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Support in school and the occupational transition process

Adolescents and young adults with
neuropsychiatric disabilities

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Title

Support in school and the occupational transition process – adolescents and young adults with neuropsychiatric disabilities

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CONTENTS

ABSTRACT	1
LIST OF PAPERS	3
ABBREVIATIONS	4
INTRODUCTION	5
BACKGROUND	6
Adolescents and young adults with neuropsychiatric disabilities	6
<i>Asperger's disorder and attention deficit/hyperactivity disorder</i>	6
<i>Young adults with neuropsychiatric disabilities in school and work</i>	8
Support in school	10
<i>The interaction between the person and the environment in school</i>	11
<i>Students with neuropsychiatric disabilities and support in school</i>	13
<i>The educational system and students with neuropsychiatric disabilities</i>	14
Support in the occupational transition process	17
<i>An interactional process between the environment and the person in the occupational transition process</i>	18
<i>The occupational transition process and individuals with neuropsychiatric disabilities</i>	19
<i>The employment system and individuals with neuropsychiatric disabilities</i>	20
Rationale of the thesis	21
AIMS	23
METHODS	24
Method description	24
Participants and procedure	25
Data collection	28
<i>Questionnaire</i>	28
<i>Interviews</i>	29
Data analysis.....	30

Ethical considerations	32
RESULTS	35
Study I. Computer use in educational activities by students with ADHD	35
Study II. Internet activities during leisure - a comparison between adolescents with ADHD and adolescents from the general population	35
Study III. Support for learning goes beyond academic support: Voices of students with Asperger's disorder and attention deficit hyperactivity disorder	37
Study IV. The occupational transition process to upper secondary school, further education and/or work for young adults with Asperger's disorder and attention deficit hyperactivity disorder	38
GENERAL DISCUSSION	41
Insufficient support in school	41
<i>Provision of support in school to students with AS or ADHD</i>	42
<i>ICT and education</i>	43
<i>Lack of social and emotional support in school</i>	47
Support for the occupational transition process	49
Methodological considerations	54
<i>Aspects of generalizability of the findings</i>	54
<i>Choice of design and data collection methods</i>	56
<i>Aspects of data analysis and trustworthiness</i>	58
CLINICAL IMPLICATIONS	61
ACKNOWLEDGEMENTS	64
SVENSK SAMMANFATTNING	67
REFERENCES	70

ABSTRACT

The overall aim of this thesis was to describe and explore the experiences of support in school of adolescents and young adults with neuropsychiatric disabilities. Furthermore, the aim was to explore support that influences the occupational transition to upper secondary school, further education and work. The two first studies investigated computer use in educational activities and during leisure activities by adolescents with attention deficit hyperactivity disorder (ADHD). Study II also aimed to explore how traditional leisure activities and Internet activities interrelate among adolescents with ADHD. In Studies I and II data was collected using a questionnaire focusing on information and communication technology (ICT) use in school and leisure. Adolescents with ADHD (n = 102) aged 12-18 years were compared with adolescents with physical disabilities (Study I) and adolescents from the general population (Studies I and II). In Study III the aim was to describe the experiences of support at school among young adults with AS or ADHD, and to explore what support they, in retrospect, described as influencing learning. Study IV aimed to describe the occupational transition process to upper secondary school, further education and/or work and to explore what support influenced the process from the perspectives of young adults with AS or ADHD. Studies III (n=13) and IV (n=15) used qualitative semi-structured interviews with young adults with AS or ADHD, aged 18-30 years and were analysed using hermeneutics according to Gadamer.

The findings of Study I showed that adolescents with ADHD reported significantly less frequent use of computers for almost all educational activities compared with students with physical disabilities and students from the general population. Adolescents with ADHD reported low satisfaction with computer use in school and a desire to use computers more often and for more activities in school compared with students with physical disabilities. Study II showed that Internet activities among adolescents with ADHD during leisure, tended to focus on

online games. Furthermore, analysis demonstrated that Internet activities were broadening leisure activities among adolescents with ADHD, rather than being a substitute for traditional leisure activities. Study III found that young adults with AS or ADHD experienced difficulties at school that included academic, social, and emotional aspects, all of which influenced learning. Support addressing difficulties with academic performance was described as insufficient and only occasionally provided in school. Results reveal that support for learning among students with AS or ADHD needs to combine academic and psychosocial support. The findings of Study IV identified three different pathways following compulsory school. Support influencing the occupational transition process included: occupational transition preparation in compulsory school, practical work experience in a safe environment, and support beyond the workplace. Support from community-based day centres was described both as an important step towards work in the regular labour market, as well as being too far away from the regular labour market.

In conclusion, this thesis revealed that support in school among students with AS or ADHD needs to combine academic and psychosocial support. Despite being regarded as facilitating learning, individuals with ADHD or AS reported limited computer and Internet use in school. Based on the results it is suggested that Internet activities may provide adolescents with neuropsychiatric disabilities with new opportunities for social interaction and educational activities. On the basis of the results it is suggested that the occupational transition process should be viewed as a longitudinal one, starting early in compulsory school and continuing on until young adults obtain and are able to remain in work or further education. This thesis revealed that extended transition planning, inter-service collaboration and support from community-based day centres were aspects of the environment that influenced the occupational transition process.

Keywords: Information and communication technology, neuropsychiatric disabilities, education, occupational transition, occupational therapy, internet activities

LIST OF PAPERS

This thesis is based on the following papers, which will be referred to by their roman numbers:

- I. Bolic, V., Lidström, H., Thelin, N., Kjellberg, A., & Hemmingsson, H. (2013). Computer use in educational activities by students with ADHD. *Scandinavian Journal of Occupational Therapy*, 20(5), 357–364. doi: 10.3109/11038128.2012.758777
- II. Bolic Baric, V., Hellberg, K., Kjellberg, A., & Hemmingsson, H. (2015). Internet Activities During Leisure: A Comparison Between Adolescents With ADHD and Adolescents From the General Population. *Journal of Attention Disorders*. November 25. doi:10.1177/1087054715613436
- III. Bolic Baric, V., Hellberg, K., Kjellberg, A., & Hemmingsson, H. (2015). Support for learning goes beyond academic support: Voices of students with Asperger’s disorder and attention deficit hyperactivity disorder. *Autism: Journal of Research and Practice*. April 24. doi:10.1177/1362361315574582
- IV. Bolic Baric, V., Hemmingsson, H., Hellberg, K., & Kjellberg, A. The occupational transition process to upper secondary school, further education and/or work for young adults with Asperger’s disorder and attention deficit hyperactivity disorder. (Submitted). *Autism: Journal of Research and Practice*

ABBREVIATIONS

ADHD	Attention deficit/hyperactivity disorder
AS	Asperger's disorder
DSM	Diagnostic and Statistical manual of Mental Disorders
HC	Habilitation centres
HSL	Health- and Medical Services Act
ICD	International Classification of Diseases
ICT	Information and Communication Technology
LSS	The Act Concerning Support and Service for Persons with Certain Functional Impairments
MOHO	The Model of Human Occupation
SOL	Social Services Act

INTRODUCTION

The need to promote participation in general education, further education and work of adolescents and young adults with disabilities is a fundamental goal of disability policy (United Nations, 2006; Prop.1999/2000:79), however many questions on how to succeed in ensuring full participation in society still remains to be answered. A number of areas are prioritised including increased labour market participation, further education participation, and information and communication technology (ICT) to allow people with disabilities of all ages full participation in everyday life (Skr. 2009/10:166). The right to education also entails adapting support in school based on each student's needs in order to support learning (United Nations, 2006; The Education Act (SFS), 2010:800). Completed education is the pathway to participation in further education, work and ultimately society (Skr. 2009/10:166; SOU 2013:74). In order to promote educational and work opportunities of young adults with AS or ADHD, further knowledge is needed regarding the occupational transition process and how support could be designed to increase the opportunities of this group of young people for learning and participation.

BACKGROUND

Adolescents and young adults with neuropsychiatric disabilities

‘Neuropsychiatric disabilities’ is an umbrella term used in Sweden to encompass a wide range of diagnoses including attention deficit/hyperactivity disorder (ADHD), Tourette's syndrome and diagnosis within The Autism Spectrum Disorder such as autistic disorder (autism) and Asperger's disorder (AS) (The National Board of Health and Welfare, 2015). Two of the two most common neuropsychiatric disabilities are AS and ADHD. Awareness of AS and ADHD has generally increased within society, with increased diagnosis and recognition of reduced participation in education, employment, and independent living (Boyd & Shaw, 2010; DuPaul et al., 2011; Levy & Perry, 2011; Loe & Feldman, 2007; (The National Board of Health and Welfare, 2010).

The term ‘neurodevelopmental disorders’ is commonly used internationally for conditions with onset early in development, including autism spectrum disorder and ADHD (American Psychiatric Association, 2013). In Sweden the terms ‘neuropsychiatric disorders’ and ‘neuropsychiatric disabilities’ are used interchangeably when referring to conditions with onset during childhood. In this thesis, the term ‘neuropsychiatric disabilities’ incorporates Asperger's disorder and attention deficit/hyperactivity disorder.

Asperger's disorder and attention deficit/hyperactivity disorder

Asperger's disorder is characterised by impairment in social interaction and the development of restricted, repetitive patterns of behaviour, interests, and activities (American Psychiatric Association, 2013). There have been different ways of classifying Asperger's disorder throughout the 20th century. Asperger's disorder was initially diagnosed as a separate disorder using The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association,

2000); however, it has now been merged into autism spectrum disorder (ASD) (American Psychiatric Association, 2013). Individuals with Asperger's disorder experience deficits in social interaction across multiple domains, including deficits in social reciprocity, nonverbal communicative behaviors, and skills in developing, maintaining, and understanding relationships. In addition to difficulties with social interaction, individuals may experience restricted or repetitive patterns of behavior, interests, or activities. Stereotyped or repetitive behaviors might include simple motor stereotypies (e.g., hand flapping, finger flicking), repetitive use of objects (e.g., spinning coins), resistance to change, or highly restricted, fixated interests (American Psychiatric Association, 2013). Approximately 0,4-0,6 % of all children are affected by Asperger's disorder (The National Board of Health and Welfare, 2010), and the early symptoms of the disorder may be identified from the age of one to three years old (Fakhoury, 2015).

Attention-deficit/hyperactivity disorder (ADHD) is characterised by a persistent pattern of inattention, hyperactivity, and/or impulsivity that is associated with clinically significant impairment in academic and/or social functioning (American Psychiatric Association, 2013; Barkley, 2014). Inattention and disorganisation may entail difficulties staying on task, sustaining focus, and listening, and a propensity to lose things. Hyperactivity-impulsivity may entail difficulties with overactivity, including fidgeting, inability to stay seated, and inability to wait. In adults, hyperactivity and impulsivity may manifest as restlessness, hasty actions that occur on the spur of the moment, or wearing others out with their extensive activity (American Psychiatric Association, 2013). ADHD is one of the most common childhood disorders, affecting between 3-7 % of all school-aged children (American Psychiatric Association 2013; Polanczyk et al., 2007; The National Board of Health and Welfare, 2014).

Multiple, interacting genetic factors and their interplay with environmental factors constitute the etiology of both ADHD and AS (Antshel et al., 2013; Fakhoury, 2015; Sadek, 2014). Both AS and ADHD may be diagnosed using The Diagnostic and Statistical Manual of Mental Disorders DSM-5 (American Psy-

chiatric Association, 2013) or earlier versions (American Psychiatric Association, 2000), and/or the International Classification of Diseases (ICD-10) (World Health Organisation, 1993). In addition, both individuals with ADHD and individuals with AS are associated with difficulties with executive function, social relationships, communication and emotional difficulties (Antshel et al., 2013; Mulligan et al., 2009; Rommelse et al., 2011; Van der Meer et al., 2012). ADHD and AS are considered to persist into adulthood, with reduced social, educational and employment participation (American Psychiatric Association, 2013; The National Board of Health and Welfare, 2014). Co-occurring difficulties with emotional well-being are common among individuals with neuropsychiatric disabilities (American Psychiatric Association, 2013; The National Board of Health and Welfare, 2014). Studies show that neuropsychiatric disabilities place individuals at higher than average risk of experiencing additional emotional difficulties, such as depression and anxiety disorder (Barkley, 2014). For example, approximately up to half of individuals with ADHD have a co morbid anxiety or depressive disorder (Barkley, 2014), while about 70% of individuals with autism spectrum disorder may have one comorbid mental disorder, and 40% may have two or more comorbid disorders (Simonoff et al. 2008).

