant individuals, situations and times.

3.7 Ethical considerations

According to Czaja and Blair (1996), I had obligations as a researcher to the respondents who agree to participate in his/ her study and the users of the results. In the invitation text that was translated into Norwegian language, I treated main ethical considerations, namely informed consent, protection of confidentiality, voluntariness of participation and consequences arising from not taking part in the questionnaire.

Firstly, I informed the participants about who I was. I said I was a student of University of Oslo and shared my email address and contact information to my supervisor. I reasonably informed participants about the area of this study, which I formulated clearly, but shortly. This way I treated informed consent.

Secondly, I protected confidentiality aspect by informing participants that all the information about the respondents and their answers will be anonymous, meaning that no third party will have access or chance to link their answers with their email addresses. The data were protected by Nettskjema software and only I had a password to log into it. Moreover, the participants were informed about where they can read about the results of the project, that their answers will be deleted in the end of the project.

Thirdly, I informed that the participation is voluntary and there would be no consequences if they decided not to fill up the questionnaire. The copy of the invitation text is in the appendix section, both in English and Norwegian language (Appendix A and B).

Moreover, I limited the number of follow up reminders to 5. The researcher should avoid badgering the respondents.

I carried out the research after I had filled out a notification form about my research and had received consent from Norwegian social science data services (NSD). *“NSD is one of the largest archives for research data of its kind and provides data to researchers and students in Norway and abroad. Additionally, NSD is a resource centre, which assists researchers with regard to data gathering, data analysis, and difficulties of methodology, privacy and research ethics.”* I enclose the consent letter from NSD in Appendix E.

3.8 Methodology of data analysis

The data for this research were gathered in Nettskjema, web-based software, which offers also data analysis and presentation in table forms. However, the calculations there were limited. Therefore I decided to use a program **IBM SPSS Statistics – 19th version**. SPSS (Statistical Package for Social Sciences) is a software package used for statistical analysis. The program was provided to me by University of Oslo. There was a number of literature available on the guidelines of how to use the program. I followed Green and Salkind (2011), Aspelmeier and Pierce (2010), George and Mallery (2012) and my supervisor’s advices.

In order to analyze the questionnaire form in SPSS, I had to export the data from Nettskejma in a “tab separated text file (utf-8)” to SPSS. The data in the SPSS program were then formatted. SPSS allows e.g. formatting name, type of a variable, labels and values, missing values. According to De Vaus (2002), collected data need to be prepared for statistical analysis in a process of coding. All verbal (non-numerical) variables were therefore coded into numerical expressions (codes) in the SPSS program. The second section of the questionnaire included open-ended answer options. The specific coding system I describe in the following chapter.

There are three types of variables. A nominal, ordinal and a scale variable. The variables in this research were following: gender, education level, and location of a kindergarten – all

were nominal variables. Age was the only scale (interval) variable. Questionnaire section 2 contained questions on ordinal level of measurement, except the open-answer option “You can specify here”, which was on nominal level of measurement. Section 3 contained variables on nominal level of measurement.

Here I define concrete statistical measurements that were used to analyze data:

Frequencies is one of the simplest and yet one of the most useful of all SPSS procedures. Frequencies command simply sums the number of instances within a particular category (George & Mallery, 2012).

Correlation coefficient (r) measures the relationship between two variables. E.g. if one increases, the other one will as well. Correlation value ranges from -1 to 1. If $r = 1$, it means the perfect correlation and is essentially never found in social sciences, $0 < r < 1$ means positive correlation. Only stronger correlation values (beyond 0.5) can be used for predictions. If $r = -1$, it means the perfect negative correlation. $-1 < r < 0$ means negative correlation. SPSS program allows calculation of Spearman (ρ) and Pearson (r) correlations. If the data aren't normally distributed, Spearman correlation is chosen (George & Mallery, 2012).

Significance (probability) coefficient (p) determines likelihood that a particular correlation could occur by chance. Significance less than 0.5 means there is less than a 5% probability this relationship occurred by chance and therefore the result is rather significant. SPSS has two significance measures, one-tailed and two-tailed significance. One-tailed is used if the researcher has prior expectations about the direction of correlations (positive or negative). Two-tailed is used if the researcher has little idea as to the direction of the correlations (George & Mallery, 2012).

Cronbach's alpha (for similar indicators) – alpha coefficient is a measure of internal consistency. The value varies from 0-1. Alpha > 0.9 is excellent, alpha > 0.8 is good, alpha > 0.7 acceptable, alpha > 0.6 questionable, alpha > 0.5 is poor, or unacceptable (George & Mallery, 2012).

Cross-tabulation statistical procedure shows in tabular format the relationship between two or more categorical values. In addition to frequencies, there is a chi-square test of independence. The purpose of chi-square value is to determine whether the observed value for the cells deviate significantly from corresponding expected values for those cells. Phi statistics divides the chi-value. The purpose is to standardize a measure of association to values between 0 and

1. 0 indicates completely independent variables and a value close to 1 a strong association between variables (George & Mallery, 2012).

4 Data presentation and analysis

4.1 Data collection process

The process of acquisition of contact email addresses for my sample of 350 participants was particularly complicated. The majority of email addresses I retrieved from an online database of LEX Norsk Samfunnsinformasjon [Information about Norwegian society] (2012).

The first limitation was that the email addresses were available only in a picture format and I could not copy the addresses electronically, I had to rewrite enormous amount of letters manually and that caused several spelling mistakes. Therefore some participants did not get the invitation to the questionnaire on the first round. Fortunately, I could follow up these wrong addresses later and correct them, because I received emails about which addresses were not valid. However, some of the addresses were not valid for different reasons, I could not fix. It might be that those kindergartens had changed email addresses without informing the database service.

The second limitation was that several kindergartens used the same contact email address. This way, the size of my sample decreased considerably.

The third limitation was that the list on the database was not complete. I found several more email addresses using random internet search, but then I decided to call to kindergartens and ask them to provide the email address. When calling, I talked English or Norwegian. I introduced myself and the project in the way as in the invitation letter. The limitation was that due to language barrier I did not understand the spelling of the email address correctly several times. I did not call again to ask for the address again, because that is considered as badgering respondents. And that was my ethical consideration. Some kindergartens refused to give me their email address and or told me to call different day, which I did. However, this process decreased my sample to 267 participants.

After the first send out of the questionnaire, I received 7 answers. I received emails about which addresses were not valid and needed follow up and also emails about which participants were not available at the moment and saying when they would be. I waited a week or two before sending the first reminder. Nettskjema sends the reminders only to those who have not answered yet. I received 5 more answers. The response rate was very

disappointing and that made me think I will have to send many more reminders in order to receive any significant sample size. However, ethical considerations made me limit it to 3 more reminders. Otherwise it would be perceived as badgering respondents.

