School’s social environment in relation to participation and well-being of young adolescents with self-rated neurodevelopmental problems

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ABSTRACT

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Young adolescents with neurodevelopmental disabilities tend to have lower levels of participation and poorer well-being compare to their typically developing peers. School is a key setting for adolescents to participate. School's social environment is found to be influential to both participation and well-being for young adolescents. This paper investigates the relations between school's social environment and participation, well-being of young adolescents with self-rated neurodevelopmental problems (SNP) and whether participation is associated with well-being of this population. Data of this study was retrieved from wave three of the longitudinal research programme LoRDIA. Study participants were 175 adolescents aged 14-15 years old with SNP. Linear regression was conducted to test the hypothesis. Results show that bullying is the strongest (negative) predictor to both participation and well-being for young adolescents with SNP, which means students within this group who have been bullied are more likely to have low level participation and poor well-being. Relation to teachers is also a strong positive predictor to participation of this population. Class atmosphere is less predictive compare to the other two predictors but still have moderate positive correlation with both participation and well-being. Adolescents with neurodevelopmental disabilities or problems are a vulnerable group, school's environment is essential to their development. Experience of bullying has a profound and long-term negative effect on children's participation and well-being. Therefore, more longitudinal data will be needed to further understand this issue. Relation to teachers brings up that the focus and attention should not only been put on students but also on fulfilling teacher’s needs, so they could provide higher quality of teacher-student relationships.

Keywords: participation, well-being, social environment, neurodevelopmental, relation to teachers, bullying, class atmosphere.
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**Abbreviations**

ADHD  
Attention Deficit Hyperactivity Disorder

ASD  
Autism Spectrum Disorders

DAMP  
Deficits in Attention, Motor control and Perception

ICF-CY  
International Classification of Functioning, Disability and Health-Children and Youth Version

ID  
Intellectual Disability

LoRDIA  
Longitudinal Research on Development In Adolescence

MBD  
Minimal Brain Dysfunction

SNP  
Self-rated Neurodevelopmental Problems
1 Introduction

School is a primary setting in which young adolescents are to participate. They spend a fair amount of time within the school setting (Schaps & Solomon, 2003). Young adolescents with neurodevelopmental problems are reported to have low engagement in school activities compared to typically functioning peers (Carlberg & Granlund, accepted), and the levels of participation and their well-being of students are found to be related to the social environment of school (John-Akinola & Nic-Gabhainn, 2014; Ryan & Patrick, 2001). Therefore, it is essential to investigate what factors in school’s social environment could be influential to participation and well-being of young adolescents with neurodevelopmental problems.

1.1 Disability

As defined in UN Convention on the Right of Persons with Disabilities, “Disability is a difficulty in functioning at the body, person, or societal levels, in one or more life domains, as experienced by an individual with a health condition in interaction with contextual factors” (UN, 2006). In the ICF-CY model, disability is described as an umbrella term that encompasses impairments, activity limitations, and participation restrictions, which are affected by barriers in the environment (WHO, 2007). The manner in which disability is defined shows that understanding disability from a biological perspective as an individual problem is insufficient. It implicates the importance of the environment to the development and functioning of a child (Adolfsson, 2011).

1.1.1 Neurodevelopmental problems and disorders

Neurodevelopmental disorders refer to behavioural and cognitive disorders that manifest early in a child's development. They are characterized by developmental deficit in the acquisition and execution of specific intellectual, motor, or social functions. (WHO, 2017). The deficits vary from learning and function control limitations, to impairment of social skills or intelligence (American Psychiatric Association, 2013). Autism spectrum disorders (ASD), attention-deficit/hyperactivity disorder (ADHD), deficits in attention, motor control and perception (DAMP), intellectual disability (ID) and learning disorders such as dyslexia and dyscalculia are a few common diagnoses under the term of neurodevelopmental disorders (Gillberg, 2010). The term neuropsychiatric has been used in many researches, in accordance with DSM-5 and ICD-11, the term neurodevelopmental will be used in this study.
Studies show that children and adolescents with neurodevelopmental conditions are affected at physical, psychological and psychosocial levels. They may suffer from poor physical health, unstable mental status, and have difficulty building friendships (Dahan-Oliel, Shikako-Thomas, & Majnemer, 2012). Neurodevelopmental disorders are reported to have a relatively high prevalence, and severely affects the well-being and the learning ability of children (Hyman, 2008). Approximately 50% of Neurodevelopmental disorders have onset in their childhood and adolescence. This indicates that the school life of these individuals might be compromised due to their conditions (Ijarogbe, Adediran, Lasebikan, & Omigbodun, 2017). Even though, a study from Eriksson & Granlund (2004) found that participation of children with disabilities are not strongly related to the type or the degree of the disability, and environmental factors in school may have an effect on children's participation.

Children could encounter difficulties and problems in school or everyday life without a diagnosis (Almqvist, Sjöman, Golsäter, & Granlund, 2018). ICF core sets, a selected sample of ICF codes depicting functioning considered important for health and well-being have been developed for neurodevelopmental diagnoses (ADHD and ASD) in the last few years (Bölte et al., 2018a; Bölte et al., 2018b). In these core sets the close connection between everyday functioning and health has been stressed. Also, behavior difficulties in children under the threshold for a diagnosis have been shown to be a risk factors for later mental disorders (Shankman et al., 2009). These sub-threshold mental health risks/symptoms are often operationalized in relation to everyday functioning, e.g. not attending school, and not following instructions (Haller, Cramer, Lauche, Gass, & Dobos, 2014). Sub-threshold problems require that participants are asked to self rate whether they have neurodevelopmental problems or not. Self-rating is preferable when it comes to identify perceived functioning problems (Arvidsson, 2013).

1.2 School environment

Behaviour does not happen in a vacuum, and learning requires a context. Children’s functioning in school can be seen as a process of interaction between individuals and their environment (Jennings, 2003; John-Akinola & Nic-Gabhainn, 2014). Children’s experiences in school are essential to the development of their self-esteem, self-perception and health behaviour (Currie et al., 2009). School’s environment is commonly categorized as physical or social in research. Physical environment is described as school policy, supportive resource (e.g. assistive devices), accessibility of school buildings and facilities and availability of school activities, while social
environment is more about teacher-student relationship, peer interaction, attitudes from teachers and peers and teacher or professional's support (Egilson & Traustadottir, 2009; John-Akinola & Nic-Gabhainn, 2014). Research shows that factors in the school environment are associated with children’s participation in school and their well-being (Anaby et al., 2013; Currie et al., 2009).