Young adults with neuropsychiatric disabilities in school and work

An important aspect of occupational participation in occupational therapy is a person's productivity. As defined by Kielhofner (2008), productivity refers to activities that contribute to others such as ideas, knowledge, information sharing and protection. Examples of productivity include paid or unpaid work, household management, and being a parent or a student. Productive occupations such as work and school are important components of everyday life, providing opportunities to participate in community life and contribute to society, and are important determinants of health (Wilcock & Hocking, 2015). In school, children and adolescents develop knowledge, skills and values, socialise with others, find meaning and are prepared for further education and work in the society (Rodger & Ziviani, 2006; The National Agency for Education, SKOLFS 2011:19). As

such, school is important for children's and adolescents' health, development and participation in further education, work and society (Rodger & Ziviani, 2006; Wilcock & Hocking, 2015).

With regard to school, students with neuropsychiatric disabilities may exhibit a variety of difficulties across different domains, including academic performance, difficulties with social relationships, and poorer well-being, all of which may negatively impact on school and work opportunities. Children and adolescents with AS or ADHD show poor academic outcomes compared to individuals without disabilities (DuPaul & Weyandt, 2006; Howlin et al., 2004; Levy & Perry, 2011; Loe & Feldman, 2007). For example, students with ADHD may have grade retention and a higher rate of suspension or expulsion from school compared to adolescents without ADHD (Barkley, 2014). Difficulties in social interaction are a hallmark feature of neuropsychiatric disabilities. Specifically, students with neuropsychiatric disabilities may experience difficulties interacting with peers, teachers and other adults, and also may struggle to make and keep friends (Blachman & Hinshaw 2002; Hebron & Humphrey, 2013; Hoza, 2007; Little, 2002; Mrug et al., 2012; Orsmond et al., 2004).

At work, individuals with neuropsychiatric disabilities show more on-the-job difficulties than their peers (de Graaf, 2008; Shifrin, Proctor & Prevatt, 2010), difficulties finding and maintaining work (Hurlbutt, 2004) and need supported employment (Howlin, Alcock & Burkin, 2005; Ridley & Hunter, 2006), and thus may require extra support with their work-related activities. In addition, studies show that individuals with AS continue to show significant social difficulties in adolescence and adulthood, and these have a negative influence on their work and community inclusion (Orsmond et al. 2013), as well as their quality of life (Howlin & Moss, 2012). Research has shown that the transition to further education is a crucial point for young adults with neuropsychiatric disabilities. When at college, preliminary studies on academic and social aspects of college students with neuropsychiatric disabilities suggest that, relative to the general college population, these college students experience more variety in their academic and psychosocial difficulties. These issues could include lower grade point

averages (Norwalk, Norvilitis & Maclean, 2009; Schwanz, Palm, & Brallier, 2007), psychological distress (Weyandt & DuPaul, 2008) and poorer satisfaction with life (Gudjonsson, 2009). Several explanations have been put forward, including loss of parental supervision and structure in college, variable course schedules, and the freedom and distractions of campus life (Blasé et al., 2009; Shaw-Zirt et al., 2005; Weyandt & DuPaul, 2008). In addition, students with neuropsychiatric disabilities are less likely to graduate from high school or obtain a college degree and employment (Blasé et al., 2009; DuPaul et al., 2009; Gerhardt & Lainer, 2011; Shattuck et al., 2012; Taylor & Mailick, 2014). Low education and unemployment increase the risk of health problems (The National Board of Health and Welfare, 2014).

Support in school

The influence of environmental aspects on occupations such as school and work is receiving increased recognition in occupational therapy (Christiansen & Baum, 2005; Kielhofner, 2008). The environment in which the occupation and its associated activities occur is important in terms of the way in which the environment enables or acts as a barrier to performance (Christiansen & Baum, 2005). The concept of support used in this thesis is broadly defined to include any changes in the environment and/or individuals' interaction with the environment, in order to support their school, work and occupational transition-related activities. The broad concept of support as it is used in this thesis refers to how aspects of the environment influence schooling and the occupational transition process (Kielhofner, 2008), rather than referring to the students' adaption of attitudes or behaviour in response to the challenges and the demands in the environment (Christiansen & Baum, 2005). For the purpose of this thesis, support is defined as incorporating modifications made in the environment (often referred to as adjustments or accommodations) and/or matching adolescents with environments or activities (Christiansen & Baum, 2005), as well as formal support (provided by the government and related services) and informal support (provided by social groups) (Rodger & Ziviani, 2006).

The interaction between the person and the environment in school

The model of human occupation (MOHO) was chosen as the theoretical framework used in this thesis (Kielhofner, 2008). MOHO is a conceptual model explaining the performance of occupation as a complex phenomenon that is influenced by personal and environmental aspects. In this model, personal aspects include, for example, values, interests, roles, habits, and performance capacities, that shape why and how individuals do things. MOHO recognises that the environment has a great impact on what people do and how people do things. Environmental aspects, including built and natural spaces, objects, social groups, cultural customs, and political and economic conditions, offer either an opportunity or a barrier to engagement in occupations (Kielhofner, 2008). Learning in school as defined in this thesis is believed to occur in the reciprocal interaction between the individual and the cultural and historical contexts in which it occurs, such as social relationships with classmates, peers, and teachers (Lave & Wenger, 1991; Säljö & Wyndham, 1993). This chosen definition is congruent with the explanation in MOHO of how a person's motivation, habits, and performance capacity interact with the social and physical environment, emphasising the interaction between the person, their activities and the environment, which may facilitate or hinder participation in school and work (Kielhofner, 2008).

From an occupational therapy perspective, the interaction between the student's characteristics and the environment, including physical and social aspects experienced at school influence students' schooling (Rodger & Ziviani, 2006; Kielhofner, 2008). School offers an abundance of activities, inside and outside the classroom. In school, children and adolescents are supposed to participate in educational activities, including school work and homework, but also to manage daily life such as dressing, eating, being on time, and social relationships with peers and teachers (Rodger & Ziviani, 2006). Therefore, it is essential for support to be understood within the context of the wider school environment. Understanding how different aspects of the school environment may influence participation in school and how to best support the fit between students' skills and abili-

ties and the physical, social, cultural and political and economic environment forms the basis for occupational therapy interventions (Rodger & Ziviani, 2006).

Several aspects of environment offer either an opportunity or a barrier to engagement in school (Kielhofner, 2008). The arrangement of the classroom (e.g., physical arrangements of the classrooms, sounds, light) (Case-Smith, & O'Brien, 2015; Rodgers & Ziviani, 2006) and available ICT, such as computers, may be used to compensate for difficulties with writing and thus help students complete assignments (Christiansen & Baum, 2005; Dunbar, 2007). Social aspects of the environment include students' interaction with classmates, other peers, teachers and other adults that provide support (Rodgers & Ziviani, 2006; Kielhofner, 2008). Within the social environment, the experience of being bullied has been reported as creating barriers in school among students with AS or ADHD (Hebron & Humphrey, 2013; Little, 2002; Orsmond et al., 2004). In addition, studies have found that support from classmates and friends contributes to reduced bullying (Gantschnig et al., 2011; Falkmer et al., 2015). Teachers can create opportunities for learning in the way they organise and provide teaching (Hemmingsson & Borell, 2002), including their choice and modifications of assignments and material (Ulke-Kurkcuoglu & Kircaali-Iftar, 2010), computer-assisted instruction in maths and reading (Clarfield & Stoner, 2005; Mautone et al., 2005) and by providing individualised support (Bevan-Brown, 2010; Hellberg, 2007; Scitutto et al., 2012; Tippett, 2004; Tobias, 2009). Cultural matters determine for example both explicit (e.g., raising the hand) and implicit rules (e.g. not running in the classroom, and doing the homework), as well as flexibility in teaching methods used and duration of events within the classroom. When considering the school environment it is not possible to disconnect it from the political and economic conditions influencing it (Kielhofner, 2008). An example is the policy of inclusive education (United Nations, 2006) mentioned earlier, in which students with disabilities are educated in general classrooms. In practice, the inclusion principle may include a variety of options for students with AS or ADHD, ranging from full-time integration into general classrooms, pull-out solutions in small groups for extra support, to full-time attendance in small groups or special classes for

students with AS or ADHD (The Swedish National Agency for Education, 2015; The Swedish Schools Inspectorate, 2014).

Students with neuropsychiatric disabilities and support in school

Receiving appropriate support in school to facilitate learning can be essential for many students with neuropsychiatric disabilities to acquire the skills and competencies required for greater academic success, considered a prerequisite for qualifying and pursuing further education and participation in work and community (Gobbo & Shmulsky, 2012; Hendricks & Wehman, 2009; VanBergeijk, Klin & Volkmar, 2008). Research into ADHD in adolescents has primarily focused on the use of medication and behaviour treatments aiming to improve behaviour as interventions for students with ADHD, particularly a combination of the two (Miranda, Jarque & Tarraga, 2006; Raggi & Chronis, 2006), as this is the predominant choice of intervention for this age group (Young & Amarasinghe, 2010). Similarly, Cognitive-Behavioural Interventions focusing on core social difficulties by improving social skills through the use of prompting/reinforcement, modelling, role-playing, and/or verbal or manual guidance have been identified as the predominant interventions for children and adolescents with AS (Volker & Lopata, 2008; Whalon et al., 2015). As such, school-based interventions for adolescents with neuropsychiatric disabilities often concentrate on improving academic performance by targeting the functional manifestation of children's and adolescents' core problems, i.e., attention, impulsiveness and hyperactivity control and social interaction (Miranda et al., 2006; Richardson et al., 2015; Volker & Lopata, 2008; Young & Amarasinghe, 2010). However, it has been suggested that a broader view emphasising the environment and how environmental aspects may influence the performance of students is needed (Miranda et al., 2006). For example, the beneficial effects of psychostimulants on the daily classroom performance, for example, for modifying disruptive behaviour of children with ADHD, have a strong evidence base; although, less is known about their effectiveness on improvements in the general long-term academic performance of individuals with ADHD. Furthermore, although medication reduces disruptive behaviour, there is no evidence that the children show improvement in their inter-

personal relationships, most often influenced in adolescents and adults with ADHD (Miranda et al., 2006). As such, use of psychostimulants is not a universal solution for addressing the complex ADHD symptomatology, and it is also important to consider complementary interventions, e.g., school-based classroom and academic interventions, with a focus on modifying instructions, materials, and the school environment (Miranda et al., 2006; Raggi & Chronis, 2006; Young & Amarasinghe, 2010). However, studies focusing on evaluating the effectiveness of such interventions aimed at modifications in the environment are limited for adolescents with neuropsychiatric disabilities. In particular, few studies have focused on evaluating the effectiveness of non-medical school interventions with students over the age of 14. As such conclusions about interventions aimed at older students in junior high school and upper secondary school are limited (Trout & Epstein, 2007). In addition, studies have shown that students with neuropsychiatric disabilities may be overlooked regarding available support in school compared to students with physical disabilities (Egilson & Hemmingsson, 2009). The effectiveness of peer tutoring (Young & Amarasinghe, 2010), modification of assignments and material (Ulke-Kurkcuoglu & Kircaali-Iftar, 2010), computer-assisted instruction in maths (Mautone et al., 2005) and reading (Clarfield & Stoner, 2005), and extended time on tests have been reported. Research on ICTs for students with ADHD in school has demonstrated that computer and Internet use provide immediate feedback, multimodal and high stimulation (Weiss et al., 2011), and they promote increased motivation for learning (Jitendra et al., 2008), active responding and attention (Rabiner et al., 2010), and prevent off-task behaviour during educational activities (DuPaul & Weyandt, 2006; Shaw & Lewis, 2005). Thus, ICT use presents a promising tool to support educational activities in school of students with neuropsychiatric disabilities, however more knowledge is needed to establish its use by this group of students.

The educational system and students with neuropsychiatric disabilities

Awareness of the laws and regulations adopted by the Swedish government and educational system is important when addressing the support system in school.