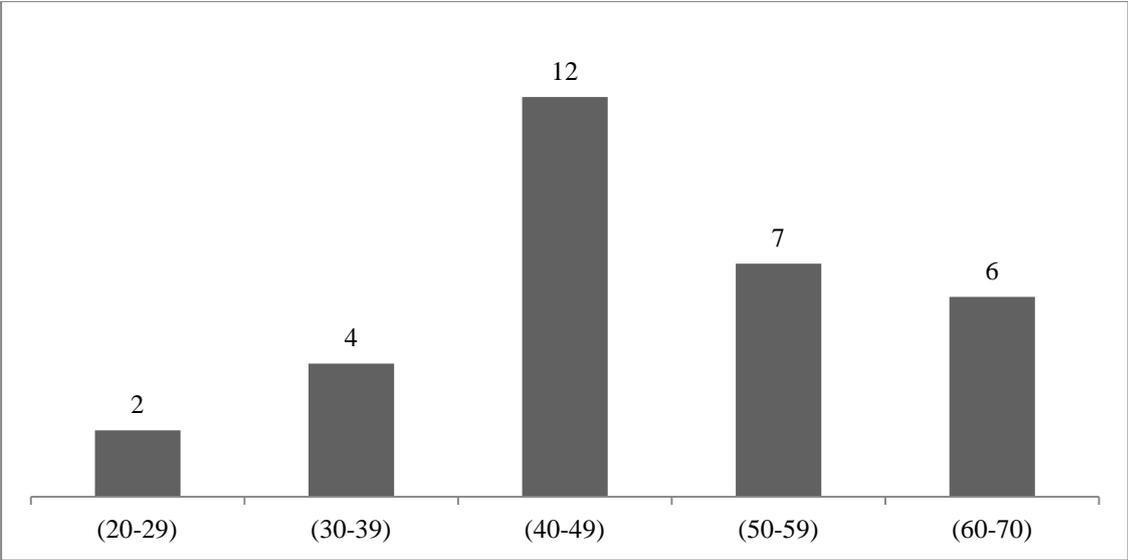
The questionnaire form was answered by 31 kindergarten teachers, out of 350 participants for the ideal sample. The answering rate for 267 invited participants was therefore 12%, which was particularly low. The possible reasons are discussed in the following chapter.

4.2 Questionnaire section 1

The actual sample of 31 kindergarten teachers consisted of 27 women (87.1%) and 4 men (12.9%). The **gender** variable data showed that the majority of kindergarten teachers in the sample were women. This is consistent with statistics done in Norwegian society in general. According to Hollås (2007), female employees dominate in kindergartens in Norway. This consistence, reflect that the tendency found in the sample may reflect the reality in population.

The collected data about the **age** indicates that the majority (38.7%) of kindergarten teachers in the actual sample were between 40 and 49 years old. A significant percentage of the participants were in between 50 and 59 years old (22.6%) and between 60-70 years old (19.4%). Comprehensive age distribution of whole sample is shown in the Figure 1, presenting frequency labels for each age group. The tendency of age distribution also shown, that the majority of participants were above 40 years old.

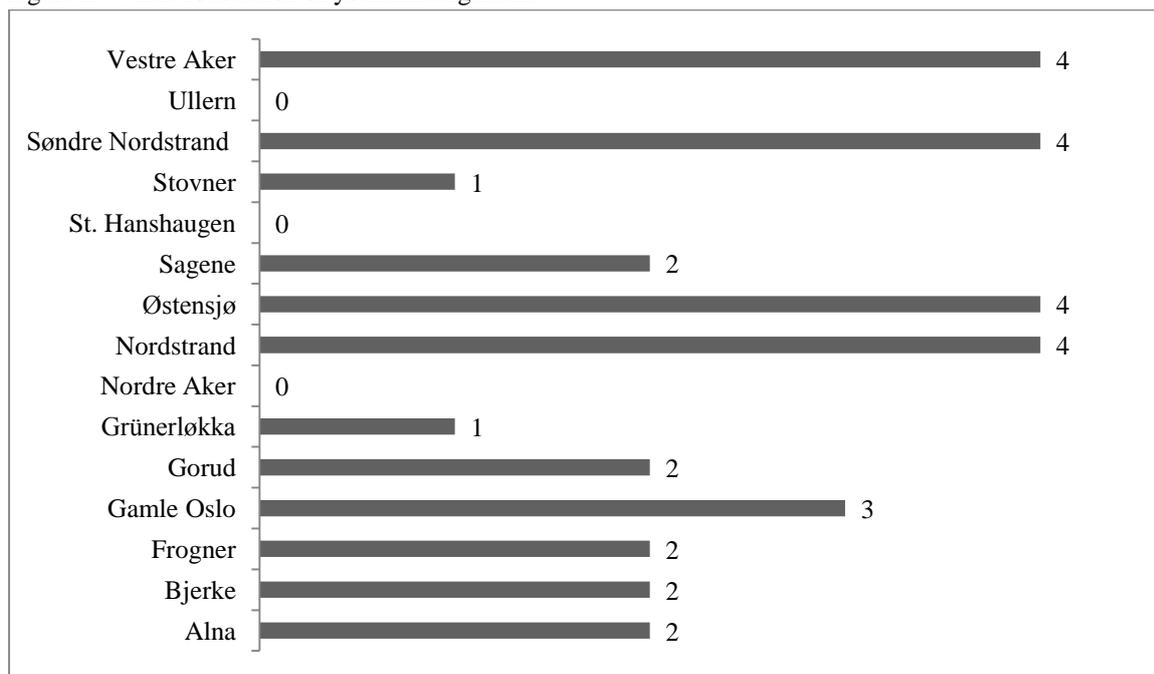
Figure 1: Age groups



As for the **education level**, especially strong majority of participating kindergarten teachers (96.8%) had bachelor degree and only rare 3.2% had master degree. None of the participants in the actual sample had PhD. education level. Therefore, education level variable showed that bachelor degree education dominated among participants. This is consistent with statistics made by Statistical sentralbyrå [Statistics Norway] (2012) that says that 91% of kindergarten leader teachers and kindergarten leaders had pre-school education.

A comprehensive distribution of answers for the question about the **location** of participants' kindergarten is shown in Figure 2. The majority of kindergartens were from Vestre Aker, Søndre Nordstrand, Nordstrand and Østensjø, all equally represented by 12.9%. Gamle Oslo was secondly most represented by 9.7%. I received no response from Ullern, St. Hanshaugen and Nordre Aker.

Figure 2: Where is location of your kindergarten?



4.3 Questionnaire section 2

As described in previous chapter, the following questionnaire section contained 17 questions on situational judgment. The questions were worded in a similar way (only the indicators varied) and the answer options were the also of the same pattern. As I will present further, a great deal of participants chose to answer in the open-ended answer option (“I would think

something else.”). These specific answers were carefully evaluated and if possible, incorporated into the five previous answer options. **The coding process** of these specific answers looked like this:

1. If participants expressed concern for given situation and chose to act on it in any way, their answer was incorporated in the strongest answer option: *I would think it is a problem. I would consult it with parents and refer the child for further assessment.* This was the strongest judgment/ reaction answer.
2. If participants expressed rather great concern, but would still not act on it for some reason, their answer was incorporated in the answer option: *I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.*
3. If participants expressed little concern, but would not refer the child for assessment, leaving the child develop in the same natural settings as before, their answer was incorporated in the answer option: *I would think it might be a little problem now, but the child can “grow out of it”. I would not refer the child for further assessment.*
4. If participants did not express concern, their answer was incorporated in the answer option: *I would not think it is a problem at all.*
5. If participants did not consider it as a problem itself, their answer was included in the fifth answer option: *I would not think it was a problem.*

In the following pages, hard data are presented for each category of sensory-motor difficulties. Interesting examples for specific answers of participants to the questions are presented and explained, how they were coded and incorporated in other answer options. This section also gives an answer to the first research sub-question: ***How are kindergarten teachers concerned about sensory-motor difficulties in a preschool child?*** This question refers to each of researched categories of sensory-motor issues: gross motor skills, fine motor skills, balance, speech – articulation, anxiety, posture, orientation, sensitivity to pain, tactile sense, sensitivity to pain, taste, temperature, and hearing sense.