1.2.1 Social environment of school

It has been acknowledged that social environment is a significant contributor to children’s well-being and it could facilitate or inhibit children’s development (Reinhardt, Miller, Stucki, Sykes, & Gray, 2011). How a person perceives the condition of the social environment around him/her would influence the degree of participation in a specific life situation of the person (Eriksson, 2005). Children’s perceptions of the school’s social environment are therefore critical to their level of engagement in school (Wang & Holcombe, 2010). A warm and supportive school climate helps students to participate more frequently and obtain better academic achievement (Voelkl, 1995). Studies that investigate the social environment of school have mainly focused on teacher-student relationship, peer acceptance, and social support from professionals. These social climate factors of school could influence participation of children both positively and negatively (Coster et al., 2013). Research indicates that a sense of connectedness to teachers and peers helps to increase academic motivation and engagement (Wang & Holcombe, 2010), while peer exclusion attenuate children's participation at school (Ladd, 2003). Children with disabilities frequently have more difficulties in building peer relations and are socially more passive than their typically developing peers (Eriksson, Welander, & Granlund, 2007). Children with disabilities often encounter bullying and social isolation at school that can decrease their rate of participation (Law, Petrenchik, King, & Hurley, 2007). A positive and welcoming attitude in school has been identified as facilitator to participation of children with disabilities (McManus et al., 2006). In addition, perception of teacher support was found to be predictive to academic and behavioral engagement for high school students (Fall & Roberts, 2012).

1.3 Participation

Participation is described in ICF-CY as "involvement in life situations" (WHO, 2007). Life situations can be understood as episodes that happen in natural environments such as home, school, and community, where children spend time (Adolfsson, 2011). Involvement refers to a feeling of belonging and active engagement, not just about being there (Eriksson & Granlund,
Therefore, it is important to consider participation as not only how children perform or complete a task, but also how they experience a life situation. Physical, attitudinal and social features of the environment constitute the life situation in which individuals are to participate (Falkmer, 2013). A systematic review by Imms et al. (2016) has stated that attendance and involvement are the two key elements in the participation construct. This finding is consistent with the definition of participation from ICF-CY: attendance refers to the objective "being there"; while involvement emphasizes the actual engagement and the subjective experience of participation. However, the subjective experience of participation is not possible to code in the ICF-CY (WHO, 2007).

By participating, children and adolescents can contribute to the society, learn about expectations from others, develop necessary skills, acquire sufficient knowledge and thrive in different life settings (Dahan-Oriel et al., 2012). Participation in school helps fostering the development of children's self-confidence and self-esteem (John-Akinola & Nic-Gabhainn, 2014). Children who have high engagement at school tend to learn more, have better grades and be more active in social activities in early adulthood (Simeonsson, Carlson, Huntington, Sturtz McMillen, & Brendt, 2001). School participation is also associated with positive academic outcome and positive well-being of children. (de Róiste, Kelly, Molcho, Gavin, & Nic Gabhainn, 2012; DiPerna, Volpe & Elliott, 2002). Conversely, paucity of participation would put children at risk for negative outcomes such as attending school unmotivated, developing disruptive behaviour, and dropout from school (Appleton, Christenson & Furlong, 2008).

The Salamanca Statement claims that all children have the right to participate fully in school regardless of their physical, intellectual, social, emotional, linguistic or other conditions (Unesco, 1994). However, children with disabilities are reported to have a more restricted participation in school activities than their typically developing peers (Eriksson, 2005). Children with neurodevelopmental conditions were also found to experience the similar situation at school (Carlberg, 2016). In a study of Peasgood et al., (2016), children with ADHD have a high risk of expulsion, poor academic performance, and they may suffer from poor psychosocial health. Due to the significant social and communication deficits, children with autism present a unique set of learning difficulties, which would inhibit them from being actively engaged in classroom activities (Leekam, Prior, & Uljarevic, 2011). Children with intellectual disabilities often encounter considerable difficulties and limitations in intellectual and adaptive functioning, and this may cause reduction in participation and poor health in adulthood (American...
Psychiatric Association, 2013). In addition, few empirical studies have demonstrated that participation of children with disabilities is affected by environmental factors in the school context (Law et al., 2007).

1.4 Well-being of young adolescents

Well-being is a state of feeling healthy and fulfilled, of enjoying good quality of life. It is not merely about people’s mental and physical health, but also deeply refers to the social wellness and satisfaction of their lives (Castree, Rogers, & Kitchin, 2013). Adolescence is a period when adolescents start to seek acceptance from peers and support from adults outside of the home. The relationships with nonparental adults and peers become vital in this life period (Roeser, Eccles, & Sameroff, 1998). Research indicates that young adolescents aged between 11 to 15 face many challenges due to physical and emotional changes associated with maturation, changing social relationships with family and peers, and growing academic expectations. Behaviours that are formed during this transition period could go further into adulthood and influence well-being of adolescents (Currie et al., 2009). School has been identified as an essential setting for promoting well-being for children (John-Akinola, Gavin, O’Higgins, & Nic-Gabhainn, 2013). A positive relationship with teachers and peers could increase the motivation to learn and contribute to better health outcomes (Jennings, 2003). Conversely, adolescents who had poor experience at school are more likely to use substances, engage in violence, and consume alcohol at an early age (McNeely, Nonnemaker, & Blum, 2002). Adolescents with disabilities are more likely to experience social isolation in school, and this could pose damaging health risks, cause serious health outcomes (Zambo, 2010).

Participation has been identified as one of the health components in ICF-CY, it is regarded as a crucial aspect of children’s well-being (WHO, 2007). A study from John-Akinola and Nic-Gabhainn (2014) shows that the more students participate in their every day school life, the more likely they are to report positive well-being. Research indicates that participation in recreational activities helps with the development of motor-skills, improves cardiovascular fitness, and decreases the rate of obesity. Participation in organized out-of-school activities are found beneficial to children’s emotional well-being, school engagement, peer relations, and academic outcomes (Law et al., 2007).
1.5 Theoretical framework

A system can be seen as a set of elements that interact with each other, affect one another in a certain context and form a larger pattern that is different from any of the parts. System theory focuses on the arrangement of relations between the parts. Each part interacts with each other through ongoing feedback to achieve the balance of the system and to make the system functioning (Heylighen & Joslyn, 1992). Bronfenbrenner’s bioecological model looks at human development as an entire ecological system in which growth occurs. The system is comprised of five interactive subsystems that support and guide human growth (Bronfenbrenner, 1994).