Sweden has adapted the UN Convention on the Rights of Persons with Disabilities adopted in Sweden in 2007 (United Nations, 2006) with the aim of ensuring that persons with disabilities are not excluded from the general education system, and that children are guaranteed free compulsory and upper secondary education. Furthermore, persons with disabilities also have the right to effective individualised support, within the general education system, to facilitate their education. The second standard influencing the development of a support system in school is the UNICEF convention on the rights of the child (UN General Assembly, 1989) underlining among other things, that every child has equal value, the child's best interests should always come first, all children have the right to have their basic needs met, and that all children have the right to express their opinions and to be respected. The aim of the Swedish Education Act (SFS 2010:800) and national curriculum for compulsory school (The Swedish National Agency for Education (SKOLFS), 2011:19) and upper secondary school (The Swedish National Agency for Education, 2013), is to provide all students with support and stimulation they need to acquire and develop knowledge and for their personal development. Furthermore, according to the national curriculum for compulsory school (The Swedish National Agency for Education (SKOLFS), 2011:19) schools have a responsibility for providing special support to those students that for various reasons experience difficulties in attaining the educational goals. It is stated in the Education Act (SFS 2010:800) that if it is "likely" that the student will not reach educational goals this must be "notified" to the head principal. It is the head principal's responsibility to ensure that the student's needs are investigated. More than 40 % of students in Sweden receive special support at least once during their compulsory school years (Giota & Lundborg, 2007). And according to the fact that most young people continue on to upper secondary school has led to an increased need for special support in upper secondary school (Ramberg, 2015). Furthermore, it is emphasised the special support should be provided within the realm of the students' general classes, unless there are specific reasons, in which case the special support may be provided individually or in other groups than the one which the student is normally part of (SFS 2010:800). Such

reasons may be that a smaller group offers a quieter environment and provides better opportunities for individualised support provided by staff with specific knowledge about a group of students. In total, 1.4 percent of students in compulsory school receive special support in small groups (The National Agency for Education, 2015). According to the general guidelines available in Sweden the education advisor has an important role in planning for the transition to upper secondary school. Information transfer to the student's health services and concerned teachers is of the utmost importance and it is recommended that this should be organised by transition coordinators. Although general guidelines are available, they provide recommendations on how to organise and plan for the transition between educational stages and to upper secondary school, and as such access to and organisation of transition services may vary between schools and municipalities (The National Agency for Education, 2014).

In Sweden, most students with neuropsychiatric disabilities attend general compulsory and upper secondary schools (The National Agency for Education, 2015). Nevertheless, working in a small group or alone with a special education-*alist*/special teacher is still commonplace among students with neuropsychiatric disabilities in many schools today. During the last decade, there has been a trend towards organising special classes for children with ADHD, or Asperger's disorder (Hellberg, 2010; Isaksson, Lindqvist & Bergström, 2010). Furthermore, several reports in Sweden have pointed out variations in how the support is organised for students with neuropsychiatric disabilities, indicating that the school situation may be very different between different schools as well as, within a single school (The National Agency for Education, 2015; The Swedish Schools Inspectorate, 2014). In general, schools are well prepared to provide support aimed at ensuring accessibility in the physical environment; however the provision of support aimed at eliminating psychosocial barriers in school including social relationships is lacking (The National Agency for Education, 2015).

Support in the occupational transition process

From an occupational therapy perspective, occupational transitions are viewed as the interactional process between a person and the environment that involves changes in roles and expectations, and a range of choices (Christiansen & Townsend, 2010; Shaw & Rudman, 2009). Occupational transitions are viewed as a major change in the occupational repertoire of a person in which occupations change, disappear and/or are replaced (Christiansen & Townsend, 2010). The occupational transition process from compulsory school to upper secondary school, further education and work can be seen as the exit from one occupational area, that is school, and the entry into a new occupational area, being either further education or work (Christiansen & Townsend, 2010). This involves changes in what people can do, are expected to do, or need to do (Shaw & Rudman, 2009). The path from compulsory school to employment is often described nowadays as a long and uncertain endeavour, unlike the short and direct routes presumed available to previous generations. For example, the average age of establishment in the labour market, rose from 21 years in the early 1990s to 28 years in 2006 in Sweden (Lundahl & Olofsson, 2014). Consequently, the upper age limit set in this thesis ≥ 30 years relates to the extended school-to-work transitions postponing labour market establishment in Sweden.

Traditionally, transitions to work or further education have been regarded as a single event, typically described as the period between the end of compulsory schooling and the entry to attainment of full-time, stable employment (Hellberg & Kjellberg, 2012; Lundqvist, 2010). More recently however, new perspectives on transitions have described young adults' transitions from school to work in a European context. Concepts such as "routes", "pathways", and "navigation" are increasingly introduced to reflect the increased uncertainty and the complexity of the transition between school and work among young adults. An underlying assumption in these concepts is the individual and his/her abilities to navigate their own path through a risky and uncertain journey. What is missing in the above-mentioned concepts is consideration of the ways in which transitions are embedded within and influenced by environmental factors (Lundqvist, 2010). There-

fore, the concept of occupational transition is used in this thesis, as the concept fits well with the view of transitions as complex, ongoing over a long period of time, and dependent on the environmental opportunities and constraints as well as personal factors.

An interactional process between the environment and the person in the occupational transition process

Model of human occupation (Kielhofner, 2008), when applied to the occupational transition process, allows a unique way of viewing the many factors that can influence the process. In particular, the model can be used to understand how aspects of the environment interrelate with personal factors in determining the success or failure of the occupational transition process. Several personal factors have been identified as facilitating and creating barriers for the occupational transition process for young adults with neuropsychiatric disabilities. Previous studies have identified that the type of condition or co-morbidity can influence the occupational transition process. For example, youths with autism spectrum disorder and facing emotional challenges were found to experience additional challenges in the occupational transition process (Shier, Graham & Jones, 2009). Furthermore, having clear post-upper secondary school goals has been identified as a significant factor associated with participation in work for young adults with autism spectrum disorder (Chiang et al., 2012). According to Stewart (2013) few published articles focus on environmental barriers and/or support for the occupational transition process among young adults with disabilities. Some examples with the focus on environmental aspects include lack of access to buildings and transportation. Moreover, lack of equipment and ICT within school and workplaces have been identified as creating barriers to the occupational transition (Stewart, 2013). The social environment of the family has been reported to create both barriers and facilitate the occupational transition process among adolescents with AS or ADHD. For example, parents' expectations for the future (Chiang et al., 2012; Griffin et al., 2014), parents providing support (Mitchell & Beresford, 2014), and having parents who advocate for the students were associated with more positive outcomes among adolescents with AS. Barriers in the cultural en-

vironment (e.g. customs, and behaviours accepted by the society) include for example lack of individualised and flexible service options (Hagner et al., 2012) and the narrow focus of the educational system on grade attainment instead of addressing the broad transition needs of youths with disabilities (Stewart, 2013). At the broadest level of political and economic influences is overarching legislation about the rights of all persons with disabilities, such as the UN Convention on the Rights of Persons with Disabilities to full participation and inclusion in further education and work (United Nations, 2006). However, in Sweden, there are merely recommendations provided by the Swedish National Agency for Education (2014), and transition services are not addressed specifically by the Education Act (SFS 2010:800).

The occupational transition process and individuals with neuropsychiatric disabilities

The occupational transition from compulsory school, to upper secondary school, and further education or work, and ultimately adult life are important parts of an individual's everyday life and development (Kielhofner, 2008). Work and further education are important determinants of one's identity, provide opportunities to connect with others, and allow access to future work or career opportunities (Wilcock, 2006).

This occupational transition is a key transition associated with more new challenges such as multiple classes and teachers, increased academic and work demands in relation to organisational and time management skills, and social interaction (Meaux, Green & Broussard, 2009; Thomson, Morgan & Urquhart, 2003). The transition is a daunting experience for all young adults but may be particularly challenging for adolescents and young adults with a neuropsychiatric diagnosis and with difficulties in initiating, planning, structuring and executing their everyday activities (Barkley, 1997; Chiang et al., 2012; Du Paul et al., 2009; Levy & Perry, 201; Trampush et al., 2009). Young adults with neuropsychiatric disabilities have a particularly difficult time becoming established in the labour market and in further education compared to young adults in the general population and individuals with other disabilities (i.e. speech/language impair-

ments and intellectual disabilities (Blasé et al., 2009; Gerhardt & Lainer, 2011; Shattuck et al., 2012; Shifrin et al., 2010; Taylor & Mailick, 2014).

The employment system and individuals with neuropsychiatric disabilities

The Swedish Public Employment Service (Arbetsförmedlingen), municipalities, the Swedish Social Insurance Agency (Försäkringskassan) and other services provide support to young adults with difficulties to help them get established in the labour market or in further education. In many cases, young people who are detached from the labour market are in need of support from more than one public authority. The Swedish Public Employment Service is a central actor in providing employment support to individuals with disabilities with difficulties in the regular labour market. The Swedish Public Employment Service is governed by the Swedish government and its overall aim is to facilitate matching between jobseekers and employers, as well as to support jobseekers that, for different reasons, are experiencing difficulties in finding employment (The Swedish Public Employment Service, 2015). The Swedish Public Employment Service provides additional support measures including labour market programmes, new start jobs and support while starting a business to individuals with difficulties finding employment, such as individuals with disabilities. The Swedish Public Employment Service also provides vocational rehabilitation, in collaboration with the Swedish Social Insurance Agency. Municipalities play a vital role in supporting the Public Employment Service at the local level. Municipalities provide, for example, opportunities for occupations to people with disabilities through community-based day centres, regulated by both the Social Services Act (SoL), as well as the Act Concerning Support and Service for Persons with Certain Functional Impairments (LSS) (SFS: 1993:387; National Board of Health and Welfare, 2009). Some day centres have a focus on work-oriented day activities (e.g. producing things to sell, or providing services such as catering, car washing or cleaning). Other day centres provide meeting place-oriented group activities (of the drop-in type, focusing on socialising and occupations such as crafts) (Tjörnstrand, Bejerholm & Eklund, 2011; The National Board of Health and Welfare, 2008). With

respect to the effectiveness of community-based day centres, research has highlighted the need for more work-like features in the traditional types of centres, usually organised in a separate building (Eklund & Sandlund, 2014), as well as contacts with local businesses and the surrounding society (Argentzell, Leufstadius & Eklund, 2013; Tjörnstrand et al., 2013). Support provided by the health care system is regulated by the Health- and Medical Services Act (HSL) and may, for example, include support from habilitation centres (HCs) or psychiatric clinics responsible for providing support and services to children and adolescents with disabilities (The National Board of Health and Welfare, 2014). Young people with extensive support needs may meet a variety of different actors in different types of contexts. For example, a young person may participate in a municipal activity for a while, and shortly thereafter may begin a Public Employment Service activity. In addition to these services, the young person may also be in contact with the Swedish Social Insurance Agency or other government agencies. Recent reports reveal that the available support measures are not always coordinated between the above mentioned actors (SOU 2013:74).

Rationale of the thesis

In summary, research has shown that adolescents and young adults with neuropsychiatric disabilities may exhibit a variety of difficulties across different domains, including academic, social, and psychosocial domains, which may negatively influence on their schooling and further education and work opportunities. To support schooling and the occupational transition process, enhanced knowledge is needed on how to support students with neuropsychiatric disabilities in school, because a completed education is a prerequisite for qualifying for and pursuing further education and work. Research reveals that the provision of support addressing the complex psychosocial barriers in school most often experienced by students with neuropsychiatric disabilities is inadequate. There is a considerable risk that students with neuropsychiatric disabilities may be overlooked with regards to support provision in school. In particular, research on school-based interventions revealed that knowledge is lacking in relation to the

effects of environmental support in school for students with neuropsychiatric disabilities. For example, ICT, has been suggested as one potential way to support students with ADHD in school, however more knowledge is needed on how students with neuropsychiatric disabilities take advantage of the opportunities offered by ICT. Enhanced knowledge is also needed to understand the interactions among individuals, activities and environments in the occupational transition process to upper secondary school, and further education and/or work. More research on these issues is needed to develop support addressing difficulties in school and promoting the occupational transition to further education and/or work.

AIMS

The overall aim of this thesis was to describe and explore the experiences of support in school of adolescents and young adults with neuropsychiatric disabilities. Furthermore, the aim was to explore support that influences the occupational transition to upper secondary school, further education and work.