Gross motor skills and coordination

If you noticed that a child has aversion to certain physical activities (e.g. jumping, walking stairs, hopping, swinging, spinning, sliding), what would you think? This question was omitted by 1 participant. Out of the 30 participants, 13 chose to answer specifically in the open ended answer-choice. 8 answers like e.g. *“I would consult it with parents.”*, *“I would consult it with parents and if the problem persisted, I would refer the child for further assessment.”*, or *“I would keep an eye on it for a while and see if it persisted. If it did, I would consult it with parents.”* were consistent with the strongest answer option and therefore, coded and incorporated into this answer option: *“I would think it is a problem. I would consult it with parents and refer the child for further assessment”*. 2 answers like *“I would think it was something new for the child and work extra with motor skills of the child.”* and *“I would think the child couldn’t do it and I would organize playgroups and train together with the child.”* were incorporated in answer option: *I would think it was a little problem now, but the child can “grow out of it.”*. However, the majority of participants (54.8%) chose answer: ***I would think it is a problem, but I don’t think someone can do anything about it. So I would not refer the child for further assessment.*** Underneath, I present a table with all participants’ answers (Table 1).

Table 1: If you noticed that a child has aversion to certain physical activities (e.g. jumping, walking stairs, hopping, swinging, spinning, sliding), what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	8
I would think it is a problem, but I don’t think someone can do anything about it. So I would not refer the child for further assessment.	17
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	5

If you noticed that a child seems clumsy with coordination using age-appropriate toys (e.g. tricycle, pull toys, kicking a ball), what would you think? This question was omitted by 1 and specifically answered by 13 participants. Similarly as above, answers like *“I would first see if we could stimulate development and security in these areas. We would check if the child had a need for external help.”*, or *“I would consult it with parents to hear if they could make me less concerned. Then refer the issue further if my concern wouldn’t decrease. In many of these cases, I would try to get advice from district’s center of expertise.”* were consistent with the highest degree of concern for this indicator and incorporated in the first answer option. The

strong majority (77.4%) answered the strongest judgment/ reaction answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** In the table, underneath, there's list of all answers (Table 2).

Table 2: If you noticed that a child seems clumsy with coordination using age-appropriate toys (e.g. tricycle, pull toys, kicking a ball), what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	24
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	6

Fine motor skills and hand eye-coordination

If you noticed that a child seems clumsy with fine motor age-appropriate activities, what would you think? This question was omitted by 1 participant and answered specifically by 14. 12 answers were incorporated into the strongest judgment/ reaction: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** An answer “It depends if there are other things as well.” was incorporated in the answer option: ***I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.*** The majority of participants (71 %) would choose the strongest judgment/ reaction: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** The table 3 shows frequencies of all answered options.

Table 3: If you noticed that a child seems clumsy with fine motor age-appropriate activities, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	22
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	8

If you noticed that a child very often breaks things when manipulating, what would you think? This question was omitted by 1 participant and specifically answered by 14 participants. Answers “*Depends on the age of child.*” and “*As an adult I would be taking interest into how the child manages things.*” were incorporated into the answer option: ***I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.*** One of the answers “*Some children are clumsier than others. Here we have to look at wholeness.*” was incorporated into ***I would not think it is a problem.*** 8 answers

were incorporated to the strongest judgment/ reaction. The majority of participants (54.8%) **would think it is a problem. I would consult it with parents and refer the child for further assessment.** The table 4 shows frequencies of all answered options.

Table 4: If you noticed that a child very often breaks things when manipulating, what would you thing?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	17
I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.	12
I would not think it was a problem at all	1

Balance

If you noticed that a child had unusually bad balance and seemed clumsy, what would you do? The question had 1 missing value. In the same coding process as mentioned above, the 11 specific answers were incorporated in the close-ended answer options. For example, “It depends on the age of the child.” was incorporated into the answer *I would think it is a little problem now, but the child can “grow out of it.” I would not refer the child for further assessment.* The majority of participants (83.9%) **would think it is a problem. They would consult it with parents and refer the child for further assessment.** The table 5 presents frequencies of all answered options.

Table 5: If you noticed that a child had unusually bad balance and seemed clumsy, what would you do?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	26
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	4

Speech – articulation

If you noticed that a child has problems with articulation, what would you think? The question had 2 missing values. 15 specific answers were incorporated in the five close-ended answer options. For example, “*I would consult it with parents and take initiative in the kindergarten. I would suggest cooperation with helsestasjon [preventive health care service in Norway]. If the initiative wouldn't work, I would establish cooperation with parents.*” was consistent with the strongest judgment/ reaction answer. On the other side answers like, “*It depends on child's age. There is a big difference in articulation in 3 and 6 years.*”, or “*I*

would be observant towards development and train it.” were consistent with the coding definition of third answer option: *I would think it is a little problem now, but the child can “grow out of it.” I would not refer the child for further assessment.* The majority of participants (74.2%) **would think it is a problem. They would consult it with parents and refer the child for further assessment.** The table 6 shows frequencies of all answered options.

Table 6: If you noticed that a child has problems with articulation, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	23
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	6

Anxiety

If you noticed that a child is unusually anxious, what would you think? The majority of respondents (96.8%) **would think it is a problem. I would consult it with parents and refer the child for further assessment.** 12 out of 13 specific answers were included in this strongest judgment/ reaction answer option. Only one answer, *“I would not say it is a problem, but I might talk to colleagues about it.”* was consistent with fourth answer option: *I would not think it was a problem at all.* The table 7 shows frequencies of all answered options.

Table 7: If you noticed that a child is unusually anxious, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	30
I would not think it is a problem at all.	1

Posture

If you noticed that a child has poor posture, what would you think? This question had 3 missing values. For this question, the participants’ answers were equally distributed between two answer options, shown in the table 8. Both answers represented by 45.2%. 9 specific answers were incorporated. 2 specific answers, *“I would adjust physical activity.”* and *“I would take initiative to improve posture.”* were incorporated into *I would think it is a little*

problem now, but the child can “grow out of it.” I would not refer the child for further assessment. The reason was that it seemed the participants would only take initiative in the kindergarten without any consultation with a specialist. 1 answer was omitted, because the respondent didn’t understand my question: “Unclear question.” The table 8 shows frequencies of all answered options.

Table 8: If you noticed that a child has poor posture, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	14
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	14

Orientation

If you noticed that a child has problems to orientate in your kindergarten (finding his/ her closet, usual bed, towel, exit doors), even after spending considerable time there, what would you think? The question had 1 missing value and 12 specific answers, that were included in the given answer options. 9 specific answers were included in the first strongest answer option. One answer “*We have tried enough to orientate the child together with an adult where everything can be found.*” was difficult to incorporate. In the end, I considered that the kindergarten teacher would be concerned actually, but still think they have done their best and would not think any specialist can do anything more about it. Therefore, the answer was incorporated into the second option. The majority of participants (83.9%) chose the answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** The table 9 below shows frequencies of all answered options.