Microsystem consists of the child’s most immediate environment such as home, school, peer and religious groups (Bronfenbrenner & Evans, 2000). The interaction between different parts of microsystem that do not necessarily include the child, make up the Mesosystem. Relationship between teacher and parents is one example (Cole, Cole, & Lightfoot, 2005). Exosystem is comprised of settings that influence the development of the child indirectly. The key exosystem for most children includes parents’ workplace, school boards, and planning commissions (Garbarino & Ganzel, 2000). Macrosystem is a culture context that provides values, beliefs, and customs in which a child grows up (Bronfenbrenner, 2005).

Since 1990s, Bronfenbrenner’s ecological model has been revised and extended. The Process-Person-Context-Time model has become the essence of his theory (Bronfenbrenner, 2005). Proximal process refers to an enduring form of interaction between human organism and the persons, objects, symbols in the immediate external environment. In order to have an effective development, the interaction must occur on a regular basis over an extended period of time. The form, power, content, and direction of the proximal processes could all affect the development of an individual (Tudge, Mokrova, Hatfield, & Karnik, 2009). Person describes the personal traits of a person such as temperament and affective expressions, curiosity and exploration of the environment, type of impairment and characteristics such as age, gender, sex (Granlund & Roll-Pettersson, 2001). Context means the environment a person is situated. It involves four interrelated systems as described in Bronfenbrenner’s early version of theory (Micro, Meso, Exo, Macro). Time, the final component of the model stresses that specific historical events that are happening as the developing individuals are at one age or another could lead to different developmental processes. These four components interact with each other progressively to
make development happen, and proximal process were identified as key factor in human development (Tudge et al., 2009).

School is a primary setting in children’s microsystem where children participate via interaction with elements in school environment. The interactions could occur between teacher and student, student and peers, student and professionals, etc. Children develop through this proximal process and the quality of interactions could affect children’s participation in school and influence the academic outcomes (Reyes, Brackett, Rivers, White, & Salovey, 2012).

1.6 Previous research

A growing body of research shows that environmental factors have a deep influence on children's participation. More and more studies stress the complex relationship between individual and environment, but little attention has been given to the social aspects of the environment (Batorowicz, King, Mishra, & Missiuna, 2016). Former research find that teachers have a significant role in whether a child could actively engage in classroom activities and have pleasant experiences during school time (Egilson & Traustadottir, 2009), while mutually rewarding interactions with peers is a great facilitator for child to learn and achieve (Falkmer, 2013). A study from John-Akinola & Nic-Gabhainn, (2014) shows that students’ participation in school is positively associated with the socioecological environment of school and their well-being. Research about students with disabilities in school has gradually shifted the focus from individual conditions of the students to the environment they interact with (Sanches-Ferreira, Silveira-Maia, Alves, & Simeonsson, 2017). However, there is a relative dearth of literature on how school’s social environment affects participation of children with disabilities and their well-being.

1.7 Research Aim

In line with the previous researches, we assume students’ participation and well-being is closely related to school’s social environment. Therefore, the aim of this paper is to investigate the relations between school’s social environment, and participation, well-being of young adolescents with SNP. The hypotheses of this study are proposed as:

1. Positive social environmental factors in school are predictive to increased participation of young adolescents with self-rated neurodevelopmental problems.
2. Positive social environmental factors in school are predictive to better well-being of young adolescents with self-rated neurodevelopmental problems.

3. Participation of young adolescents with self-rated neurodevelopmental problems is positively associated with their well-being.
2 Method
2.1 Study design

Longitudinal Research on Development In Adolescence (LoRDIA) is an ongoing multidisciplinary research programme which has a non-experimental and longitudinal design. The study focuses on the development of youth during their adolescence, in the areas of social networks, adjustment to school, mental health, and use of alcohol and drugs in Sweden. Adolescents are being followed from 12-13 years to their adulthood. Data were collected at four time-points: grade six is followed up in grade seven and eight, then in upper secondary school year two; grade seven is followed up in grade eight and nine, and then in upper secondary school year two. The sample of the present study was chosen from wave three (based on the sample from wave one), and it was designed as a cross-sectional study.

2.2 Participants

Students aged 14-15 years old from four municipalities in the south of Sweden, filled out the questionnaire. In total, after students and parents (on behalf of their children) had the possibility to opt-out, the total study population of LoRDIA consist of 1896 students. Not all of these, however, participated in data collections in each wave. In wave three, 573 students didn’t participate eventually due to various reasons, that made the actual study population down to 1323 students, representing a response-rate of 70 percent. In wave one, there were 246 students who rated themselves as having neurodevelopmental problems. While in wave three, there were no questions for students to rate if they have neurodevelopmental problems. The intention of self-ratings on one hand was because many students were not yet fully assessed or diagnosed. On the other hand, researchers wanted to focus on true feelings of students instead of merely valuing diagnosis since students could have difficulties without a diagnosis. Based on the data collection in wave one, it was found that 175 students with self-rated neurodevelopmental problems responded to the items in both dependent and independent variables of this study. Therefore, this group of students were chosen as the final study sample. Compare to wave one, there were 71 young adolescents who reported themselves as having neurodevelopmental problems but did not participate in wave three. The type of self-rated problems of the study group are presented in Table 2.2. Among all the participants, 77 were girls (44 %), 98 were boys (56 %). The mean age of this population is 14.4 years old (age range is from 13-16 years old). There were 164 participants (93.7 %) reported themselves as born in Sweden while 11(6.3 %) were
Out of all participants, 89.1% reported to have working mothers while 90.2% reported to have working father.