The specific aims were:

- Study I: To investigate computer use in educational activities of students with attention deficit hyperactivity disorder.
- Study II: To investigate leisure activities, particularly Internet activities, among boys and girls with ADHD, compared with those of boys and girls from the general population. The aim was also to explore how traditional leisure activities and Internet activities interrelate among adolescents with ADHD.
- Study III: To describe the experiences of support at school among young adults with AS and ADHD and to explore what support they, in retrospect, describe as influencing learning.
- Study IV: To describe the occupational transition process to upper secondary school, further education and/or work and to explore what support influences the process from the perspectives of young adults with AS or ADHD

METHODS

Method description

This thesis is based on four studies using both quantitative and qualitative research methods to describe and explore support in school and the occupational transition process for adolescents and young adults with neuropsychiatric disabilities. Studies I and II had a cross-sectional design using questionnaires with group comparison (Polit & Beck, 2008), between adolescents with ADHD, adolescents with physical disabilities and adolescents from the general population, and focused on the use of ICT in school and leisure. Semi-structured interviews followed by a hermeneutic analysis were used to describe and explore the experience of support at school (Study III) and the occupational transition process to upper secondary school, further education and/or work from the perspectives of young adults with AS or ADHD (Study IV). An overview of the design, inclusion criteria, participants, data collection and data analysis is presented in Table I.

Table I. Overview of the included studies’ design, inclusion criteria, participants, data collection and data analysis.

	Study I	Study II	Study III	Study IV
Design	Cross-sectional design		Qualitative study using a Hermeneutic analysis	
Inclusion criteria	Adolescents diagnosed with ADHD, aged 12-18 years		Young adults with Asperger’s disorder or ADHD, aged 18-30 years	
Participants	102 adolescents with ADHD aged 12-18 years		13 young adults with Asperger’s disorder or ADHD, aged between 20 and 29 years	15 young adults with Asperger’s disorder or ADHD, aged between 20 and 29 years
Data collection	Questionnaire		Semi-structured interviews	
Data analysis	Descriptive statistics Chi- square test Kruskal–Wallis test Binary logistic regression	Descriptive statistics Chi- square test A principal component analysis (PCA)	A hermeneutic analysis was used	

Studies I and II are part of a project “ICT use in school and leisure”, reported in Lidström (2011), which has the overall aim of investigating the use of ICT in school and leisure among children and adolescents with disabilities. A cross-sectional design (Polit & Beck, 2008) using questionnaires was used in order to gather data on ICT from three different populations at one fixed point in time.

A hermeneutic approach guided by Gadamer (2004) was chosen in Studies III and IV. The use of hermeneutics is one way of deepening the understanding of multifaceted phenomena (Patton, 2015), such as the occupational transition process to upper secondary school, further education and/or work. Retrospective semi-structured interviews were used to collect data in Study III and IV (Repstad, 2007).

Participants and procedure

Adolescents between the ages of 12-18 years (Studies I and II) and young adults aged 18-30 years (Studies III and IV) were included in this thesis as support in school is considered a prerequisite for the occupational transition to work and/or further education (Chantry & Dunford, 2010).

In the above mentioned project “ICT use in school and leisure” (Studies I and II), data were collected in 2007 on children and adolescents with physical disabilities and ADHD. The results concerning children and adolescents with physical disabilities are reported by Lidström (2011). In this thesis, the focus is on adolescents with ADHD and data on adolescents with physical disabilities are used as a comparison group. Participants in the project were recruited from the caseloads of four habilitation centres (HCs), in both urban and rural areas in central Sweden. HCs are a service responsible for providing interdisciplinary support (e.g. psychologists, occupational therapy, physical therapy) to children and adolescents with disabilities and their families. The procedure, distribution of the questionnaire and how consent was obtained has been reported by Lidström (2011).

The four HCs identified 254 participants with a primary diagnosis of ADHD, aged 10–18 years, from their medical records, and they were sent a questionnaire.

In total, 132 of the 254 questionnaires were returned, giving a response rate of 52%. Specific inclusion criteria for Studies I and II were: adolescents with a primary diagnosis of ADHD, aged 12-18 years, giving a total sample of 102 adolescents. There were no differences in age and sex between those adolescents with ADHD that agreed to participate and those who declined ($p > 0.05$).

In study I, a comparison of adolescents with physical disabilities was performed. Adolescents with ADHD ($n=102$) were pair-matched in terms of age and sex with adolescents with physical disabilities. In addition, in Study I a comparison was also made among adolescents from the general population, whose data were obtained from the national survey “Information Technology in School”, conducted by the National Agency for Education (2005). This survey included 940 children and adolescents from the general population, of whom 478 were boys and 462 were girls, with an age split of: 11 years (grade 5) ($n = 292$), 15 years (grade 9) ($n = 340$), and 17 years (level 2) ($n = 308$), and a mean age of 14.5 years (SD 2 y 5 mo).

In order to compare ICT use in leisure among adolescents with ADHD to that of the general population, data on the reference group in Study II was obtained from the national survey “Kids and Media” about children’s and adolescents’ leisure and ICT use, conducted by the Media Council (2006). The reference group ($n=677$), comprised 342 boys and 335 girls, between the ages of 12-16 years.

The following criteria were used to recruit participants for Studies III and IV: young adults between the age of 18 and 30 years, with a primary diagnosis of AS or ADHD, based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 2000) and/or the International Classification of Diseases (ICD-10) (World Health Organization, 1993), willing and able to communicate their experience of earlier education and the transition process to upper secondary school, further education and work. Individuals with other primary diagnosis were excluded. There was an effort to achieve gender balance. Since there are no official registers of individuals with AS or ADHD in Sweden, different services responsible for providing support and services to

the target groups in three municipalities in the mid-east region of Sweden were approached in order to recruit participants for Studies III and IV. As individuals with AS or ADHD may experience speech, language, and communication difficulties associated with the diagnosis (American Psychiatric Association, 2013), selecting participants purposely using criterion sampling enables the researcher to select information-rich cases which may illustrate aspects of central importance for the purpose of the research (Patton, 2002). A total of 17 young adults between 18-30 years were interviewed. Based on the inclusion criteria, one participant was excluded due to not having a formal diagnosis of AS or ADHD. Another participant was excluded due to ethical dilemmas, discussed later on under the headline Ethical considerations, giving a total sample of 15 participants in Study (IV), 10 of whom were diagnosed with AS and 5 with ADHD. The ages of the participants ranged from 20 to 29 years, and eight men and seven women participated. In Study III, only young adults who had graduated from compulsory school were included, giving a total sample of 13 participants.

In Studies III – IV, senior administrators in municipality services identified potential participants based on the inclusion criteria and approached staff members in the young adults' immediate environment. Staff members were for example, coaches in labour market training, staff at group housing, or personnel involved in home support. The staff members informed potential participants about the study, both orally and through written information, and asked for permission for the first author to contact them. Details of only those participants who gave consent to participate in the study were passed to the author of this thesis. After agreement to participate in the study was obtained, the author of this thesis contacted the participants to schedule a time and place for the interview. The interviews were performed in places that were convenient and chosen by the participants, including their home, the library, and different consultation rooms.

Data collection

Questionnaire

The questionnaire used in Study I and II was developed by Lidström and colleagues (2011) in the project mentioned earlier. The questionnaire has been used in several studies of adolescents with physical disabilities (Lidström, Ahlsten, & Hemmingsson, 2010; Lidström, Granlund, & Hemmingsson, 2012). The questionnaire consisted of 36 main questions in three sections; (i) demographic information (n=7), (ii) ICT use in school (n=17), and (iii) ICT use in leisure (n=12). In this thesis the section in the questionnaire concerning ICT use in school was used in Study I and the section concerning ICT use in leisure was used in Study II.

The questionnaire included nine questions replicated from two national surveys “Information Technology in School”, conducted by the National Agency for Education (2005) and “Kids and Media” conducted by the Media Council (2006), enabling comparison between children and adolescents with disabilities and children and adolescents from the general population. Examples of the replicated questions were as follows: “How often do you use a computer in educational activities for (a) writing, (b) searching for information on the Internet, (c) making presentations, (d) exercising skills (Doing practice exercises), (e) e-mailing teachers and (f) creating images/music/movies?” The participants graded their use on a five-point Likert scale, where 1 = never at all and 5 = often. Other examples of the replicated questions were: “What do you usually do on the Internet in your leisure?” where the participants could tick five out of ten activities (e.g., playing online games, chatting, surfing).

The questionnaire also included questions specifically constructed for adolescents with disabilities, for example; “How satisfied are you with your computer use in leisure activities?” The participants graded their satisfaction on a 5-point Likert scale, where 1 = not satisfied at all and 5 = very satisfied.

The content validity and reliability of the questionnaire has been reported by Lidström (2011). The reliability of the questionnaire in terms of internal con-

sistency for students with ADHD was calculated, and a Cronbach's alpha value of 0.67 (Study I) and 0.74 (Study II) was obtained. The Cronbach alpha values for the present study are close to the generally accepted value of 0.7 for developing questionnaires, indicating an acceptable average correlation between items (Field, 2013).

Interviews

Interviews were performed using a semi-structured interview guide in Studies III and IV. Semi-structured interview guides provide subject areas within which the researcher is free to build a conversation with the participants by exploring, probing and asking follow-up questions (Patton, 2015). In Study III, the focus was on retrospective accounts of young adults' experience of support, and in Study IV the focus was on their current situation in relation to education and work, and support influencing the occupational transition process to upper secondary school, further education and work. The interview guide used in Studies III and IV consisted of broad, open-ended subject areas that covered the following: (1) experience of learning in school (Study III), (2) experience of support that facilitated and/or constrained conditions for learning in school (Study III), (3) suggestions for support for learning based on earlier experience (Study III), (4) current situation in relation to education and work (Study IV), (5) the occupational transition process to upper secondary school, further education and work (Study IV), (6) experience of support that facilitated and/or constrained the occupational transition process to upper secondary school, further education and work (Study IV). Follow-up questions, probing questions and the young adults' vocabulary were used to build a conversation in which the researcher could elucidate and exemplify the participants' descriptions (Harrington et al., 2013; Patton, 2015). In order to capture the longitudinal process of the occupational transition process (Christiansen & Townsend, 2010; Shaw & Rudman, 2009), a timeline was used to sort the participants' experiences into a chronological order from school to their current situation (Polit & Beck, 2008). The timeline enabled the participants to summarize and write down significant events influencing the occupational

transition process from compulsory school to the current situation. When necessary, the timeline was constructed in collaboration with the author of this thesis. The interviews lasted between 1 to 2.5 h, with half of them lasting longer than 1.5 h. All interviews were digitally recorded with the participants' permission and transcribed verbatim.

Data analysis

Descriptive statistics and non-parametric statistics were used, as the data in Studies I-II were derived from nominal and ordinal scales (Polit & Beck, 2008). In study I, cross-tabulation (X^2) (Polit & Beck, 2008) was used to compare categorical data between two groups of students. A Kruskal-Wallis test was used to compare ordinal measures between adolescents with ADHD, adolescents with physical disabilities, and adolescents from the general population. A p value of $p < 0.05$ was considered significant.

Relationships between the dichotomized dependent variable 'satisfaction with computer use in school' for students with ADHD and a set of independent variables (e.g. students' characteristics, frequency of computer use, and educational activities with the computer) were analysed using a binary logistic regression in study I.

In Study II, a principal component analysis with orthogonal rotation (varimax) was performed in order to explore how traditional leisure activities and Internet activities were related among adolescents with ADHD. In total, 22 activities were included in the analysis. The Keyser-Meyer Olkin measure (KMO) = .54 was within the accepted value of 0.5, which supports sampling adequacy. Only the factors with eigenvalues of 1.0 were included in the analysis, resulting in eight factors that together explained 66 % of the total variance (Field, 2013). According to Polit & Beck (2008) the amount of factors extracted should account for at least 60 % of the total variance to be meaningful.