Table 9: If you noticed that a child has problems to orientate in your kindergarten (finding his/ her closet, usual bed, towel, exit doors), even after spending considerable time there, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	26
I would think it is a problem, but I don’t think someone can do anything about it. So I would not refer the child for further assessment.	1
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	3

Sensitivity to pain

If you noticed that a child has high tolerance of pain, what would you think? This question was answered specifically by 13 participants and 12 chose the strongest concern answer option. One participant answered “*It is not a problem, without a care for a child, and talked with caregivers. Something else can lie behind.*”. It was difficult to incorporate this answer, because it seemed contradicting in a way. In the end, I judged that the participant would think the problem would lie somewhere else and the sensitivity would not be a problem itself. Therefore, the answer was incorporated into: *I would not think it was a problem.* But either way, very strong majority of participants (90.3%) chose the strongest answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** The table 10 shows frequencies of all answered options.

Table 10: If you noticed that a child has high tolerance of pain, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	28
I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.	1
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	1
I would not think it is a problem at all.	1

Tactile sense

If you noticed that a child was evidently bothered by some materials (e.g. clothes), what would you think? This question was answered specifically by 14 participants and all expressed a strong concern and reaction for the matter. For example, “*We meet this problem very often in the kindergarten. We consult it with caregivers first, before we go further with it. Sometimes it becomes a concern for child being neglected and consulted in cooperation with parents.*” Therefore, their answers were included in the first answer option. A very strong majority of participants (93.5%) chose the answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** The table 11 shows frequencies of all answered options.

Table 11: If you noticed that a child was evidently bothered by some materials (e.g. clothes), what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	29
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	2

If you noticed that a child hates to be touched, what would you think? This question was omitted by 1 and answered specifically by 9 participants and all chose the strongest concern. Their answers were included in the first answer option. For example, *“I would observe whether it was in general against everyone or it was because the child didn’t feel safe among adults in the kindergarten. I would follow it up if there was different behavior when the child was with different people.”*, or *“It depends what kind of touch. If I believed there may be a sexual neglect, I would announce it to social services.”* In the latter case, even if the kindergarten teacher would assess the situation not as sensory-motor issue, some kind of specialist would be contacted and the matter might be referred then. Either way, I considered the answer consistent with the strongest concern answer option. The majority of participants (87.1%) chose the answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** The table 12 shows frequencies of all answered options.

Table 12: If you noticed that a child hates to be touched, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	27
I would think it is a problem, but I don’t think someone can do anything about it. So I would not refer the child for further assessment.	1
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	1
I would not think it is a problem at all.	1

If you noticed that a needs to chew everything (e.g. toys, blankets), what would you think? This question was omitted by 1 and answered specifically by 10 participants. 8 answers were included in the first answer option. For example, *“I would talk to parents and hear whether they experience the same. If not, I would observe the child in which situations the chewing behavior emerges.”* 2 answers expressed similar judgment: *“It depends on the age of the child.”* Both these answers were included in third answer option. The majority of participants

(48.4%) chose the third answer option: ***I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.*** However, the second highest result was close to the first one. 41.9% of participants ***would think it is a problem. They would consult it with parents and refer the child for further assessment.*** The table 13 shows frequencies of all answered options.

Table 13: If you noticed that a needs to chew everything (e.g. toys, blankets), what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	13
I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.	1
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	15
I would not think it is a problem at all.	1

Sensitivity to temperature

If you noticed that a child has evident aversion to usual temperatures (e.g. does not eat ice because it is cold), what would you think? This question was answered specifically by 9 participants. 8 answers were included in the strongest answer options. For example, *"I would talk to parents; observe if there was a trouble in child's other functional areas. I would evaluate to which degree this hinder the child."*, or *"I would talk to parents, observe for a while, eventually if it continued, I would refer it further."* In the same manner as before, the answer *"It depends on the age of child."* was included in the third answer option. The majority of participants (45.2%) chose the answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** The table 14 shows frequencies of all answered options.

Table 14: If you noticed that a child has evident aversion to usual temperatures (e.g. does not eat ice because it is cold), what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	14
I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.	3
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	9
I would not think it is a problem at all.	5

Sense of taste

If you noticed that a child has aversion to usual tastes, what would you think? This question was omitted by 2 participants and answered specifically by 9 participants. One answer “*Usual taste is a relative expression.*” wasn’t included, because the participant didn’t understand the question. 7 specific answers were incorporated into the first strongest reaction answer option. One of the answers, “*If this was the child’s only problem, I would not go further with it. If there were other things as well, and it hindered the child, I would talk to parents, considered taking initiative, eventually referral.*” was consistent with the fifth answer option according to my coding system: *I would think it is a problem, but I don’t think someone can do anything about it. So I would not refer the child for further assessment.* The answers for this question were more distributed. The smaller majority of participants (35.5 %) chose the answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** A very even amount of participants (32.3%) chose answer: ***I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.*** The table 15 shows frequencies of all answered options.

Table 15: If you noticed that a child has aversion to usual tastes, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	11
I would think it is a problem, but I don’t think someone can do anything about it. So I would not refer the child for further assessment.	2
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	10
I would not think it is a problem at all.	6

Hearing sense

If you noticed that a child is very sensitive to noise around him (e.g. often covers his ears), what would you think? This question was omitted by 1 and answered specifically by 10 participants. All 10 of them were included in the strongest judgment/ reaction answer. For example, “*I would consult it with parents and refer for further assessment.*”, or “*I would keep an eye on it for a while and if it continued, I would consult it with parents.*” The majority of participants (83.9%) chose the highest degree answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** The table 16 shows frequencies of all answered options.

Table 16: If you noticed that a child is very sensitive to noise around him (e.g. often covers his ears), what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	26
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	4

If you noticed that a child speaks generally too quiet or too loud, what would you think? This question omitted by 1 and answered specifically by 13 participants. All these participants showed concern for the matter and would act on it. For example, “I would talk to parents. Then I would observe if it seemed like the child had a problem with hearing. If I was concerned for that, I would ask parents to go to a doctor and carry out a hearing test.”, or “Leave the child say what s/he thinks about it, eventually carry out the hearing test in cooperation with parents.”. Such answers were consistent with the first answer option, even though the kindergarten teachers would not connect the issue with sensory-motor difficulties, the child would be sent to a specialist. The majority of participants (67.7%) chose the answer option: ***I would think it is a problem. I would consult it with parents and refer the child for further assessment.*** The table 17 shows frequencies of all answered options.

Table 17: If you noticed that a child speaks generally too quiet or too loud, what would you think?

Answer	Frequency
I would think it is a problem. I would consult it with parents and refer the child for further assessment.	21
I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.	7
I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.	2

4.3.1 Data analysis (section 2)

In order to analyze the questions, using 12 categories of sensory-motor difficulties (gross motor skills, fine motor skills, balance, posture, orientation, speech – articulation, anxiety, tactile sense, sensitivity to temperature, sensitivity to pain, sense of taste, hearing sense), I had to check internal consistency of categories (gross motor skills, fine motor skills, tactile sense, and hearing sense), because they had 2-3 indicators. I calculated Spearman correlation coefficient for 2 variables in gross motor skills, fine motor skills and hearing sense categories. The 2 variables in gross motor skills and fine motor skills correlated only moderately and

rather significantly (gross motor skills – $r = 0.453$, $p = 0.12$ and fine motor skills – $r = 0.496$, $p = 0.05$). I concluded it was not enough to refer to the indicators as one common category. The category of the hearing sense was easier to decide. $R = 0.205$ and $p = 0.278$, which meant there was a very low correlation and I had to refer to each indicator individually. I calculated Cronbach's alfa coefficient for internal consistency of three variables in the tactile sense category. In this sample, alfa was only 0.472 and it was therefore it was questionable, whether the variables correlated. Neither Spearman correlation showed strong relationships (above 0.5). Therefore, I analyzed them separately as well.