Table 2.2

Self-rated problems of the study sample

<table>
<thead>
<tr>
<th>Population</th>
<th>Number of students</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave 1</td>
<td>1515</td>
<td></td>
</tr>
<tr>
<td>Neurodevelopmental problem(^1)</td>
<td>246</td>
<td>16.2</td>
</tr>
<tr>
<td>Wave 3</td>
<td>1323</td>
<td></td>
</tr>
<tr>
<td>Neurodevelopmental problem(^2)</td>
<td>175</td>
<td>13.2</td>
</tr>
</tbody>
</table>

Type of self-rated problems

<table>
<thead>
<tr>
<th>Type of problem</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech impairment</td>
<td>21</td>
<td>1.5</td>
</tr>
<tr>
<td>MBD, DAMP &amp; ADHD</td>
<td>23</td>
<td>1.7</td>
</tr>
<tr>
<td>Autism/Asperger syndrome</td>
<td>14</td>
<td>1.0</td>
</tr>
<tr>
<td>Difficulty in reading and writing</td>
<td>93</td>
<td>7.0</td>
</tr>
<tr>
<td>Difficulty in counting</td>
<td>82</td>
<td>6.1</td>
</tr>
<tr>
<td>Intellectual disability</td>
<td>12</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Number of neurodevelopmental problems students had\(^3\)

<table>
<thead>
<tr>
<th>Number of problems</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>124</td>
<td>70.9</td>
</tr>
<tr>
<td>2</td>
<td>42</td>
<td>24.0</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>More than 3 (max. 6)</td>
<td>6</td>
<td>3.4</td>
</tr>
</tbody>
</table>

1. Percentage out of total population of adolescents in wave 1, N=1515
2. Percentage out of total population of adolescents in wave 3, N=1323.
3. Percentage out of population of adolescents with neurodevelopmental disabilities, N=175.

2.3 Data collection

Data was collected between October and November 2015 from 14 schools. Students took 50 minutes on average to complete the questionnaire. Questionnaire was administered in the classroom with the support of the research team, who also helped students that had problems or difficulties filling in the questionnaire.
2.4 Instruments and variables

The questions in the questionnaire were based on previously tested instrument. The questionnaire was adjusted for students with cognitive problems or with difficulties in reading and writing only in wave one. Questionnaires used in the waves afterwards are the same for both typically developing students and students with neurodevelopmental problems, because after two waves, questionnaires were adapted and made easier to all students, and the adjusted scales were found to be as reliable as the ones used in former waves. Scales that were used in this study include school and teacher relationships, sexual and personal harassment, perceived well-being, etc. Details of the scales can be seen in the description of each variables.

Indexes were created by combining requisite item variables. Then, Scales were constructed as mean of available items provided that at least 75 per cent of these items had been completed in the individual case. Before calculating score for each scale, the negatively worded scales were reversed to make sure all the items in each scale have the same positive response direction. Furthermore, Cronbach’s alpha was tested to examine the internal consistency of each scale. Dependent variables in this study are participation and well-being. Participation was measured by combining both self-rated engagement and attendance. Well-being was captured by combined physical, psychological and psychosomatic health. Independent variable was social environment of the school, which was covered by relation to teachers, experience of bullying, and class atmosphere. An overview of the variables can be seen in Table 2.4.

2.4.1 Dependent variables

Participation in school was measured by the Engagement in School - part of the School Adjustment Scale (Kerr & Stattin, 2000). This sub-scale mainly focuses on motivation and attitudes towards school, and has been tested in previous study from Määttä, Nurmi, & Stattin, (2007). The scale was adjusted in wave three, and aspects of engagement and attendance were both included in those five items: 1. Did you skip school this semester (been away a whole day - unexcused absence)? 2. Are you happy with your academic progress in school? 3. Do you try your best in school? 4. How do you like school? 5. How would you describe the relationship between the school and yourself? The school registered data on absenteeism only provided a combined figure of percentage of days absent, therefore, this study used the first item in the scale (self-reported absenteeism) to measure the frequency of attendance. The 5-point Likert
scale response alternatives were changed to 4-point, with higher score indicating high level of participation. Cronbach’s alpha was 0.737.

Well-being was measured by combining the scale of health and life, and health and mood. Health and life scale was developed from Berlin, Modin, Gustafsson, Hjern, & Bergström, (2012), which was used originally to measure adolescents’ psychological health. The scale used in wave three has four questions: 1. How many times in one week do you exercise at least 30 minutes and become out of breath and/or work up a sweat? 2. From your own viewpoint, how healthy are you? 3. In general, do you enjoy your life at the moment? 4. I think my life has a meaning and a purpose. Response alternatives were changed from three in wave one to four in wave three. Health and mood scale was adopted from the psychosomatic problems scale (Hagquist, 2008). The current scale has eight questions that focus on psychosomatic problems with answers in 5-point Likert scale (Never / Rarely / Sometimes / Frequently / Always): 1. Did you have trouble concentrating? 2. Did you have trouble sleeping? 3. Did you experience headaches? 4. Did you experience stomach aches? 5. Did you feel tense/worried? 6. Did you experience loss of appetite? 7. Did you feel sad or low? 8. Did you feel dizzy in your head? Cronbach’s alpha of the combined scale well-being was 0.895. This score of the scale varied from one to five, with a higher score representing better well-being.

2.4.2 Independent variables

Relation to teachers was examined by a scale used in previous research from Kerr and Stattin, (2000). Twelve questions were asked in wave one. Researchers had to condense the questions in the questionnaire since it took too long to complete. They found out that scales were still reliable when there were fewer items in the scale. They chose the items with highest loadings in Principal Component Analysis to update the scales in the subsequent waves. By wave three, three questions were left in the scale of relation to teachers with 4-point Likert scale response alternatives: 1. Do the teachers care about the pupils? 2. Are the teachers fair to the pupils? 3. Do the teachers like the pupils? The score of the scale varied from one to four, with a Cronbach Alpha of 0.870. Higher score implied better relationship with teachers.

Experiences of harassment and bullying was investigated by a scale used in the study from Kendrick, Jutengren, and Stattin, (2012). The current scale consisted of 18 questions with answers in 3-point Likert scale response alternatives (No never / Yes occasionally / Yes often), measuring both bullying victimization and perpetration. The questions covered sexual
harassment, appearance and personal harassment, and issues of bullying. Six questions/items were deleted from the scale since this study only wants to include bullying victims. The 12 questions left were: 1. Did anyone show or send you offensive (nasty) pictures, photos, drawings, texts, or other messages? 2. Did anyone comment your appearance or your body in a sexual way that you don’t like? 3. Did anyone grope or touch your body sexually that you found offensive? 4. Did anyone say things about how you look, like fatty, toothpick, twig, big nose, dough boy, or other mean words? 5. Did anyone said that you must change – e.g. lose weight, change outfit style, or your manner of being in order to join them? 6. Did anyone criticize you for personal things, saying that you are a swot, loser, freak, nerd, immature, geek, dafty, idiot, or similar words? 7. Did others show that they didn’t want you to joint them? 8. Were you beaten, kicked or attacked in an ugly way by someone in school, or on the way to or from school? 9. Were you mocked, bullied in an unpleasant way, or did someone give you nasty comments in school or on the way to or from school? 10. Did you get teased because of your origin (e.g. where you or your parents come from)? 11. Did anyone say ugly things about your origin? 12. Did you feel ill-treated by other students because of your origin? All the questions referred to the current semester. The score of the scale varied from one to three, with higher score suggesting more exposure to bullying. The scale had Cronbach Alpha of 0.848.