The interviews in Studies III and IV were analysed using hermeneutic analysis guided by Gadamer (2004). Concepts from Gadamer (2004) that were used in Studies III and IV include tradition and history of effect; prejudice; openness and

fusion of horizons. The following steps in the analysis were performed in both Studies III and IV: (i) use of a reflexive diary, (ii) reading the transcripts as a whole, (iii) extracting segments of text, and (iv) engaging in a dialogue with the text. According to Gadamer (2004), a researcher is a historical being and as such is always affected by his or her own tradition and historical effect, including upbringing, past experiences, education and family life, all of which influence interpretation of the participant's experiences. As such, the author of this thesis reflected upon her own experiences of the occupational transition process and experiences of support prior to interviewing young adults with AS or ADHD. Initial ideas, attitudes and pre-understandings of the author of this thesis were written down in a reflexive journal in order to understand one's own thoughts, beliefs and experiences concerning the process. All interviews were read and re-read by the author in order to develop an overall understanding of what the participants were describing. Next, segments of text that provided insight into the research questions of interest in Studies III and IV were extracted. Gadamer (2004) recognizes that all understanding inevitably involves some pre-understandings, either positive or negative ones, and these stand in the way of complete openness. Openness involves keeping oneself open to the otherness of the other, by listening and asking questions in order to separate oneself from one's pre-understandings (Gadamer, 2004). According to Gadamer (2004), interpretation begins with an assumption of familiarity and proceeds to listening and a readiness to revise early understandings. Thus, the author engaged in a dialogue with the text in an attempt to understand what was described and to use the understandings gained to further explore experiences. Throughout the analysis, early understandings of each interview and pre-understandings that arose were written down in margins, in an attempt to retain any early understandings. Furthermore, all new ideas and understandings, as well as similarities and unique experiences were written down in a reflexive journal throughout the analysis, as pre-understandings were constantly revised and replaced by more suitable interpretations.

The last two steps of the analysis, namely searching for similar and different experiences, and searching for a comprehensive understanding differed between Studies III and IV. For example, different analytic tools were used in order to search for similarities and dissimilarities in each study. In Study III, the timeline was used as an analytic tool for analysing the data for sub-clusters that cut across different educational stages. In Study IV, three different sub-clusters emerged by comparing experiences of received support and support needs with each other. In both studies, overarching clusters emerged by comparing sub-clusters with each other and grouping these together. According to Gadamer (2004), understanding of a phenomenon incorporates the understanding and bringing together of two perspectives, those of the researcher and of the participants. This was performed by continually moving between the parts and the whole texts, described as the hermeneutical circle. Understanding occurs when the researcher perspective are merged with participants' experiences, a process which Gadamer (2004) calls the fusion of horizons. Finally, in order to achieve a comprehensive understanding of the relationship between sub-clusters, clusters and the researchers' perspective in each study, different interpretations were checked against the data to see whether they covered all parts of the data.

Ethical considerations

All of the studies were approved by the Regional Ethics Committee in Linköping, Sweden Dnr 2010/292-31 and Stockholm 2006/1101-31.

One ethical dilemma that occurred during the data collection in Studies III and IV was that initial consent was obtained with the support from staff members in services with whom some participants had close contact and in some cases wanted to please by taking part in an interview that these staff members had informed them about. This was the case with one of the participants excluded from the analysis. This participant said that participating in the interview was the right thing to do since he had been asked, while at the same time saying he felt uncomfortable talking about the service. Such circumstances could have been avoided by asking staff members to inform the participants that a researcher would come

and ask if they were interested in taking part in an interview. The researcher could then inform the participants at the different services about the study, and initial conformed consent could have been given to the researcher with whom the participants had no prior relation. This may have made it easier to refuse participation.

The probable risk of participants' involvement in the studies could be seen as of an emotional nature, as it is possible that discomfort and stress could arise. When interviewing participants about their earlier school time and transition process, even after a period of time, they could be reminded of feelings and memories which were painful at the time. The planned course of action was to inform the participants that they could turn to the staff members for further support if needed; however, this strategy did not need to be applied in the interviews.

RESULTS

Study I. Computer use in educational activities by students with ADHD

There were no differences between students with ADHD and students with physical disabilities in access to computers in school or location for use, including the classroom, computer room and library. However, fewer students with ADHD were provided with their own computer in school ($p < 0.05$).

The use of computers for educational activities among students with ADHD was compared to students with physical disabilities and students without disabilities. The results showed that students with ADHD reported significantly lower use of computers for: *writing, searching for information, making presentations* and *e-mailing* with teachers in school compared to students with physical disabilities and students without disabilities ($p < 0.05$).

Only half of the students with ADHD (55 %) stated that they were satisfied with their computer use, two thirds (66 %) wanted to use the computer more often and for more activities (63 %), and one third reported that their classmates used the computer more often in school than they did. Factors positively associated with satisfaction with computer use in school were: having access to a computer in school, and using the computer both for writing and for searching for information on the Internet. These findings indicated that being able to use the computer's full potential for a wide range of educational activities was associated with satisfaction with computer use in educational activities.

Study II. Internet activities during leisure - a comparison between adolescents with ADHD and adolescents from the general population

Leisure activities with a focus on Internet activities were compared between adolescents with ADHD and adolescents without disabilities. The findings re-

vealed that a lower proportion of adolescents with ADHD performed traditional activities such as *meeting friends*, *doing homework*, *doing sports*, *reading books/newspapers*, and *acting/dancing* compared to adolescents without disabilities ($p < .001$). On the other hand, a higher proportion of adolescents with ADHD *played computer games* and *videogames* compared to adolescents without disabilities. In particular, a higher proportion of girls with ADHD played computer games compared to girls from the reference group ($p < 0.05$). As regards online games and video games, almost all of the adolescents with ADHD considered them to be fun to use, (95 % vs. 82 % respectively) ($p > 0.05$), a social activity in which they could socialize with friends (75 % vs. 53 % respectively), and as providing a learning experience (91% vs. 58% respectively).

When comparing Internet activities during leisure between adolescents with ADHD and adolescents from the reference group, the results demonstrated that a higher proportion of adolescents with ADHD used the Internet for *online games*, *visiting communities*, and *looking at pornography*, compared to adolescents without disabilities ($p < 0.05$). In contrast, adolescents with ADHD used the Internet less frequently for chatting and doing homework, compared to the reference group.

Factor analysis revealed three types of related leisure activities labelled; (i) a mix of Internet activities and traditional leisure activities for entertainment and information acquisition, (ii) Internet activities for interaction with others, and (ii) traditional activities for cultural activities and homework. Some activities were performed on the Internet such as using the Internet to access online information without abandoning traditional ways of performing the same activity, such as reading books/newspapers. The Internet was used for interaction and communication with others in online communities, chats, and e-mailing. Creative activities, such as crafts/drawing were primarily performed without the Internet.

Study III. Support for learning goes beyond academic support: Voices of students with Asperger's disorder and attention deficit hyperactivity disorder

The experiences of support at school among young adults with AS and ADHD were organized into two clusters referred to as "Individual learning experiences" and "Support for learning".

The cluster "Individual learning experiences" emerged from the participants' descriptions of difficulties at school that encompassed academic, social, and emotional aspects, all of which could influence learning. Difficulties with subjects at school, completing homework, social relationships with peers, and difficulties with emotional well-being, including anxiety and depressed mood, influenced the participants' ability to manage school.

"Support for learning" described experiences of receiving support in school, including "*small groups*", "*individualized teaching method*", "*teachers who care*", and "*emotional and practical support*". Most participants had experiences of receiving support in small groups outside the general classroom in elementary school; however, the participants emphasized that attending small groups was only sufficient when it was combined with individualized support for learning based on their needs. Individualized teaching methods such as diverse methods for giving instructions, different assessment strategies, using computer, modified assignments based on individual preferences, and the teacher being open to students working at their own pace were considered as important for managing school. However, according to the participants, individualized teaching methods were only occasionally provided, were not common feature of the students' education, and were associated with specific teachers. Interpersonal relationships with teachers and other personnel and being recognized as an individual were seen as important for a sense of belonging in school. Receiving emotional support from parents, friends, and student's health services, was considered as important for participants' self-esteem and for sustaining the effort to graduate from school, however emotional support was difficult to access. Also, practical sup-

port, e.g. being woken up by parents in time for school, was described by the participants as crucial for managing school and for meeting educational goals.

Overall, the results revealed that academic support, combined with support for social relationships and emotional well-being at school, seemed to be crucial for students' learning in school. However, support usually focused on academic performance, and support addressing social relationships at school and emotional well-being was overlooked, both by the school and the healthcare service.

Study IV. The occupational transition process to upper secondary school, further education and/or work for young adults with Asperger's disorder and attention deficit hyperactivity disorder

The occupational transition process and experiences of support influencing the process were organized into two clusters labelled "Occupational transition paths" and "Experience of support that influenced the occupational transition".

The participants' took three different pathways following compulsory school: (i) "A straightforward occupational transition to community-based day centres"; (ii) "Interrupted periods of adult education, community-based day centres and work in the regular labour market" and (iii) "Occupational transition to university studies and employment in the regular labour market".

Support that influenced the occupational transition process included: (a) occupational transition preparation in compulsory school, (b) practical work experience in a safe environment, and (c) support beyond the workplace. The need for early transition preparation throughout compulsory school was stressed by participants following pathway (i) in order to prepare for making educational and/or work-related choices. Meetings with education advisors were valued by participants following pathway (ii) when they were based on the student's unique strengths and interests. Community-based day centres were described both as increasing possibilities for eventually finding a job in the regular labour market by participants following pathways (i) and (ii), as well as being too far from the

labour market by participants following pathway (iii). All participants, regardless of transition path, said that support beyond the workplace, addressing residential, economical and emotional aspects of everyday life, influenced their ability to obtain and remain in employment.

Overall, the results revealed that the occupational transition process towards upper secondary school, work, or further education was a longitudinal process starting in compulsory school and continuing until the young adults obtained and retained employment, or entered further education. The occupational transition process was influenced by the interaction between environmental support (e.g. different services), and personal factors such as having transition goals.

GENERAL DISCUSSION

Insufficient support in school

The findings of this thesis revealed insufficient support in school addressing difficulties with school work, social relationships and emotional well-being, indicating that these aspects of the school environment were disregarded in school (Studies I, III, IV). Analysis demonstrated that a combination of academic, social, emotional and practical support needs to be provided in order to support young adults with AS or ADHD in school and to prepare them for the occupational transition to upper secondary school, further education and employment. However, the organization of support in school with a focus on addressing difficulties with schoolwork (Study III) was described as insufficient for supporting learning. This thesis demonstrated that support addressing difficulties with learning, including small groups, ICT use and different teaching methods (Study III) needs to be combined with support addressing social relationships and emotional well-being, in order to support learning in school and to prepare young adults with neuropsychiatric disabilities for the occupational transition process. This is in line with sociocultural theory, which emphasizes the context in which learning occurs, including the psychosocial characteristics of that context, in order to address all aspects of the school environment influencing learning (Säljö & Wyndham, 1993). An important finding of this thesis was that young adults with AS or ADHD expressed difficulties accessing support addressing social relationships and emotional well-being, indicating that these aspects of the school environment were disregarded in school. It is stated in the Swedish Education Act (SFS 2010:800) that school must offer an school environment that supports students' learning, as well as personal growth and well-being. From this perspective the experience of young adults with AS or ADHD of lack of support regarding emotional well-being and social relationships, as described in Study III, is noteworthy. Given the difficulties described in academic, social and emotional aspects of

school, as well as lack of support, students with AS or ADHD may be at risk of negative educational and developmental outcomes. Therefore, it is suggested, based on the findings of this thesis, that support addressing multiple aspects, such as fostering social relationships, and addressing psychosocial issues, needs to be provided in order to prepare young adults with AS or ADHD for the occupational transition to further education and employment. However, given that schools often operate with limited resources and have the primary goal of supporting academic performance, providing a comprehensive policy vision for support in schools at a time when financial conditions have deteriorated may be a challenge for the educational system. Thus, a comprehensive policy vision for support may require increased collaboration between the student's health services, teachers, and the healthcare system to create conditions for support that address young adults' needs for psychosocial well-being.

These aspects of support will be discussed under the following sections: "Provision of support in school to students with AS or ADHD", "ICT and education", "Lack of social and emotional support in school", and "Support in employment- community based day centres".

Provision of support in school to students with AS or ADHD

The results of studies I and III provide the basis for a discussion on how to provide support in school to students with AS or ADHD. Support in school was mostly provided in small groups outside the general classroom. However, attending small groups was described as facilitating learning when combined with individualized support for learning. The results of study III clearly demonstrated the importance of individualized teaching methods (e.g. diverse instructional delivery methods, different assessment strategies and modified assignments) and ICT use in order to facilitate learning in school. However, the provision of individualized teaching methods occurred occasionally, did not permeate the students' education, and was associated with specific teachers (Study III). The importance of actively participating in determining what kind of support the students needed and wanted was stressed by young adults with AS or ADHD; how-

ever opportunities to do this were fragmented and depended on specific teachers' willingness to involve the students.