By running Spearman correlation calculations for all variables in this questionnaire section, I found that many variables correlated rather strongly and very significantly at the same time. The variable *the child being very sensitive to noise around him/ her* correlated with *the child having a poor balance* ($r = 0.521$, $p = 0.004$), *the child having a need to chew on everything* ($r = 0.681$, $p = 0$) and *the child having problems with articulation* ($r = 0.536$, $p = 0.003$). The variable *the child being evidently bothered by usual materials* correlated with *the child having a poor balance* ($r = 0.681$, $p = 0$). The variable *the child talking too loud or too silently* correlated with *the child having a poor posture* ($r = 0.629$, $p = 0$). And the variable *the child seeming clumsy with fine motor age-appropriate activities* correlated with *the child having aversion towards usual physical activities (e.g. jumping, walking stairs, etc.)* ($r = 0.547$, $p = 0.002$). However, to find the reason behind such significant correlations was very difficult.

Conclusion

The individual answers to the 17 questions in previous pages provide the answer to the sub-question: ***How are kindergarten teachers concerned about sensory-motor difficulties in a preschool child?*** The conclusion is that the first answer option was dominating in the strong majority of the questions (76%). Therefore, the participants would be concerned and would consider many of the sensory motor issues a problem. They would consult it with parents and refer the child for further assessment. They would be concerned, if the child (from 3 and ½ to 6 years old) was unusually anxious, clumsy with balance, clearly bothered by some textures, very sensitive to noise around him/ her, clumsy with coordination; also if the child had high tolerance for pain, aversion to usual temperatures, aversion to usual tastes, problems with articulation, problems to orientate in the kindergarten; and if the child hated to be touched, generally spoke too loud or too quietly, very often broke things when manipulating or seemed clumsy with fine motor age-appropriate activities. If the child tended to chew on everything

(e.g. toys, blankets), the majority of participants would think it might be a little problem now, but the child can “grow out of it”. So they would not refer the child for further assessment. If the child had aversion to certain physical activities (e.g. jumping, walking stairs, hopping, swinging, spinning, sliding), majority of participants would think it was a problem, but didn’t think someone can do anything about it. They would not refer the child for further assessment. The participants’ answer differed in judging the situation if they noticed the child had a poor posture. 50% of the participants would think it was a problem. They would consult it with parents and refer the child for further assessment. Another 50% would think it was a little problem now, but thought the child can grow out of it. So they would not refer the child for further assessment.

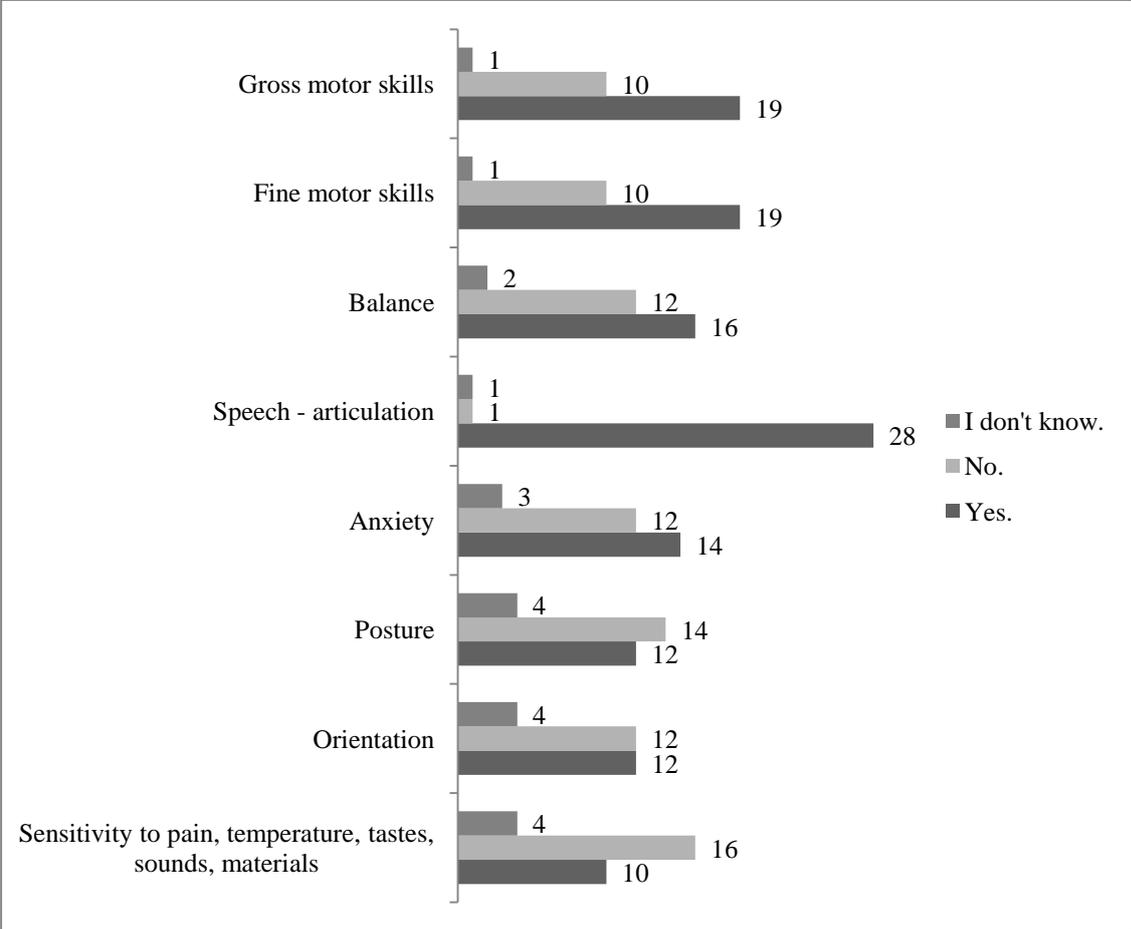
The next research sub-question was: *Are kindergarten teachers generally more concerned about a particular type of sensory-motor difficulties?* This refers to questions answered by a very strong majority (beyond 80%) of participants in the first answer option, reflecting the highest degree of concern. Therefore, participants would be generally more concerned if the child (3 and ½ to 6 years old) was unusually anxious, clearly bothered by some textures (e.g. clothing), sensitive around him/ her; if the child had high tolerance for pain, problems with articulation, problems to orientate in the kindergarten; if the child seemed clumsy with balance, hated to be touched, seemed clumsy with coordination, and fine motor age-appropriate activities.

4.4 Questionnaire section 3

This questionnaire section started with the common question: *Are any of the following categories included in tests/ assessments of children in your kindergarten?* It was followed by 8 categories of sensory-motor difficulties: gross motor skills (e.g. jumping, running, and swinging), fine motor skills (e.g. use of scissors), balance, posture, orientation, speech – articulation, anxiety, sensitivity (to pain, various materials, temperature, tastes, sounds, touch). The participants were asked to give more details in open-ended answer option: *Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist).*

The Figure 3 presents frequencies of all answers for each routines category. The majority of participants answered that they have tests/ assessment procedures for gross motor skills (61.3%), fine motor skills (61.3%), balance (51.6%), speech – articulation (90.3%) and anxiety (48.4%). On the contrary, the majority answered they did not have tests/ assessment routines for posture (45.2%) and sensitivity (51.6%). Participants’s answered were equally distributed in the category for orientation. Both *Yes.* and *No.* answer options received 38.7% answers. Each category was omitted by 1 participant, except orientation category which was omitted by 3 participants.