*Class atmosphere* was measured by asking students to choose the statement they thought correct. This scale was constructed by LoRDIA group, measured the social climate of the classroom, whether the students are supportive to each other. There were 4-point Likert scale response alternatives (Yes, absolutely true / Yes, fairly true / No, not so true / No, not true at all) with four statements: 1. We help each other; 2. We are kind to each other; 3. We like doing things together; 4. No one feels excluded. The score of the scale varied from one to four, with higher score signifying better class atmosphere. The scale had Cronbach Alpha of 0.833.

Table 2.4

*Overview of the variables*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Number of cases</th>
<th>Missing</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in school</td>
<td>1.20</td>
<td>4.00</td>
<td>3.10</td>
<td>172</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>Well-being</td>
<td>1.42</td>
<td>4.75</td>
<td>3.52</td>
<td>171</td>
<td>4</td>
<td>2.3</td>
</tr>
<tr>
<td>Relation to teachers</td>
<td>1.00</td>
<td>4.00</td>
<td>2.88</td>
<td>172</td>
<td>3</td>
<td>1.7</td>
</tr>
</tbody>
</table>
### 2.5 Data analysis

A multiple linear regression was performed by using IBM Statistics SPSS version 25 to test all the hypotheses. Before running the analysis, preparation was carried out with checking all the assumptions. Multicollinearity denotes the independent variables that are highly correlated. When it happens, it will be difficult to tell how much each variable has contributed to the outcome. Therefore, it is essential to test for multicollinearity before running multiple regression. Checking for outliers is also an important step before the analysis since multiple regression is sensitive to extreme scores. Both dependent and independent variables were screened. Normality was tested to see if the data was normally distributed or skewed. Linearity was checked between independent variables and dependent variables to make sure they have linear relationships, and homoscedasticity was evaluated to ensure the variation about the predicted value is constant (Pallant, 2010).

Missing cases were tested to see if they differ from the participants of wave three in the aspects of participation, well-being, relation to teachers, experience of bullying and class atmosphere. Regarding the size of the sample, Tabachnick and Fidell (2013) recommend that number of cases should be above $50 + 8m$ ($m =$ number of independent variables). In this study, 175 is way more than 74. Thus, the sample size has met the requirement for multiple regression. Out of all assumptions, normality was violated, and four outliers were identified. Data of bullying was skewed since it is logical that many of the students were not bullied at school. Given the size of the data, it is not unusual to have a few outliers. When looking back into the data, there were no values that fell outside the range of possible values. Thus, outliers were not deleted from the dataset. After the preparation, linear regression was performed twice. First regression had participation as dependent variable, with relation to teachers, experience of bullying, and class atmosphere as independent variable. Second regression had well-being as dependent variable and the same independent variables as the first regression. Pearson R was applied to find out whether the participation and well-being are correlated. The detail of the analysis can be seen in Chart 2.5.

<table>
<thead>
<tr>
<th>Experience of bullying</th>
<th>1.00</th>
<th>2.56</th>
<th>1.17</th>
<th>169</th>
<th>6</th>
<th>3.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class atmosphere</td>
<td>1.00</td>
<td>4.00</td>
<td>3.04</td>
<td>171</td>
<td>4</td>
<td>2.3</td>
</tr>
</tbody>
</table>

1. Percentage of missing cases.
Threats to reliable data could be unclear questions on instruments, tests are carried in different ways, and participants are nervous, misinterpret questions (Creswell, 2002). In the present case, young adolescents with SNP filled questionnaires in school with the help of the members of research team. This increased the reliability of the data collected. Scales used have to be tested, if any adaptations were made within the scale, then it has to be verified. All scales used in LoR-DIA have been pretested, and scale with modifications were also tested in pilot studies before each wave. This greatly increased the reliability of the measurements. In addition, Cronbach’s alpha of all scale used in this study were tested, and all values were above .07, indicated a satisfactory internal consistency of the scales. In this study, threats to internal validity could be testing, since the data was collected at time point three, students already had some of the questions in the questionnaire twice, they might give the same answers as before without much thinking. As to external validity, sample characteristics could be a threat. Because the sample of this study was specific of a certain group with certain problems, the generalization could be limited to only this group.

2.7 Ethical consideration

Chart 2.5

*Analysis route*

**IV:**
1. Relation to teachers
2. Experience of bullying
3. Class atmosphere

**DV:**
- Participation
- Well-being
If participants are research subjects in a study, there are critical ethical issues in need of thorough consideration. Fundamental principles such as confidentiality, and especially informed consent can be very important. First, participants have the right to be informed. Information about the aim and the procedure of the research, how data will be collected, stored confidentially and applied in publication should be explained to the parents. Second, participants have the right to withdraw. They could choose not to do the interview or answer any kind of questions and withdraw themselves from the study. No explanation will be needed for such actions, and researchers have to make sure both parents and participants are aware of this. Since adolescents with neurodevelopmental disabilities are a vulnerable group, the possible anxiety and stress that could be provoked in the research process should be seriously considered (Long & Johnson, 2007). Each wave of LoRDIA was approved, and the data collections used in the present study (waves 1 and 3) were approved by the Region Research Ethics Board in Gothenburg, Sweden (No. 362-13, 2013-09-25 and No. T553-15, 2015-09-25). Before entering the study, all the parents and students received a letter explaining the purpose of the study. It emphasized the voluntary nature of participation and the confidentiality of the information collected. They were also informed that they have the right to withdraw from the study at any time. According to Carroll-Lind, Chapman, Gregory, and Maxwell (2006), access to children’s views is often prevented due to ethical guideline as study involving children has to get active consent from the parents. If active consent cannot be obtained from parents, then the child cannot participate in the study. In order to hear authentic voices of the children, procedure of passive consent can be used. Based on information about the study, parents have the opportunity to deny their child’s participation by contacting the research group either through email or phone call, or by returning the form that was sent to them. In LoRDIA, the critical part was to ensure that all parents had the opportunity to understand and to opt-out on behalf of their child. Therefore, the information letter was translated to 32 languages based on the mother language of all migrated persons, and in case of parents living separated, the letter was sent to both of the parents to their home addresses. When the parents did not opt-out their child, the child had the right to decide whether participate or not. Furthermore, students were informed that if they experience emotional distress during the research process, there is a welfare officer who could help them.
### 3 Result

#### 3.1 Predictors to participation

The interest was to test if school’s social environmental factors are predictive to participation of young adolescents with SNP. First, correlations between social environmental factors and participation of adolescents with SNP were tested. Results show that relation with teachers has a strong positive correlation with adolescents’ participation level. Experience of bullying has a strong negative correlation with participation. Class atmosphere is positively correlated with participation on a moderate level. All the correlations were statistically significant. The details of correlations were presented in Table 3.1.1.