An extensive body of literature has focused on school-based interventions for supporting students with ADHD in school. Previous studies have largely focused on interventions aimed at improving or remediating disruptive classroom behaviour of children with ADHD in compulsory school (Miranda et al., 2006; Pelham & Fabiano, 2008; Raggi & Chronis, 2006; Young & Amarasinghe, 2010), rather than focusing on support that reduces environmental barriers (Schultz et al., 2011). Thus, previous studies about the way students with neuropsychiatric disabilities learn have focused more on factors impeding students' success than on support that may help them succeed in school. Recommendations for supporting learning in school often emphasize classroom management strategies (e.g., teacher-implemented reward programs, or providing specific instructions) and individualized support for promoting both the participation of students with AS or ADHD in the general education curriculum and the attainment of educational goals (Bevan-Brown, 2010; Sciutto et al., 2012; Tippett, 2004; Tobias, 2009). Study III supports some of these recommendations by highlighting support described by young adults with AS or ADHD as facilitating learning, including ICT use for completing exams, and modifications to assignments and instructions. Assessment of the degree to which this support is used in schools as well as across compulsory and upper secondary school is warranted.

ICT and education

One way to support learning and individualize exams and ways to provide teacher instructions was through the use of computers in school (Study III). However, the findings of study I showed that adolescents with ADHD used the computer less than students with physical disabilities and students without disabilities in school. The findings of studies I and III warrant discussion about limited ICT use in school and participation in school and future education, employment and society. ICT, such as computers and the Internet, has been suggested as one potential way to support academic performance of students with ADHD in education, and,

ultimately, the occupational transition process to inclusion in the community and society as a whole (Chantry & Dunford, 2010). As such, the findings concerning the limited computer and Internet use in school reported among individuals with ADHD or AS (Studies I and III) are of concern, since research shows that computers and the Internet may act as tools to facilitate writing, as well as provide new ways in which information concerning content of assignments are presented and accessed in school (Clarfield & Stoner, 2005; Mautone et al., 2005; Shaw & Lewis, 2005). Internet activities may be a new way to promote occupational justice and participation in education, leisure and society, by offering resources for individuals with ADHD to help them succeed and engage in desired activities as his or her peers (Chantry & Dunford, 2010; Foran, 2011). According to Townsend & Wilcock (2004), occupational justice asserts that all humans should have equal opportunities and resources to engage in meaningful and desired occupations. When these opportunities and rights are denied or compromised, issues of occupational injustice occur. Based on the findings of this thesis, occupational injustice, related to occupational deprivation, that is limited opportunities to engage in occupations that are meaningful or necessary due to external factors (Christiansen & Townsend, 2010), may prevent adolescents with ADHD from taking advantage of the opportunities offered in multiple areas of school, including mathematics (Mautone et al., 2005), science (Shaw & Lewis, 2005), reading fluency (Clarfield & Stoner, 2005), and writing (Brossard-Racine et al., 2011). Furthermore, occupational injustice in relation to occupational marginalization, occurring when people lack the opportunity to exert choices and make decisions related to occupation (Christiansen & Townsend, 2010), was highlighted in studies I and III. For example, adolescents with AS or ADHD said that they wanted to use the computer more and for more activities and decide when and how computers and the Internet were used for school work (e.g. writing and instructional purposes), which may be interpreted to mean they had limited opportunities to choose when and how to use Internet in activities of their own choosing. With regard to the frequent use of Internet activities in the performance of all kinds of everyday activities in the society of today, the results indicate that the limited

ICT use represent a considerable risk factor for the occupational transition process by placing adolescents with ADHD at risk of exclusion from further education, employment and society. The European Commission (2010) stresses the importance of fostering E-accessibility in order to ensure that people with disabilities have equal ICT use, as well as the need to remove the barriers associated with access to and use of ICT. The findings of this thesis indicate that adolescents with ADHD experience barriers in ICT use in school, which may influence their abilities to develop the digital skills needed for the occupational transition process and participation in employment, further education and modern society (European Commission, 2010). Consequently, these results imply that it is important for occupational therapists, teachers and other health care professionals to consider the role of ICT use in adolescents' everyday life, as a means to support educational activities in school and enable the occupational transition process of adolescents with ADHD or AS in society.

There are several reasons presented in the literature that might explain the occupational injustice and the limited Internet use in school among adolescents with ADHD. First, adolescents with a variety of cognitive disabilities are considered as potentially at risk of experiencing difficulties using technology in everyday life (Kassberg, Prellwitz & Larsson Lund, 2013; Larsson Lund, Lövgren Engström & Lexell, 2012). However, by comparing Internet use in two different environments, school and leisure, as well as by focusing on distinctive types of Internet activities, the results of this thesis (Studies I-II) indicate that adolescents with ADHD may have experience and digital skills in using the Internet and computer applications, acquired through frequent Internet use in leisure activities. In particular, the results of study II illustrated that adolescents with ADHD used the Internet in leisure as much as adolescents without disabilities, and for the same activities (i.e. Informational use, Communicational use, Creative use) reported in study I, which were not frequently performed in school. Additionally, frequent online gaming and use of social media (such as visiting communities) reported in study II, have been suggested as providing adolescents with digital skills (i.e. practical and/or theoretical knowledge) in using the computer and the

Internet (Appel, 2012; Cox, 2012; Voogt et al., 2013). Based on the findings of study II, as well as earlier research suggesting that digital skills develop through extensive use (Appel, 2012; Cox, 2012; Livingstone et al., 2011; Voogt et al., 2013), it is suggested, based on the findings of this thesis, that adolescents with ADHD may have the digital skills required for computer and Internet use; skills that are not fully explained by the limited Internet use in school.

Other explanations found based on the findings of this thesis relate to environmental factors, such as accessibility to computers and parental rules, that limit ICT use in schools (Weiss, 2011; Xu, Reid & Steckelberg, 2002). The less frequent use of Internet in school by students with ADHD found in study I may to some extent be explained by their limited access to computers and the Internet in the classroom. For example, few adolescents with ADHD (14 %) were provided with their own computer, compared to one third of adolescents with physical disabilities. On the other hand, no differences were found between students with ADHD and students with physical disabilities regarding access to shared computers in school. Thus, accessibility to ICT may only partially explain the limited use. Yet another explanation relates to parents and teachers setting rules that restrict the adolescents' Internet use. Livingstone et al. (2011) suggested that parents reduce their rules when their children approach adolescence, while Weiss (2011) suggests that parents frequently describe their children as having good achievements on the computer, causing parents to show a reduced tendency to set rules. This is in line with the findings from study II showing that adolescents with ADHD did not report having more rules set by parents compared to adolescents with physical disabilities. Teachers, on the other hand, maintain or even increase their rule setting for Internet activities as children approach adolescence, according to Livingstone et al. (2011). This reported tendency found in the educational system towards restricting Internet use can be understood in relation to the extensive focus in previous research on the potential risks of Internet use among adolescents with ADHD, including distortion of young adults' social relationships and displacement of homework due to increased time on the Internet (Carli et al., 2012; Chou et al., 2015; Weiss et al., 2011). The findings of study II

add to the discussion about the potential risks of Internet use by indicating that Internet activities may also serve to broaden and complement traditional leisure activities, rather than substituting for traditional leisure activities. This finding recognizes that all Internet activities may not be treated as potentially harmful; rather they may be considered as mutually exclusive and complementary to each other, by providing new opportunities and tools to perform activities in everyday life. This finding may increase awareness and greater understanding between parents, teachers and other professionals about the potential possibilities that the Internet creates, as well as associated risks; however this needs further research.

Lack of social and emotional support in school

The findings of this thesis (Studies I, II and III) may promote discussion about the social and emotional aspects of school in relation to learning. In study III, difficulties with social relationships with classmates, teachers and peers, as well as anxiety and depressed mood, created barriers in school among young adults with AS or ADHD. In addition, the findings of study III revealed a distinct trajectory for bullying once young adults with AS or ADHD reach junior high school and upper secondary school. Support addressing social relationships was described as insufficient and temporary, often resulting in increased bullying and negative peer reactions. These findings indicate that support addressing social relationships at school and emotional well-being may be disregarded, both by the school and the healthcare service.

Previous studies have found that children and adolescents with AS or ADHD may be particularly vulnerable to bullying (Hebron & Humphrey, 2013, Zablotsky et al., 2014). The findings of study III indicated that bullying tended to peak during junior high school, followed by a decrease as the adolescents with AS or ADHD developed new friendships in upper secondary school. These findings are partly in agreement with studies reporting an increase in bullying as children with AS grow older (Hebron & Humphrey, 2013; Little, 2002). However, the findings of study III propose a distinct trajectory for individuals with AS or ADHD when they approach upper secondary school and in a higher extent met

peers with similar interest. Thus, it is possible that positive relationships with peers formed in upper secondary school may contribute to increased participation in upper secondary school and may reduce bullying. This is especially important since it suggests that social relationships are crucial for a sense of belonging in school, which may influence participation in school and, ultimately the occupational transition process to further education and employment (Blasé et al., 2009; Küpper et al. 2012; Rodger & Zivani, 2006). From this perspective, support addressing the formation and development of social relationships in school among adolescents with ADHD and AS seems crucial.

According to an earlier study, considerably less work has focused on factors that could influence the development and maintenance of social relationships, in contrast to the larger body of research devoted to peer rejection and social skills difficulties (Mikami et al., 2015). From an occupational therapy perspective, barriers in forming/or maintaining social interactions and in participation in meaningful everyday occupations, such as education and employment, is of concern since participation in meaningful activities influences health, well-being and development (Heah et al., 2007; Law, 2002; Rodger & Zivani, 2006). Based on the findings of Study II it is suggested that Internet activities, such as social networking sites and chat rooms, may provide adolescents with ADHD or AS with new opportunities for developing and/or maintaining social interaction with peers in leisure, although not used in school. For example, the findings of study II revealed that adolescents with ADHD were more likely than adolescents without disabilities to use the Internet as a means of online social interaction through social networking sites in leisure, indicating the relevance of this medium for social interaction among adolescents with ADHD. One possible explanation might be that the difficulties adolescents with ADHD face in establishing positive face-to-face social interaction may motivate their preference for online social communication (Wolak, Mitchell, & Finkelhor, 2003), and may prompt them to seek connections with others online (Morahan-Martin & Schumacher, 2003).

The findings of study II concerning the frequent use by adolescents with ADHD of Internet activities for social interaction raise some issues within occu-

pational therapy theory. The role of virtual environments as means to expand social environments for people with disabilities are so far seldom discussed in occupational therapy models (Kielhofner, 2008; Letts, Rigby & Stewart, 2003). The findings of study II indicate that Internet activities may be used to enhance and expand social relationships and communication with peers. In turn, this might provide opportunities in school for positive social relationships and communication between classmates, other students in school, and teachers. On the basis of the findings of study II, it is recommended that the potential importance of online social interaction of adolescents with AS or ADHD in school should be addressed. Occupational therapists may work collaboratively with teachers and parents to equip adolescents with ADHD or AS with appropriate information and education about how to manage the potential risks of going online that they may encounter, including cyber-bullying and the risk of contact with people they have not met face-to-face (Livingston et al., 2011; Weiss et al., 2011).

Support for the occupational transition process

The findings of studies I, III and IV provide a basis for discussion on how to support the occupational transition process towards upper secondary school, further education and/or employment for young adults with AS or ADHD. The implication for support includes (a) supporting high-school completion through academic, social and emotional support, (b) extended compulsory school transition planning, (c), individualized transition planning, (d) inter-service collaboration and (e) support from community-based day centres. The support suggested highlights the need to consider the occupational transition process as a longitudinal process rather than as separate domains of school, further education and/or employment.

Internationally, federal legislative initiatives, notably the Individuals with Disabilities Education Act (IDEA) (2004), have required an earlier focus on transition planning (at age 14 or earlier), as well as identification of key players to provide needed transition services, in an attempt to improve school and transition outcomes among students with disabilities. Although general guidelines for tran-

sition are available in Sweden (The National Agency for Education, 2014), there are no requirements specified for transition planning in the Education Act (SFS 2010:800) or the curriculum for Compulsory school (The National Agency for Education, 2013) beyond the need for increased collaboration and recognition of the needs of students requiring special support. The findings of this thesis (parts I, III and IV) highlight several forms of support that young adults with AS or ADHD have suggested may influence the occupational transition process towards work and/or further education.