Figure 3: Are any of the following categories included in tests/ assessments of children in your kindergarten?



However, the specific answers in the open-ended answer option showed that some participants might have misunderstood my intentions. For example, an answer “*We use Alle med.*” was consistent with the intentions of the question, because Alle med [All with] is a systematic observation instrument for child’s language, play, socio-emotional development, everyday activities and sensory-motor development. Also the answer, “*TRAS*” was consistent, because TRAS is also an observation guide for kindergarten teachers assessing

systematically child's emotional, language (articulation as well), motor and social development (Stangeland, 2006). Both these examples showed that the kindergartens had some kind of systemic (external) routine for screening all children in case, some children with sensory-motor difficulties were overlooked. Many participants stated something like: *"There is no defined test, but we naturally follow up things. All our colleagues have responsibility to look after these things. But the pedagogical leader in cooperation with the headmaster of the kindergarten have responsibility for consulting it with parents, and getting external help."*, or *"We don't use concrete tests, but we build on our knowledge and literature about child's development on various age level. Together with long experiences with work with children we look at the child in his/ her age group, and all the time observe if the child is within norms for actual age-group. If the child is not, we contact parents/ special needs educator, if usual stimulation doesn't help."* My intention in this question wasn't to judge the quality of everyday observation of the kindergarten teachers. I was searching for systematic routines that should actually help the kindergarten teachers to decrease the burden of constant observation/ evaluation process. I was searching for e.g. an observation check-list with would specifically include the mentioned sensory-motor categories. And in fact, there were some answers like that: *"Our pedagogues observe all children in pre-school age, with our own observation scheme that was developed by our kindergarten."* But answers like *"We use observation."* were unclear for me. I couldn't know what the participants' definition of observation is. Was it every day constant observation or an aimed observation? Also, I wanted to find examples of screening – type of tests/ assessments routines for all children. But some participants understood my question differently and said: *"We follow up all children that we think they have a problem in some area. We don't use tests without a specific reason."* The last limitation was the wording the statement: *Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist).* The part about who carries out the test was misleading. Again, I was searching for examples for rather screening assessments or screening tests for all children without a special reason. But this part was interpreted so the participants were naming specialists responsible for the certain areas of sensory-motor difficulties, after they are identified in kindergarten settings. And that was not the intention of this research. Nevertheless, one of the questions seemed very consistent with all additional specific answers. And it was the category of speech – articulation. 28 participants out of 31

answered they had a test/ assessment for speech – articulation in their kindergarten. And up to 26 participants said specifically that the name for the test was TRAS.

As I've stated in the first chapter, I chose Oslo location for this research to investigate whether existing screening tests/ assessment methods for particular sensory-motor difficulties varied among districts in Oslo. However, I haven't received enough responds from each district and I couldn't do any calculations per each district. I could still divide the variable of locations of kindergartens in two groups: the east-located kindergartens (Bjerke, Alna, Gorud, Stovner, Nordstrand, Østensjø, and Søndre Nordstrand) and the west-located kindergartens (Vestre Aker, Ullern, Frogner, Nordre Aker, St. Hanshaugen, Sagene, Grünerløkka, Gamle Oslo). In SPSS, I ran crosstabulations to see relationships between these categorical variables. In addition to frequencies, there were chi-square and Phi values. Frequencies showed slight tendency that the east-Oslo districts had generally more tests/ measurements for all categories of sensory-motor difficulties. Nevertheless, all Pearson chi-square and Phi values were very low and therefore the relationships weren't strong to make any prediction.

4.5 Conclusions for key research questions

The key questions for this research were: *Are children (from 3 and ½ to 6 years old) with sensory-motor difficulties recognized in kindergarten settings? How are children with sensory-motor difficulties recognized in early years?*

As described in the theory framework chapter, there were two levels to be analyzed and a subject of this research. The first one (micro level of Bronfenbrenner's ecological theory, 1979) was kindergarten teacher's judgment of a situation when s/he notices a child with some kind of sensory-motor difficulties, and the action s/he chooses to follow up the child. The second level (meso and exo level) referred to existence of external systemic routines, e.g. screening tests or other assessment methods, created by kindergarten, district, or municipality or state authorities.

The research data showed that the participating kindergarten teachers showed great concern for the majority of sensory-motor issues. In most cases, they would be concerned particularly about child's anxiety, lack of balance, oversensitivity to touch, noise, temperatures, tastes, hyposensitivity to pain, problems with articulation, orientation, or clumsiness in fine motor activities. They would follow up the children with such difficulties, consult with parents and

cooperate with specialists for further assessment. If the child tended to chew on everything (e.g. toys, blankets), the majority of participating kindergarten teachers would think it might be a little problem now, but still thought the child can “grow out of it”. And if the child had aversion to certain physical activities (e.g. jumping, walking stairs, hopping, swinging, spinning, sliding), majority of these kindergarten teachers would think it was a problem, but didn’t think someone can do anything about it. They would most likely work with the child on this issue in their kindergarten, but they would not refer the child for further assessment.

The majority of participating kindergarten teachers has some kind of tests/ assessment methods for gross motor skills, fine motor skills, balance, speech – articulation and anxiety issues. Tests/ assessment routines for posture and sensitivity were less frequent among participating kindergartens. As I explained in data analysis, these data might be biased, with one exception, speech – articulation category. It seemed the majority of participants have a test called TRAS.

Unfortunately, these results are not significant enough to be drawn to entire population of kindergarten teachers in Norway. In the following chapter I discuss, what could have been done differently to gain better results.

5 Discussion

5.1 Results discussion

First of all, the response rate of this research was very low and there might be various reasons to it. One possibility is the research location in the capital city of Norway. Kindergartens in Oslo are likely overloaded with filling out other surveys. Other options might be e.g. low interest in the research topic of this survey, uninteresting invitation text, or length of the questionnaire form. I stated in the invitation text, it might take around 15 minutes to fill out the form and in fact, I might have overdrawn this estimate.

The results of the first questionnaire section seemed most valid and reliable. The results about gender (the majority – female gender) or educational level (the majority – bachelor degree) were consistent with other statistics carried out in Norwegian society. Age variable showed the majority was above 40 years old. In my own rationale, I would think that the respondents were most likely headmasters of kindergartens. I presume, one becomes headmaster generally in later years. As for the geographical distribution of participants, I received more answers from east-Oslo districts than from west-Oslo districts. It is difficult to give a reason for the result.

The second questionnaire section was more difficult to analyze, due to large amount of specific open-ended answers. Fortunately, there were only 31 participants, so the analysis and coding procedure was manageable. To avoid this, I should have done pilot testing to see the possible responses. Many participants didn't choose any of the given close-ended options. I think the reason was that the wording of each question meant to sound as though the situation (e.g. the child seems unusually anxious) happened the very first time. Therefore naturally, the participants would not consult it with parents immediately and refer the child for further assessment. But fortunately, due to the worked out coding system, I was able to incorporate the responses into the given answer options as I intended them at first place. The results here seemed rather positive. The majority of participants would be concerned in a high degree about the majority of the given examples of sensory-motor difficulties, which would mean that the children with sensory-motor issues would be recognized by these participating kindergarten teachers. However, as I have mentioned in methodology chapter, there is a possibility that is the wording of question could have given away the research intentions. The

answer options were ordered from the most concern to the lowest concern, because of their length. My intention was to make the questionnaire easy and fast to go through and secure a higher response-rate. Nevertheless, participants might have chosen estimated desirable answer and this may have caused a bias in the responses.