Table 3.1.1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>$r$</th>
<th>$p$</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in school</td>
<td>3.1035</td>
<td>-</td>
<td>.000</td>
<td>172</td>
</tr>
<tr>
<td>Relation to teachers</td>
<td>2.8818</td>
<td>.528</td>
<td>.000</td>
<td>172</td>
</tr>
<tr>
<td>Experience of bullying</td>
<td>1.1929</td>
<td>-.528</td>
<td>.000</td>
<td>169</td>
</tr>
<tr>
<td>Class atmosphere</td>
<td>3.0390</td>
<td>.398</td>
<td>.000</td>
<td>171</td>
</tr>
</tbody>
</table>

* $p=.000$ means $p<.0005$

The tolerance and variance inflation factor (VIF) of the predictors indicated that there was no concern for multicollinearity (all tolerance values > 0.10; all VIFs < 2.0). According to Tabachnick and Fidell (2013), in order to rule out the violation of having outliers, the critical value of Mahalanobis distance should not exceed 16.27 when there are three independent variables in the regression. Mahalanobis distance of this model was higher than the critical value. Then, one outlier was deleted just to test how it will affect the result. It was found out that if the outlier was deleted, Mahalanobis distance would drop to 26.40. However, the R square would be lower, and it would be unethical to delete this outlier from the dataset since there was no error in the data of this case. Therefore, no outlier was deleted. The maximum value for Cook’s Distance was .254, means that the unusual cases had no major influences on the results of the model as a whole. Values larger than 1 suggest there is a potential problem (Pallant, 2010). The result from the standard multiple regression show that the regression model significantly (Sig.= .000) accounted for 44.1 per cent of the variance in participation of young adolescents with SNP. Out
of those significant predictive factors, experience of bullying made the biggest contribution to explain participation. In other words, experience of bullying is the strongest predictor to participation of young adolescents with SNP compare to the other two predictors. The relation to teachers made slightly less contribution to predict participation, and class atmosphere made the least contribution in this case. In order to find out how much of the total variance in participation that is uniquely explained by these three predictive factors, and how much total R square would drop if any of these three predictive factors were not included in this model, the Part r value was squared. It indicated that relation to teachers, experience of bullying, and class atmosphere explained eight per cent, eleven per cent, and three per cent of the variance in participation respectively. The total R square would drop eight per cent, eleven per cent, and three per cent severally if relation to teachers, experience of bullying, and class atmosphere were not included in this regression model. Notably, the total value of Part r \( (8+11+3 \% = 22 \% ) \) is not equal to 44.1 per cent. This is because Part r values only represent unique contribution of each variable with any overlap or shared variance removed. While the total R square value not only include unique variance explained by each variable, but also the shared variance. The details of the model can be seen in Table 3.1.2.

Table 3.1.2

The results of the first regression

<table>
<thead>
<tr>
<th>Model</th>
<th>( R^2 )</th>
<th>Adjusted ( R^2 )</th>
<th>( p )</th>
<th>Mahal. (max)</th>
<th>Cook’s (max)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.441</td>
<td>.430</td>
<td>.000</td>
<td>46.65</td>
<td>.254</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>( \beta )</th>
<th>( p )</th>
<th>Part r</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relation to teachers</td>
<td>.326</td>
<td>.000</td>
<td>.290</td>
<td>.789</td>
<td>1.268</td>
</tr>
<tr>
<td>Experience of bullying</td>
<td>-.362</td>
<td>.000</td>
<td>-.335</td>
<td>.852</td>
<td>1.173</td>
</tr>
<tr>
<td>Class atmosphere</td>
<td>.194</td>
<td>.003</td>
<td>.179</td>
<td>.858</td>
<td>1.166</td>
</tr>
</tbody>
</table>

*\( p < 0.05 \)

3.2 Predictors to well-being

The second hypothesis was that school’s social environmental factors are predictive to well-being of young adolescents with SNP. The correlations between IV and DV were examined
first. Results show that all the correlations were statistically significant. Relation to teachers and class atmosphere had moderate positive correlation with well-being of students, while experience of bullying had moderate negative correlation with well-being. Details of correlation can be seen in Table 3.2.1.

Table 3.2.1

*Correlations between social environment and well-being*

<table>
<thead>
<tr>
<th>Variables</th>
<th>r</th>
<th>p</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-being</td>
<td>.404</td>
<td>.000</td>
<td>170</td>
</tr>
<tr>
<td>Relation to teachers</td>
<td>-.544</td>
<td>.000</td>
<td>170</td>
</tr>
<tr>
<td>Experience of bullying</td>
<td>.356</td>
<td>.000</td>
<td>169</td>
</tr>
<tr>
<td>Class atmosphere</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05

Since the second regression had the same independent variables as the first one, the result of multicollinearity was the same (all tolerance values > 0.10; all VIFs < 2.0). Mahalanobis distance was explained in the first regression, and the maximum value for Cook’s Distance was .085, indicated that the unusual cases did not have any undue influences on the model. The results of the second regression suggest that experience of bullying was the strongest predictor to well-being of adolescents with SNP. Relation to teachers and class atmosphere had less and almost the same contribution to students’ well-being. As explained in the first regression, acsquared part r value in this model implied that relation to teachers explained 2% of the variance in well-being of students, while experience of bullying and class atmosphere uniquely contributed 16% and 3% to the variance. The total R square would drop 2 %, 16 %, and 3 % respectively if relation to teachers, experience of bullying, and class atmosphere were not included in this regression model. Details of the second regression was displayed in Table 3.2.2.

Table 3.2.2

*The results of the second regression*

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>$p$</th>
<th>Mahal. (max)</th>
<th>Cook’s (max)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.374</td>
<td>.363</td>
<td>.000</td>
<td>46.65</td>
<td>.085</td>
</tr>
</tbody>
</table>
Correlations between participation and well-being

To test the third hypothesis that participation of young adolescents with SNP are associated with their well-being. Correlation test shows that participation of young adolescents with SNP had a significant positive strong correlation with well-being of this population ($r=0.542$, $p<0.005$).