Based on the findings of studies III and IV, as well as previous studies (Gerhardt & Lainer, 2011; Shattuck et al., 2012; Shifrin et al., 2010; Taylor & Mailick, 2014) completed compulsory school education has been suggested as a critical pathway for the occupational transition to work or further education for students with AS or ADHD. As mentioned earlier, the need for support provision combining academic, social and emotional support identified in study III, is once again underscored here in order to address school success in compulsory school among young adults with AS or ADHD. Furthermore, extending support addressing difficulties with school work to include increased ICT which was identified as important in Studies I and III, as discussed earlier may provide improved conditions for young adults to succeed in school.

In particular, the findings of study IV suggest that early transition planning should be considered as part of the development of support targeting transition preparation among students with AS or ADHD. The findings of study IV suggest the need to expanded transition planning in high school, beyond close connection to graduation from compulsory school. It should be initiated at age 14 or preferably earlier, in order to prepare young adults with AS or ADHD for decision-making. In contrast to international federal legislative initiatives (Individuals with Disabilities Education Act, 2004) no such age specifications for when transition planning is to begin are available in Sweden.

The findings of studies III and IV also highlight the need for transition planning to be tailored to the particular needs of each student. A specific focus on helping students to define their own transition goals was highlighted by adoles-

cents with AS or ADHD as influencing transition planning. The key elements described by young adults with AS or ADHD as necessary for individualized transition planning included: a need for support in exploring interests, information provided by teachers and parents on careers that matched their interests, and information on qualifications required to pursue the identified career.

The findings of this thesis identified some key players needed to provide coordinated support for the occupational transition process from compulsory school to upper secondary school, further education and/or employment. Lack of support in addressing requirements concerning academic, social, emotional and practical support for everyday activities identified in studies III and IV points to the need to improve support provision and emphasises the need for collaboration between students, parents, schools, employment services, the health care system, and others. Despite being increasingly suggested as a means to help students with disabilities to attain educational goals and facilitate the transition process to further education and employment, inter-service collaboration is difficult to implement (Stodden, Abhari & Kong, 2015). Stodden et al. (2015) identified some issues that may present barriers to developing inter-service collaboration, including lack of shared information on students across services, lack of attention to broad aspects of school life such as well-being and aspects of the home environment, as well as inefficient and ineffective transition planning among involved services. Some of these barriers have been identified in the general guidelines for transitions available in Sweden including lack of shared information on students across educational settings and services and insufficient transition planning (The National Agency for Education, 2014). Based on the findings of studies III and IV several suggestions on ways to create formal collaborative structures are suggested. Young adults with AS or ADHD described difficulties accessing psychosocial support in school, indicating the need for enhanced collaboration between student's health services and the health care system. This particularly calls for the establishment of clear service roles and responsibilities, currently identified as lacking in the Swedish educational system (The National Agency for Education, 2014). Young adults with AS or ADHD point to the need for transition planning

to begin at least three years prior to the student leaving compulsory school or preferably earlier (Study IV). Considering the identified importance of parents, upper secondary school visits, and employment agencies in transition preparation in Study IV, it is suggested, based on the findings of this study, that meetings with education advisors may be enhanced to include the students, parents, upper secondary school personnel and representatives from further education and employment services, to ensure that critical transition needs are addressed.

The findings of Study IV revealed that community-based day centres play a prominent role in supporting the occupational transition process to employment by offering flexible and long-term support for young adults with AS or ADHD facing difficulties obtaining and remaining in employment. Community-based day centres were on the one hand described as providing young adults with AS or ADHD with practical work skills and self-esteem and a safe environment in which they had room to fail and learn from their mistakes. On the other hand, participants with previous work experience in the regular labour market stated that community-based day centres made them feel too remote from the labour market. From an overall perspective, these findings are encouraging, because they suggests that young adults with AS and ADHD following different pathways can benefit from community-based day centres when appropriate support is provided. These findings are in line with Tjörnstrand et al. (2013), showing that community-based day centres may need both to serve as a ‘safe place’, as well as offer a continuum of low and high occupational demands in order to meet the needs of young adults with AS or ADHD.

Overall, the findings in study IV indicated that different aspects of support provided in community-based day centres, including individual placements and on-the-job support provided by professionals, fostered a sense of hopefulness and motivation towards future goals of finding employment. Being placed in a regular workplace to work alongside others was identified in Study IV as fostering a sense of hopefulness and motivation towards finding employment in the regular labour market. This is an important finding since concerns have been raised about the “lock-in effects” of day centres, whereby those who come to day cen-

tres tend to remain there without transitioning to paid employment (The Swedish National Board of Health and Welfare, 2008). The finding is also important as it indicated that individual placements in a regular workplace, which may be comparable to supported employment, comprising a rapid job search, community placement and job coaching (Nicholas et al., 2015), may support a sense of hopefulness and motivation towards finding employment in the regular labour market. On-the-job support provided by professionals such as occupational therapists with appropriate knowledge about the young adult's disorders appeared to support obtaining and remaining in employment. This is in line with Nicholas et al. (2015) highlighting that, on-the-job support or job coaching may be of particular importance for facilitating preparation for finding a job, including how to apply and interview for a position, and also provide needed support in the work environment. Thus, allowing for the large amount of one-on-one time required of the professional for exploring appropriate job opportunities and supporting the individual in the workplace is a crucial aspect of on-the-job support.

Methodological considerations

Aspects of generalizability of the findings

The possibility of generalizing the findings of Studies I-II in terms of the (i) sampling plan, (ii) population homogeneity and (iii) response rate warrants some comments. Since there is no register data on children and adolescents with ADHD, the participants in Studies I and II were chosen from the case loads of HCs. In Sweden, the organization of support and services for children and adolescents with ADHD in the health care system differs between counties and regions (Bohlin, 2009). In some counties and regions, HCs are responsible for providing support and services to children and adolescents with ADHD, while in other parts of the country, child and adolescent psychiatry (BUP) are responsible for providing support and services to the target group (The National Board of Health and Welfare, 2014). As such, deciding which service will provide support to children and adolescents with ADHD seems to depend on how the responsibilities are divided in each county, rather than the severity of the disorder experienced by the individuals with ADHD. This indicates that the results may be generalizable to adolescents with ADHD receiving support from other services than the HCs. Based on the findings of Study I, one may argue that adolescents with ADHD enrolled in Study I-II might present with more motor difficulties, such as odd gait, or clumsiness, which might explain the use of a walking aid. However, a majority of children with ADHD present with motor difficulties associated with ADHD (American Psychiatric Association, 2013), and both fine motor skills and gross motor skills may be affected (Kaiser et al., 2014). Thus, the co-occurring motor disabilities shown in Study I may not be specific to the target group, rather a representation of the population of children and adolescents with ADHD.

Another important aspect of the possibility generalizing the findings of Studies I-II relates to the representativeness of the population in relation to age and sex (Polit & Beck, 2008). The population comprised almost 2/3 adolescents aged 12-15 years and 1/3 adolescents aged 16-18 years, which may influence the possibility of generalizing the findings to older adolescents. The difference in age

distribution may be a shortcoming since it is assumed that older adolescents are slightly more likely to be daily users of the Internet in the general population (Livingstone et al., 2011). Thus, if the population consisted of older adolescents, computer use in school might have increased, since it is assumed that ICT use in school increases with age (Findahl, 2014; Livingstone et al., 2011). Moreover, the population in Studies I-II contained slightly more boys than girls, which mirrors the fact that ADHD is more frequent in males than in females, with a ratio of approximately 2:1 in children (American Psychiatric Association, 2013). However, the distribution between boys and girls among the participants in Studies I and II warrants some comments, since it is assumed that boys and girls in the general population have different leisure activities and use the computer differently (Rhodes, Mark & Temmel, 2012; Wakimoto, 2013). For that reason, sex was considered in the analysis in Study II and taken into account for all the results obtained.

The response rate in Studies I and II was 52 % is a limitation, however this is not unusual for the chosen data collection method. The use of questionnaires has several advantages, especially when one wants to reach as many participants as possible (Polit & Beck, 2008). However, a disadvantage according to Polit & Beck (2008) is low response rate and the associated difficulties describing those who have decided not to participate in the study. These respondents may represent those individuals with either a special interest in computer use or those that are not satisfied with such use, which may have biased the findings. Analysis of response bias on gender and age indicated no differences between participants and non-participants in this thesis.

Studies III and IV were based on a qualitative approach. In qualitative studies the aim is not to make generalizable claims; rather they invite readers of research results to make connections between elements of a study and their own experiences and contexts (Patton, 2002; Polit & Beck, 2008). In Studies III and IV all participants were recruited from different community-based municipality services, and all participated in community-based day centres; therefore, the findings are not transferable to young adults without any support services or young

adults with AS or ADHD employed in the regular labour market or studying at university. However, it may be possible to transfer the results to similar services based on the descriptions provided of the participants and the context enabling the reader to assess how transferable the results are to other contexts (Patton, 2015; Polit & Beck, 2008). One limitation was that the participants were willing and able to communicate their experience of previous education and the occupational transition process. As such, the findings do not reflect those individuals diagnosed with AS or ADHD with profound speech, language, and communication difficulties associated with the conditions. Furthermore, the participants in Studies III and IV comprised both young adults with AS and those with ADHD. AS and ADHD are two of the most common neuropsychiatric disabilities among students attending general classrooms in Sweden (The National Agency for Education, 2015). With regard to school and work, co-occurring symptoms of deficits in executive function, difficulties with social interaction and emotional difficulties (American Psychiatric Association, 2013; Mulligan et al., 2009; Rommelse et al., 2011; Van der Meer et al., 2012), found with both diagnosis may cause these individuals to experience reduced academic performance and attainment (Frazier et al. 2007) and a higher probability of unemployment during the transition process (Biederman & Faraone, 2006; Shattuck et al., 2012). Thus, due to the similar patterns in reduced participation in school and work, both of these diagnosis were included in Studies III and IV.

Choice of design and data collection methods

In this thesis, the applied design and data collection methods are both qualitative and quantitative and have been chosen according to their ability to answer the specific aims stated in the thesis. The main argument for using a questionnaire in Studies I and II is that it enabled a novel comparison on computer and Internet activities between adolescents with ADHD, to that of adolescents with physical disabilities and adolescents from the general population. Previous research in occupational therapy has established that the professional knowledge on children and adolescent with ADHD is a developing field (Chu, 2003; Chu &

Reynolds, 2007). In particular, occupational therapist involvement with children and adolescents with disabilities has traditionally focused on individuals with physical disabilities and less on individuals with neuropsychiatric disabilities (Chu, 2003; Egilson & Hemmingsson, 2009). Furthermore, studies have shown that adolescents with ADHD may be overlooked regarding available support in school compared to students with physical disabilities. According to the Swedish Education Act (2010:800) all students should have access to “modern learning tools” in school. This motivated the use of a questionnaire enabling comparison of ICT use between two different groups of adolescents with disabilities and adolescents from the general population. The questionnaire showed initial validity (Lidström, 2011); however, further tests for validity and reliability on adolescents with ADHD would have been beneficial.

Furthermore, the cross-sectional design applied in Studies I and II did not allow for cause-effect relationships to be established (Polit & Beck, 2008). Therefore, it is not possible to say in Study II whether playing online games led to reduced performance in other leisure activities, or whether adolescents were playing online games because other leisure activities were inaccessible. Similarly, findings of study I, showing that having access to one’s own computer in school and using the computer for a variety of activities were associated with satisfaction with computer use, have to be interpreted with caution. Another criticism of the cross-sectional design is that computer and Internet activities were measured at a certain point in time (Polit & Beck, 2008), and as such provided no information on development in computer and Internet use over time. Embedding a longitudinal design with repeated data collection would be warranted in further research.

In Studies III and IV, hermeneutics according to Gadamer (2004) was used. The strength of Gadamer’s hermeneutics is that it encourages openness to others’ experience; however, due to the author’s bond with the participants’ experiences, considering the element of history of effect, it is also the most difficult part of the interpretation process. Thus, during the whole process of analysis, continuous comparisons between the transcripts, emerging sub-clusters, clusters and overall

understanding were performed with the intention of ensuring that the interpretations were grounded in the data. Furthermore, the thesis author's similar experience of the educational system of that time with participants may present the risk of glossing over or losing importance nuances in the participants' descriptions (Gubrium et al., 2012). Probing questions were especially effective in removing taken for granted understandings of the participants' descriptions of matters such as the organization of support, and who provided the support and how.