The third questionnaire section showed rather positive results as well. The majority of participating kindergartens had some kind of screening tests or other assessment methods for majority of given sensory-motor categories. However, the results seemed rather biased, considering the specific answers given in open-ended answer options, which I had discussed earlier. It is possible, that participants might have chosen estimated desired answer or misunderstood the question at first place.

Statistical validity can't be used for section two or three, because I haven't found a different research that would be investigating the same area. My results can't be statistically compared to test validity. Considering construct validity, the variables were measuring the construct of sensory-motor difficulties and the therefore they were valid. The wording of the questionnaire is very general and is possible to be applied to different groups of participants, e.g. for parents in home settings. It can also be applied at any time or any age of the child (just by removing the instruction that the questionnaire is supposed to be referring to children from 3 and ½ to 6 years). Therefore, the questionnaire has a good external validity (Cook & Campbell, as cited in Lund, 2002).

5.2 Recommendations

I consider the research questions important and believe that there is a better way how to obtain answers, significant enough to gain an overall picture of how children with sensory-motor difficulties are identified. I believe that a survey design is the right approach. However, the questions should be worded differently, using more categories to cover the whole concept of sensory-motor issues and perhaps organized differently to hide more the intentions of the research. In addition to questionnaire technique, a document analysis of existing screening tests, or diagnostic files of children already identified as experiencing sensory-motor difficulties would be a great asset. Interviews with kindergarten teachers about their experiences with children with sensory-motor difficulties would be a possibility.

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Appendix A

Invitation text (English version)

Hi,

I am a master student in philosophy of Special Needs Education at University of Oslo, and I am working on my final master thesis. The topic of the thesis is how kindergarten teachers generally assess sensory-motor development in a child, whether they use tests or observation in order to follow up these difficulties.

Therefore, I hope you will answer my questionnaire. The majority of the questions are about your opinions, and will take about 15 minutes to answer them.

Your answers will be confidential. All your answers will be anonymous, so that it will not be possible to identify any respondent. The general research results will be published in my thesis. The answers will be erased when the project is over, 30th June 2013 at the latest. The study is registered in Data Protection Official for Research, Norwegian Social Science Data Services. Participation in the questionnaire is voluntary, and you can abort your participation whenever without any consequences.

For further questions or information about the questionnaire, you can contact my supervisor Lage Jonsborg or me on email:
radka.ondrejtkova@gmail.com.

Supervisor: Lage Jonsborg, Institutt for spesialpedagogikk, Universitetet i Oslo

lage.jonsborg@isp.uio.no

Tel.: 22 85 81 47

Best regards

Radka Ondrejtková

Appendix B

Invitation text (Norwegian version)

Hei,

Jeg er masterstudent i filosofi av spesialpedagogikk ved Universitetet i Oslo, og holder nå på min avsluttende masteroppgave. Temaet for oppgaven er hvordan barnehagelærere vurderer motorisk-sensorisk utvikling hos barn generelt, og om de bruker tester eller observasjon for å følge med på dette.

Jeg håper derfor at du vil svare på et spørreskjema. De fleste spørsmålene dreier seg om hva du mener om dette, og din tidsbruk vil være ca 15 minutter.

Din besvarelse vil bli behandlet konfidensielt. Alle dine svar vil bli anonymisert, slik at det ikke blir mulig å spore den enkelte respondent. De generelle kartleggingsresultatene vil bli publisert i min masteroppgave. Svarene på spørreundersøkelsen vil bli slettet når prosjektet er avsluttet, senest 30. juni 2013. Studiet er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste. Deltaking i undersøkelsen er frivillig, og du kan avbryte din deltakelse når som helst uten noen konsekvenser.

For ytterligere spørsmål eller opplysninger i forbindelse med spørreskjemaet kan du gjerne ta kontakt med min veileder Lage Jonsborg eller med meg på mail: radka.ondrejkoval@gmail.com.

Faglig veileder: Lage Jonsborg, Institutt for spesialpedagogikk, Universitetet i Oslo

lage.jonsborg@isp.uio.no

Tlf. 22 85 81 47

Med vennlig hilsen

Radka Ondrejková

Appendix C

Questionnaire (English version)

1. Are you a man or a woman?

- Woman
- Man

2. How old are you?

3. What is your education level?

- Bachelor
- Master
- Ph.D.

4. Where is your kindergarten located?

- Alna
- Bjerke
- Frogner
- Gamle Oslo
- Grorud
- Grünerløkka
- Nordre Aker
- Nordstrand
- Sagene
- St. Hanshaugen
- Stovner
- Søndre Nordstrand
- Ullern
- Vestre Aker
- Østensjø

Following questions are focused on a child from 3 and a half to six years old.

1. If you noticed that a child is unusually anxious, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

2. If you noticed that a child has high tolerance of pain, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

3. If you noticed that a child had unusually bad balance and seemed clumsy, what would you do?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

4. If you noticed that a child was evidently bothered by some materials (e.g. clothes), what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

5. If you noticed that a child has evident aversion to usual temperatures (e.g. does not eat ice because it is cold), what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

6. If you noticed that a child has aversion to usual tastes, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

7. If you noticed that a child is very sensitive to noise around him (e.g. often covers his ears), what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

8. If you noticed that a child has aversion to certain physical activities (e.g. jumping, walking stairs, hopping, swinging, spinning, sliding), what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

9. If you noticed that a child doesn't like to be touched, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

10. If you noticed that a child needs to chew everything (e.g. toys, blankets), what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

11. If you noticed that a child seems clumsy with coordination using age-appropriate toys (e.g. tricycle, pull toys, kicking a ball), what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

12. If you noticed that a child has poor posture, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

13. If you noticed that a child speaks generally too loud or too quietly, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

14. If you noticed that a child very often breaks things when manipulating, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

15. If you noticed that a child has problems with articulation, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

16. If you noticed that a child has problems to orientate in your kindergarten (finding his/ her closet, usual bed, towel, exit doors), even after spending considerable time there, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

17. If you noticed that a child seems clumsy with fine motor age-appropriate activities, what would you think?

- I would think it is a problem. I would consult it with parents and refer the child for further assessment.
- I would think it is a problem, but I don't think someone can do anything about it. So I would not refer the child for further assessment.
- I would think it might be a little problem now, but the child can "grow out of it". I would not refer the child for further assessment.
- I would not think it is a problem at all.
- Most likely, I would not notice that.
- Something else. Specify underneath.

You can specify here:

Are any of the following categories included in tests/ assessments of children in your kindergarten?

1. Anxiety

- Yes
- No
- I don't know

Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist)

2. Balance

- Yes
- No
- I don't know

Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist)

3. Posture

- Yes
- No
- I don't know

Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist)

4. Speech and articulation

- Yes
- No
- I don't know

Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist)

5. Orientation

- Yes
- No
- I don't know

Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist)

6. Sensitivity to pain, various materials, temperature, tastes, sounds, touch

- Yes
- No
- I don't know

Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist)

7. Gross motor skills (e.g. jumping, running, swinging)

- Yes
- No
- I don't know

Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist)

8. Fine motor skills (e.g. use of scissors)

- Yes
- No
- I don't know

Please, give as many details as you know. (The name of the test, target-group (age), who regulates the test (the state, municipality, district), who carries out the test (kindergarten teacher or a specialist)

Thank you for your answers.