3.4 Missing cases

In order to make sure the missing cases do not have significant differences compare to the group that participated in wave three, regression analysis was performed with participation and well-being as dependent variable, relations to teachers and bullying as independent variable (class atmosphere only existed from wave three) using data from wave one for both of the groups. Results show that the group that did not participate in wave three had bullying as the strongest negative predictor to their participation and well-being in wave one; while the group that participated in wave three had relation to teachers as the strongest positive predictor to participation and well-being in wave one, bullying in this case was slightly less contributive. For the group that did not participate in wave three, bullying has a moderate negative correlation with participation and well-being; while relation to teachers has a moderate positive correlation with participation and well-being. For group that participated in wave three, relation to teachers has a strong positive correlation with participation, a moderate positive correlation with well-being; while bullying has a moderate negative correlation with both participation and well-being.
4 Discussion

This study investigates the relations between school’s social environment and participation, well-being of young adolescents with SNP. It intends to pinpoint what social environmental factors in school that are influential and what factors that are the strongest predictors to participation and well-being of young adolescents with SNP. The results show that experience of bullying is the strongest (negative) predictor to both participation and well-being followed by the factors relation to teachers and class atmosphere (both positive). In other words, students who have been exposed to bullying in school are more likely to have low level of participation and poor well-being; who have good relations with teachers and peers tend to have higher levels of participation and better well-being. In addition, participation of young adolescents with SNP was found to be strongly positively related to their well-being.

Young adolescents spend a big amount of time in school on a regular basis over years. They frequently interact with teacher and peers in the school context and they develop through this proximal process. The results of the study show that the quality of the interactions is influential to their level of participation and well-being, in other words, affect the healthy development of young adolescents. This coincides with Bronfenbrenner’s mature version of his biopsychosocial model stating that the form, content, power and direction of proximal process could influence the development of an individual (Bronfenbrenner, 2005).

4.1 Experience of bullying

The concept of bullying nowadays is not only limited to physical forms such as kicking and hitting, but also include social bullying (e.g. spreading rumors, exclusion/isolation, embarrass someone in public etc.), and verbal bullying (e.g. threatening, taunting, inappropriate sexual comments etc.) (U.S. Department of Health and Human Services, 2015). Research shows that bullying towards personal characteristics such as ethnicity, sexual orientation, religion etc. are common nowadays and can be as harmful or even more deleterious than the general forms of bullying (Gower, McMorris, & Eisenberg, 2015). Bullying is considered to be the most pervasive form of youth violence, and it may escalate into extreme antisocial behaviour (Smokowski & Kopasz, 2005). It is also a problem that has often been neglected in school around the world (Swearer, Espelage, Vaillancourt, & Hymel, 2010).

The current study indicates that the participation level of young adolescents with SNP is more likely to decrease if they have experienced bullying at school. According to a study from Buhs
and Ladd (2001), reduced school participation that emanates from bullying can be generally explained in two ways. First, children who are bullied become less active in classroom or school activities because their opportunities to participate are deprived due to the exclusion from peers. Second, children who are bullying victims have a propensity to stay away from school as a means of avoiding further abuse. The first explanation coincides with the engagement while the second interpretation corresponds to the attendance. A study from Cornell, Gregory, Huang, & Fan, (2013) reveals that students’ perceived bullying in high school is a serious problem that is associated with school dropout.

Research indicates that bullying in school have significant consequences for well-being of young adolescents. This study shows that experience of bullying is negatively associated with well-being of young adolescents with SNP. It means these students with SNP who have been bullied in school are more likely to have poor well-being. Experience of bullying is closely tied to students’ physical and mental health both concurrently and longitudinally (Gower et al., 2015). Students who are bullying victims generally show higher levels of insecurity, anxiety, depression, unhappiness, and low self-esteem. They demonstrate poor social and emotional adjustment, lack communication and problem-solving skills. They have difficulty making friends and often feel lonely. (Glew, Rivara, & Feudtner, 2000; Nansel et al., 2001). Bullying victims may develop psychosomatic symptoms such as headache or stomach ache because of the fearful experience in school. They are also at great risk for psychiatric disorders, substance use, and suicidality in young adulthood (Gower et al., 2015; Smokowski & Kopasz, 2005).

The results of the current study are consistent with previous findings using the same sample but with data from wave one. Carlberg and Granlund (accepted) report that students who have self-reported neurodevelopmental disabilities are more exposed to bullying and tend to have lower level of participation in school compare to their typically developing peers. Having neurodevelopmental conditions might make them an easy target of bullying, which will bring damaging consequences to both participation and well-being of these students. The fact that the same relations are seen for two time points indicates that bullying is phenomenon that might be ongoing for long time periods.

4.2 Relation to teachers

The results show that relation to teachers was slightly less contributive than experience of bullying when predicting level of participation as an outcome. Yet, it has a strong positive
correlation with participation of young adolescents with SNP. The current study shows that students who have better relation to teachers are more likely to have higher level of participation. Klem and Connell (2004) find that students who report having positive relationships with their teachers are three times more engaged in class than students who report having poor relationships. Support from nonparental adults is especially important to adolescents. Perceived teacher-student relationship has a strong impact on high school students’ motivational beliefs (Ryan & Patrick, 2001). When students perceive their teachers as supportive, responsive, caring and trustworthy, they have a great likelihood to reduce disruptive behaviours, and engage more in academic work, ask for help, use self-regulated learning strategies and achieve better grades (Patrick, Ryan, & Kaplan, 2007). Young adolescents with neurodevelopmental disabilities have more negative relationships with teachers compare to their typically developing peers (Carlberg & Granlund, accepted). Children with disabilities are more dependent on adults than their classmates (Eriksson, Welander, & Granlund, 2007). The quality of the relationship between teachers and students is critical for motivating and engaging students to learn (Wentzel & Miele, 2009).