Previous research has suggested that some individuals with AS may experience difficulties in recalling personally experienced distant memories in detail (Harrington et al., 2013). Thus, using retrospect interviews in which questions about past events are asked may present a particular challenge. Several strategies were used in order to help young adults with AS or ADHD to remember past events. Questions were asked about three educational stages, middle school, high school and upper secondary school, in line with suggestions from previous research (Beresford et al., 2004; Harrington et al., 2013), suggesting that sequences of events may be easier for youths to answer questions about. In particular, use of a timeline on which significant events/experiences were placed was especially influential in helping young adults with AS or ADHD to recall earlier experiences. Some significant events and previous experiences were mentioned earlier in the interview, and the timeline enabled the young adults to elaborate on the emotions and stories attached to them while filling out the timeline. Other experiences were not mentioned earlier during the interview.

Aspects of data analysis and trustworthiness

The differences in sample size in the comparison groups between adolescents with ADHD (n=102) and adolescents without disabilities in Study I (n= 940) may increased the risk for type I or Type II error. In the analysis performed concerning differences between the groups Type I error may lead to a conclusion that there is a difference between the groups when there isn't (Polit & Beck, 2008). Conversely, Type II error may lead to a conclusion that there are no differences between the groups when there is a difference. The risk for Type I error

was controlled for by applying both the significant level of 0.5 in both Study I and II and the stricter level of 0.001 in Study II. It would have been beneficial to apply the stricter criterion of 0.001 in Study I to reduce the risk of accepting a difference between the groups that does not exist, however this might have increased the risk for Type II error (Polit & Beck, 2008).

Recommendations concerning the minimum sample size required for performing a principal component analysis (PCA) are generally around 100 samples or cases (Field, 2013; Polit & Beck, 2008). As the sample in study II lies near the recommended minimum sample required, the Keyser-Meyer Olkin measure (KMO) was checked to ensure sampling adequacy. The value of the KMO for the set of variables in Study II was .54, which is slightly greater than the the accepted value of 0.5 (Field, 2013).

In qualitative research, the concepts of credibility, transferability, dependability and confirmability, are used to illustrate different aspects of trustworthiness (Guba & Lincoln, 1989; Patton, 2015). Gadamer (2004) uses the concept of valid interpretations, which is applicable to the criteria used for trustworthiness (Fleming et al., 2008).

Credibility was attained by involving all co-authors throughout the analysis, in discussions of the findings, critically questioning the thesis author's understanding of the text, and in the search for alternative clusters, different patterns and alternative explanations, as suggested by Guba & Lincoln (1989). In addition, using the timeline allowed for immediate feedback from participants on the thesis author's initial interpretations, as means of establishing credibility as recommended by Patton (2015).

The reflexive process used during data collection and data analysis is one measure that might enhance the dependability of qualitative research (Patton, 2015). By making regular entries in a reflexive diary of initial expectations that the thesis author was consciously aware of, as well as changes in the author's pre-understandings that developed over time, continual awareness of pre-understanding was supported, in line with suggestions from Krefting (1991) and Patton (2002).

Detailed descriptions are provided of the selection of participants and characteristics of the participants in terms of age, gender, current education/work status, living arrangements and transition paths following compulsory school, with the intention of enabling the reader to assess how transferable the results are to other contexts as suggested by several authors (Guba & Lincoln, 1989; Patton, 2015; Polit & Beck, 2008).

Confirmability was attained by using the timeline, enabling participants both to immediately provide feedback on the author's initial interpretations and summarize of the interview, and the chance to correct initial interpretations, as well as to provide additional information for clarification or information that might not have been mentioned, in line with recommendations provided by Guba & Lincoln (1989), Krefting (1991) and Patton (2015).

CLINICAL IMPLICATIONS

The findings of this thesis have clinical implications and contribute knowledge to the field of occupational therapy. They will also be of benefit to other professionals that provide services in school and during the occupational transition to adolescents and young adults with AS or ADHD.

Based on the findings, it seems crucial for teachers, student's health services and other professionals to be aware that students with AS or ADHD experience difficulties at school that encompass academic, social, and emotional conditions, all of which influence learning. Therefore, the provision of support aiming at addressing difficulties with schoolwork needs to be combined with support addressing social relationships and emotional well-being, in order to support learning in school, as well as to prepare students with AS or ADHD for the occupational transition process to upper secondary school, further education and employment. Providing comprehensive support addressing difficulties with social relationships and emotional well-being requires teachers to work closely with student's health services in school, and the healthcare system to create conditions for support that targets students' academic needs, as well as their need for emotional well-being.

Professionals in school also need to be aware that support provided in school needs to be tailored to individual students' needs. For example, attending small groups was insufficient in itself unless combined with individualised support for learning. Furthermore, the findings of this thesis point to the need to consider all kinds of support in relation to the students' desire to be involved in determining what kind of support is needed and wanted. As such, the findings concerning the students' priorities for individualised support for learning, as well as the need for student involvement, underline the necessity to involve the perspectives of the students' in discussions concerning support provision in school.

The findings of this thesis (Studies I and III) show that computer and Internet activities have the potential to support students with ADHD in school by

providing new methods for writing, doing exams and instruction delivery. The limited computer use in school in Study I reported by adolescents with ADHD in comparison to students with physical disabilities and students without disabilities may place these adolescents at increased risk of exclusion from further education, work and society. Therefore, it is crucial that schools foster the development and use of digital skills, and that they remove the barriers associated with access and use of ICTs.

It is essential that teachers, parents and other professionals are aware that not all Internet activities should be treated as potentially harmful; rather they may serve to broaden and complement other traditional leisure activities by providing new opportunities and tools to perform activities in everyday life. Based on the findings of Study II it is suggested that Internet activities such as social networking sites and chat rooms may provide new opportunities for individuals with AS or ADHD to develop and/or maintain social relationships with peers. From this perspective, it seems crucial for parents, teachers and other professionals to specifically address how Internet activities might provide new opportunities in school and work for social relationships and communication, as well as are aware and investigate specific risks associated with Internet activities.

When the occupational transition process to upper secondary school, further education and work is considered in relation to support, there are several important aspects that need to be addressed, including extended transition preparation in compulsory school starting from age 14 or earlier (Study III), ICT use in school (Study I and III), individualised transition planning (Study III), inter-service collaboration between school, work and the home (Study III- IV), and provision of ongoing on-the-job support (Study IV). To address these issues, enhanced collaboration between students, parents, teachers, student's health services in school and the health care system is needed to ensure that critical transition needs are met. With regard to available guidelines on transition preparation in Swedish schools, it would be beneficial to have specific details of how, when and with whom formal collaborative transition planning should occur, as well as

details of formal service roles and responsibilities and the age at which transition planning should be initiated.

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SVENSK SAMMANFATTNING

Att sluta skolan innebär för ungdomar en övergång till vuxenlivet med antingen vidare studier eller arbetsliv i sikte. Övergångsprocessen innebär för alla ungdomar en förändring och för många en ”resa” mot okända mål. Denna process kan vara särskilt problematisk för unga vuxna med neuropsykiatriska funktionsnedsättningar eftersom denna grupp av elever ofta har svårt att uppnå målen i grund- och gymnasieskolan vilket efter avslutad utbildning ökar risken för arbetslöshet och psykisk ohälsa. Hur stödet har sett ut i skolan kan påverka unga vuxnas övergångar till arbetslivet. Tidigare studier har visat att ungdomar som tar del av undervisning i särskilda undervisningsgrupper i skolan löper större risk att få svårigheter att etablera sig på arbetsmarknaden. Informations- och kommunikationsteknik (IKT) har idag en självklar roll i de flesta ungdomars och unga vuxnas vardagsliv och kan därför utgöra ett viktigt redskap för lärandet i skolan. Datorn kan göra det lättare för elever med Attention deficit hyperactivity disorder (ADHD) att läsa och skriva, att kommunicera med lärare och andra elever och att hålla reda på material och uppgifter.

Det övergripande syftet med denna avhandling var att beskriva och få en fördjupad förståelse av hur ungdomar och unga vuxna med neuropsykiatriska funktionsnedsättningar beskriver sina erfarenheter av stöd i skolan. Vidare var syftet att undersöka vilket stöd som hade betydelse för övergångsprocessen från skola till vidare studier och arbete. De första två studierna undersökte datoranvändning i skolaktiviteter och på fritiden bland ungdomar med ADHD. I studie II undersöktes hur traditionella fritidsaktiviteter och Internetaktiviteter relaterade till varandra bland ungdomar med ADHD. I studie I och II samlades data in med en enkät som fokuserade på IKT i skolan och på fritiden. Datoranvändning i en variation av skolaktiviteter bland ungdomar med ADHD (n = 102) i åldrarna 12-18 år jämfördes med ungdomar med rörelsehinder (Studie I) och ungdomar utan funktionsnedsättningar (Studie II). Syftet med Studie III var att beskriva hur unga

vuxna med Aspergers syndrom och ADHD beskriver sina erfarenheter av stöd i skolan samt vad individerna retrospektivt värderar som betydelsefullt för sitt lärande. Studie IV syftade till att beskriva övergångsprocessen till gymnasiet, vidare studier och arbete, samt att undersöka, utifrån ungdomarnas perspektiv vilket stöd som påverkade processen. I Studie III (n=13) och IV (n=15) har kvalitativa, semi-strukturerade intervjuer genomförts med unga vuxna med ADHD och Aspergers syndrom i åldrarna 18–30 år. Data har analyserats med en hermeneutisk ansats i enlighet med Gadamer.

Resultatet i Studie I visade att ungdomar med ADHD använde datorn i mindre omfattning i nästan allt skolarbete än elever med rörelsehinder och elever utan funktionsnedsättningar. Exempelvis visade resultaten att bara en tredjedel av eleverna med ADHD använde datorn för att söka efter information på nätet medan hälften av elever med rörelsehinder och två tredjedelar av övriga elever gjorde det. Elever med ADHD var mindre nöjda med sin datoranvändning och ville använda dator oftare och till fler aktiviteter i skolan, än elever med rörelsehinder. Studie II visade att ungdomar med ADHD ägnade sig mindre åt sport och använde internet till att spela spel på fritiden mer än ungdomar med rörelsehinder. Ungdomar med ADHD umgås också mer sällan med kompisar i verkliga livet och träffas oftare på sociala sajter. Analysen visade att Internetaktiviteter inte har övertagit och ersatt traditionella fritidsaktiviteter. Ungdomar med ADHD som använde Internet till informationssökning läste också traditionella böcker och tidningar. Resultatet visade att Internetaktiviteter kan utgöra ett komplement till eller bredda traditionella fritidsaktiviteter. Studie III visade att unga vuxna med ADHD och Aspergers syndrom upplevde svårigheter i skolan som inkluderade pedagogiska, sociala och emotionella aspekter, vilket påverkade deras lärande i skolan. Stöd i skolan som riktades mot svårigheter med skolarbete beskrevs av unga vuxna med neuropsykiatriska funktionsnedsättningar som otillräckligt och tillfälligt. Resultaten visade att stöd i skolan för elever med neuropsykiatriska funktionsnedsättningar behöver riktas mot såväl de pedagogiska, sociala som emotionella aspekterna av skolmiljön. Resultaten i Studie IV identifierade tre olika vägar från skola till vidare studier och arbete. Stöd som påverkade över-

gångsprocessen inkluderade: planering inför övergången i grundskolan, arbetslivserfarenhet i en trygg miljö och stöd utanför arbetsplatsen såsom praktiskt stöd i hemmet. Daglig verksamhet beskrevs både som ett viktigt steg mot arbete då det gav erfarenhet och träning i en trygg miljö och av andra som ett misslyckande långt ifrån arbetsmarknaden.

Sammantaget har avhandlingen funnit att stöd i skolan för elever med neuropsykiatrisk funktionsnedsättning behöver kombinera pedagogiskt och psykosocialt stöd. Trots att datorn beskrevs som ett redskap som underlättade skolarbete av elever med ADHD, så visade resultaten att denna grupp av elever hade begränsade möjligheter att använda dator och Internet i skolan. Utifrån resultaten diskuteras hur Internetaktiviteter kan erbjuda nya möjligheter för social interaktion och nya förutsättningar för skolarbete. I denna avhandling beskrivs övergångsprocessen som en longitudinell process som börjar tidigt i skolan och pågår fram till att unga vuxna får och behåller arbete eller kommer in på vidare utbildning och klarar av sina studier. Denna avhandling visade att långsiktig planering inför övergången, samarbete mellan tex. skola, arbetsförmedlingen och hemmet samt stöd i daglig verksamhet, utgjorde aspekter i miljön som påverkade övergångsprocessen.

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