Appendix D

Questionnaire (Norwegian version)

1. Er du kvinne eller mann?

- Kvinne
- Mann

2. Hvor gammel er du?

3. Hva er din utdanningsnivå?

- Bachelor
- Master
- Ph.D.

4. Hvor ligger din barnehage?

- Alna
- Bjerke
- Frogner
- Gamle Oslo
- Grorud
- Grünerløkka
- Nordre Aker
- Nordstrand
- Sagene
- St. Hanshaugen
- Stovner
- Søndre Nordstrand
- Ullern
- Vestre Aker
- Østensjø

Følgende spørsmål fokuserer på barn fra tre og et halv år til seks år.

1. Dersom du merket at et barn var uvanlig engstelig, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

2. Dersom du merket at et barn hadde uvanlig høy toleranse for smerte, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

3. Dersom du merket at et barn hadde uvanlig dårlig balanse og virket klønete, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

4. Dersom du merket at et barn var tydelig plaget av noen materialer (f.eks. klær), hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

5. Dersom du merket at et barn hadde tydelig aversjon mot vanlige temperaturer (f.eks. ikke spiser is fordi den er kald), hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

6. Dersom du merket at et barn hadde aversjon mot en vanlig smak, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

7. Dersom du merket at et barn var svært sensitiv til lyder rundt seg, (f.eks. holder seg ofte for ørene), hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

8. Dersom du merket at et barn hadde aversjon mot vanlige fysiske aktiviteter (f.eks. å hoppe, å gå i trapper, å huske, å snurre rundt, å skli i sklie), hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

9. Dersom du merket at et barn ikke liker å bli berørt, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

10. Dersom du merket at et barn trenger å tygge på alt av ting (f.eks. leker, pledd), hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

11. Dersom du merket at et barn virket klønete med leker andre barn i samme alder bruker (f.eks. trehjuls sykkel, traller, sparke ball), hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

12. Dersom du merket at et barn hadde dårlig kroppsholdning, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

13. Dersom du merket at et barn snakker uvanlig lavt eller høyt, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

14. Dersom du merket at et barn veldig ofte ødelegger ting de håndterer, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

15. Dersom du merket at et barn hadde problemer med å artikulere seg, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

16. Dersom du merket at et barn hadde problemer med å orientere seg i barnehagen (f.eks problemer med å finne skapet sitt, sin vanlige seng, håndklet sitt, utgangsdøren) etter å ha tilbrakt en betraktelig mengde tid der, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

17. Dersom du merket at et barn virket klønete med finmotoriske, alderskorrekte aktiviteter, hva ville du tro?

- Jeg ville trodd det var et problem. Jeg ville tatt det opp med foreldrene og henvist barnet for videre vurdering.
- Jeg ville trodd det var et problem, men jeg ville ikke trodd det var noe som noen kunne gjøre noe med og ville ikke henvist barnet for videre vurdering.
- Jeg ville trodd det var et lite problem nå, men at barnet ville vokse det av seg. Jeg ville ikke henvist barnet for videre vurdering.
- Jeg ville ikke trodd det var et problem.
- Jeg ville trolig ikke legge merke til det.
- Noe annet. Spesifiser under.

Du kan spesifisere her:

Er noen av de følgende kategoriene inkludert i tester/vurderinger av barna i din barnehage?

1. Engstlighet

- Ja
- Nei
- Jeg vet ikke

Vennligst angi så mye detaljer du kjenner. (Navn på test/vurdering, målgruppe (alder), hvem regulerer testen (stat, fylke, kommune, distrikt), hvem gjør testen (barnehageansatt eller spesialist)

2. Balanse

- Ja
- Nei
- Jeg vet ikke

Vennligst angi så mye detaljer du kjenner. (Navn på test/vurdering, målgruppe (alder), hvem regulerer testen (stat, fylke, kommune, distrikt), hvem gjør testen (barnehageansatt eller spesialist))

3. Kroppsholdning

- Ja
- Nei
- Jeg vet ikke

Vennligst angi så mye detaljer du kjenner. (Navn på test/vurdering, målgruppe (alder), hvem regulerer testen (stat, fylke, kommune, distrikt), hvem gjør testen (barnehageansatt eller spesialist))

4. Språk og artikulering

- Ja
- Nei
- Jeg vet ikke

Vennligst angi så mye detaljer du kjenner. (Navn på test/vurdering, målgruppe (alder), hvem regulerer testen (stat, fylke, kommune, distrikt), hvem gjør testen (barnehageansatt eller spesialist))

5. Orientering

- Ja
- Nei
- Jeg vet ikke

Vennligst angi så mye detaljer du kjenner. (Navn på test/vurdering, målgruppe (alder), hvem regulerer testen (stat, fylke, kommune, distrikt), hvem gjør testen (barnehageansatt eller spesialist))

6. Sensitivitet overfor smerte, forskjellige materialer, temperaturer, smaker, lyd eller berøring

- Ja
- Nei
- Jeg vet ikke

Vennligst angi så mye detaljer du kjenner. (Navn på test/vurdering, målgruppe (alder), hvem regulerer testen (stat, fylke, kommune, distrikt), hvem gjør testen (barnehageansatt eller spesialist)

7. Generell motorikk (f.eks. hopping, løping, husking)

- Ja
- Nei
- Jeg vet ikke

Vennligst angi så mye detaljer du kjenner. (Navn på test/vurdering, målgruppe (alder), hvem regulerer testen (stat, fylke, kommune, distrikt), hvem gjør testen (barnehageansatt eller spesialist)

8. Finmotorikk (f.eks. bruk av saks)

- Ja
- Nei
- Jeg vet ikke

Vennligst angi så mye detaljer du kjenner. (Navn på test/vurdering, målgruppe (alder), hvem regulerer testen (stat, fylke, kommune, distrikt), hvem gjør testen (barnehageansatt eller spesialist)

Tusen takk for dine svar.

Appendix E

Research authorization from NSD

Norsk samfunnsvitenskapelig datatjeneste AS
NORWEGIAN SOCIAL SCIENCE DATA SERVICES

NSD

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Org.nr: 585 321 884

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Institutt for spesialpedagogikk
Universitetet i Oslo
Postboks 1140 Blindern
0318 OSLO

Vår dato: 10.10.2012 Vår ref: 31729 / 3 / MAS Deres dato: Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 05.10.2012. Meldingen gjelder prosjektet:

31729	<i>Kindergarten Teachers' Consideration for Sensory-motor Issues in Early Years</i>
Behandlingsansvarlig	Universitetet i Oslo, ved institusjonens øverste leder
Daglig ansvarlig	Lage Jonsborg
Student	Radka Ondrejková

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

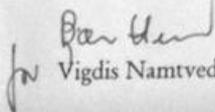
Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, eventuelle kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

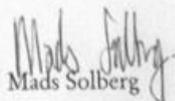
Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, http://www.nsd.uib.no/personvern/forsk_stud/skjema.html. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 30.06.2013, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen


Vigdis Namtvedt Kvalheim


Mads Solberg

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Kopi: Radka Ondrejková, Colletts gate 82, 0460 OSLO

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