4.3 Class atmosphere

In the current study, class atmosphere is less indicative to participation and well-being of young adolescents with SNP compare to the experience of bullying. However, class atmosphere was found to have moderate positive correlation with both participation and well-being of the study population. The scale used to measure class atmosphere laid the focus on peer relations. It shows that students who report themselves as having a good relationship with peers are inclined to participate more in school. Earlier research has confirmed that social environment of the classroom is essential to student engagement. Support from teachers and peers enhance students’ focus on mastery and feelings of efficacy, hence facilitate engagement (Patrick et al., 2007). Students who feel supported by their peers have stronger sense of emotional security and tend to engage more in academic environment. A poor relationship with peers may lead to school adjustment problems such as school dropout, truancy, and underachievement (Wentzel & Miele, 2009). Furthermore, young adolescents who report having good peer relations also report higher levels of emotional well-being. A positive relationship with peers is beneficial for adolescents to develop social skills and self-esteem, form identity, and establish autonomy (Currie et al., 2009). It is also linked to higher levels of psychosocial well-being and positive health during adolescence (Lygnegård, Almqvist, Granlund, & Huus, 2018).
4.4 Participation and well-being

The results substantiate the premise that participation is strongly associated with students’ well-being. Children with disabilities are a vulnerable group that are at higher risk of abuse, discrimination and neglect, and they often have poor health (Hershkowitz, Lamb, & Horowitz, 2007). Young adolescents with neurodevelopmental disabilities are more likely to have restricted participation in school than their typically developing peers (Carlberg & Granlund, 2018, accepted). By participating, children get the opportunities to develop new competencies, and improve their sense of mastery. In a long term, they could reap benefits like improved social skills, better physical health, as well as psychological and emotional benefits such as enhanced self-efficacy and sense of identity (King, Rigby, & Batorowicz, 2013).

4.5 Strengths and limitations

This study was designed as cross-sectional, it only demonstrates associations instead of causality. Therefore, it is hard to say what is the cause of low level of participation and poor well-being of young adolescents with neurodevelopmental problems. It is only possible to identify the relations between these factors. Self-reported neurodevelopmental problems can be seen as both a limitation and a strength. Since the problems are self-reported, we do not know if the child has a diagnosis or not. Also, childrens’ voices on these matters have rarely been heard when doing research. Asking children to speak out their own opinion is emphasized in United Nation’s Convention of the Rights of the Child (UNCRC) (UNICEF, 1989). Children without diagnosis also frequently encounter difficulties in school. Having children self rate their problems could bring out their experience at school, also raise the voices for children who perceive themselves as different but do not have a formal diagnosis. Such “grey zone” children can perceive functional problems have been reported in several earlier studies of younger children (Almqvist et al., 2018).

One strength of the study is that young adolescents with SNP who participated in wave one but not in wave three have been compared with the ones who participated in wave three but using data from wave one, in order to see if there are any difference between these two groups in the same aspects. Since similar results were found, the sample used in this study can be seen as representative for all the young adolescents with SNP. Another strength of this study is that participation was measured with combined self-reported attendance and engagement. Although participation is a multidimensional concept, the objective dimension of attendance and the
subjective dimension of engagement should be at least included when being measured (White-
neck & Dijkers, 2009). Most of the research has been focused on the frequency of participation
since attendance is easy to quantify while engagement is hard to grasp (Maxwell, Alves, &
Granlund, 2012). Young adolescents with self-reported neurodevelopmental problems have
been taken as study population is another advantage of this study. Former studies examined the
participation level of young adolescents with neurodevelopmental problems comparing to their
typically developing peers. The current study solely put the focus on students with neurodevel-
opmental problems to study within group variance. Furthermore, no previous study that inves-
tigate the relations between school’s social environment and participation and well-being of
this certain group of students in Sweden has been found.

4.6 Implications for teachers

As a teacher, it is important to be sensitive to bullying behaviours. Research indicates that many
teachers do not have knowledge or skills to identify bullying behaviours among their students.
Physical aggression was more often deemed as bullying and was taken more seriously than
verbal aggression (Castree, Rogers, & Kitchin, 2013). In a study of Holt and Keyes (2004),
students reported prevalence rates of bullying were higher than teacher reported. Teachers could
also participate in school’s bullying prevention programs (if available), which helps teacher to
understand the problem, learn how to respond to it and adjust their interactions with students to
decrease the bullying behaviours. Furthermore, intervene students’ disruptive behaviours in a
positive, educative and effective way could also help decreasing the likelihood of bullying (Al-
len, 2010).

4.7 Future research

Similar findings from two time points using LoRDIA data from wave one (Carlberg, 2016) and
wave three (the current study) imply that bullying can be ongoing for years to young adolescents
with neurodevelopmental problems. Study shows that children who are bullied are at risk for a
wide range of poor social, health, and economic outcomes nearly four decades after exposure
(Takizawa, Maughan, & Arseneault, 2014). Children with neurodevelopmental conditions
might have even more damaging consequences. Therefore, longitudinal studies of bullying tra-
jectories are needed to find out how bullying influence well-being of young adolescents with
neurodevelopmental problems.
In line with former research, this study shows that teacher plays an important role in helping students to participate in school. However, research that examines factors that foster supportive and caring behavior on the part of teachers is relatively rare. School level factors are influential to teacher’s ability to cultivate positive relationships with their students. For instance, provision of support to high school students is associated with teacher’s job satisfaction, teacher education, and classroom management skills (Opdenakker & Van Damme, 2006). Other factors like quality of feedback from administrators, involvement in decision making, opportunities to collaborate, relation with colleagues, instructional help and resources, are all likely to increase teacher’s willingness to support their students in a similar manner (Firestone & Pennell, 1993). Young adolescents with neurodevelopmental disabilities have more negative relationship to teachers than their typically developing peers (Carlberg, 2016). It is very likely that teachers who have these students would experience stress, depress and they may need help. Therefore, more research is called for to pinpoint what resources teachers need and how to create a supportive environment not only for students, but also for teachers.
5 Conclusion

Participation of young adolescents with SNP are strongly associated with social environmental factors of being bullied and relation to teachers. Young adolescents who experience bullying and have poor relationship with teachers are more likely to have low level of participation in school. Although class atmosphere is less predictive to participation, it still indicates that a good class atmosphere could help increasing participation of young adolescents with SNP. Regarding well-being of young adolescents with SNP, bullying is found out to be the most significant predictor. Young adolescents who have been bullied tend to have poor level of well-being. Good relations with teachers and supportive class atmosphere are also predive to better health and well-being with a lesser degree. Bullying has prolonged effects on children and youth, it could be destructive to children with neurodevelopmental conditions. Therefore, more longitudinal studies will be needed to investigate the time period of bullying and how this affect their participation and well-being. In addition, having students with neurodevelopmental conditions can be overwhelming. How to provide a supportive environment for teachers deserves more attention, since this can help teacher to be more ready and qualified to build up positive teacher-student relationships.
References


