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Quality of life in older adults with ADHD: links to ADHD symptom levels and executive functioning deficits

Lisa B. Thorell^a , Ylva Holst^a and Douglas Sjöwall^{a,b}

^aDepartment of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden; ^bHabilitation and Health, Stockholm County Council, Stockholm, Sweden

ABSTRACT

Purpose and aim: The overall aim of the present study was to examine quality of life in attention deficit hyperactivity disorder (ADHD) patients age ≥ 60 years. First, we compared older adults with ADHD to both healthy controls of the same age and younger adults with ADHD. Second, we examined executive functioning as a possible underlying factor for quality of life among older adults with ADHD.

Methods: The study included 158 participants in three groups: (1) older adults (60–75 years of age) with ADHD ($n = 42$), (2) healthy controls of the same age ($n = 58$), and (3) younger adults (age 18–45 years of age) with ADHD ($n = 56$). The patients with ADHD were clinically-referred. Quality of life was examined through self-ratings and executive functioning was examined using both self-ratings and tests.

Results: Older adults with ADHD differed significantly from controls the same age on all aspects of quality of life, with large effect sizes. However, they showed similar levels of quality of life compared to younger adults with ADHD. The exception was psychological health, for which older adults displayed better quality of life compared to younger adults with ADHD. Executive deficits measured through self-ratings, especially working memory, were related to quality of life, sometimes also beyond the influence of ADHD symptom levels.

Conclusions: Older adults with ADHD show serious impairments in quality of life, that are comparable to the levels found for younger adults. Impairments may increase further as these individuals grow older and clinics need to meet the needs of this increasingly larger group of patients.

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Previous studies have shown that adult attention deficit hyperactivity disorder (ADHD) has severe negative impact on daily life functioning such as impairments in academic, occupational, and social functioning [1–3]. In addition, or possibly as a consequence of these impairments, adult ADHD has also been associated with lower quality of life [4,5]. However, there are still very few studies that have focused on adults above the age of 60, despite the fact that an increasing number of older individuals with diagnosed or undiagnosed ADHD will seek help during the next decades. Lately, there has been an increased interest in examining quality of life in patients with mental disorders. For ADHD, it has even been argued that improvements in quality of life outweigh simple short-term symptom reductions as the most important treatment outcome [6]. The overall aim of the present study was therefore to examine quality of life in older adults with ADHD and compare them both with healthy, age-matched controls and younger adults with ADHD. In addition to group differences, we also aimed to investigate whether ADHD symptom levels and executive deficits are related to quality of life.

ADHD in older adulthood

From previous research, we know that ADHD often persists into older adulthood with prevalence rates of 2.8–3.3% for individuals age 55 and above [7,8]. There are also a few studies showing that older adults with ADHD have similar impairments as younger adults with ADHD such as higher rates of comorbid depression, lower educational levels, higher rates of divorce/never married, and more loneliness as compared to healthy controls [7,9]. With regard to quality of life in older adults with ADHD, only two previous studies have addressed this issue. Lensing et al. [10] reported significantly more moderate to severe problems on each studied dimension of quality of life (i.e. mobility, self-care, usual activity, pain/discomfort, and anxiety/depression) when comparing older adults with ADHD to population norms. The second study instead compared younger and older adults with ADHD and found that older adults had significantly lower work productivity, but significantly better life outlook [11]. No significant differences were found between younger and older ADHD patients with regard to the domains assessing psychological health or relationships.

CONTACT Lisa B. Thorell  lisa.thorell@ki.se  Division of Psychology, Department of Clinical Neuroscience, Karolinska Institutet, Nobels Väg 9, SE-171 77 Stockholm, Sweden

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Underlying factors explaining poor quality of life in ADHD

In order to provide better care for patients with ADHD, we need to know more about the underlying factors contributing to poor quality of life in this patient group. Of the few previous studies that have examined this issue, most have focused on ADHD symptom levels. Brod et al. [12] described how symptoms of inattention in adults with ADHD may lead to poor time management, inability to follow through on a task, and disorganization or procrastination, all of which have a negative impact on work productivity and daily life functioning. In line with this interpretation, several studies have found that ADHD symptom severity is associated with decreased quality of life in childhood [6] young and middle adulthood [13], as well as in older adulthood [10].

Previous research of ADHD in younger adulthood has shown that poor executive functioning (i.e. working memory, inhibitory control, switching, and planning) is of central importance for the disorder [14]. With regard to older adulthood, much fewer studies exist and findings are more mixed. A previous study using the same sample as the present study showed that older adults with ADHD differed from healthy controls with regard to working memory, inhibitory control, switching, but not planning [15]. However, another population-based study found that older adults with ADHD only differed from controls with regard to working memory [16]. It should also be noted that studies using person-oriented analyses have shown that only a subgroup of individuals diagnosed with ADHD has clear executive deficits, and this has been demonstrated in both childhood [17,18] and adulthood [15]. This heterogeneity in neuropsychological functioning may explain why some individuals with ADHD have more impaired daily life functioning than others. However, only one previous study [4] has examined the link between executive functioning and quality of life in adults with ADHD and this study included younger/middle adulthood. The results showed small to large significant correlations between self-ratings of executive functioning and most aspects of quality of life, whereas laboratory tests of executive deficits were not significantly related to quality of life. Due to the relatively strong association between ADHD and executive deficits, it is important to control for ADHD symptom levels when examining the association between executive functioning and quality of life. This way, it will be possible to establish whether executive functioning is only related to quality of life because individuals with ADHD and executive deficits have higher symptom levels compared to individuals with ADHD without executive deficits.

Aim of the present study

The review of previous studies presented above demonstrates that there are indications that ADHD in older adults is associated with poor quality of life. However, due to few available studies, our knowledge about ADHD in older adulthood is still very limited. The overall aim of the present study was therefore to examine quality of life in adults with ADHD

age 60–75 years. First, we compared older adults with ADHD with both healthy controls the same age and younger adults (age 18–45 years) with ADHD with regard to quality of life. Second, we aimed to investigate executive function deficits (measured using both laboratory test and self-ratings) as a possible underlying factor that could explain variations in quality of life among older individuals with ADHD. In addition to investigating simple bivariate associations between executive function deficits and quality of life, we also aimed to investigate how much of the variance in quality of life that can be explained by executive deficits, beyond the influence of ADHD symptom levels. Finally, we examined whether background variables (i.e. gender, age and educational level) are related to quality of life among older adults with ADHD.

Materials and methods

Participants and procedure

The study included 153 participants in three groups: (1) older adults (60–75 years of age) diagnosed with ADHD ($n=42$), (2) controls of the same age without any psychiatric disorder ($n=58$), and (3) younger adults (age 18–45 years of age) with ADHD ($n=53$). Adults with ADHD were recruited from outpatient psychiatric units in Stockholm specialized in neuropsychiatric disorders and they all met the full diagnostic criteria according to DSM-5 [19] as assessed by trained psychologists/psychiatrists. Information regarding the study was available in the waiting room at the clinics and psychologists working at the clinics also informed their patients that there was an ongoing study that they could participate in if they wanted to. Information regarding exact time of receiving their diagnosis in unfortunately not known, but all of the participants had been diagnosed in adulthood. The diagnostic assessment included a detailed anamnesis, and standardized rating instruments. Information was collected from both the patient him-/herself and a significant other (i.e. a partner, parent, or sibling). As patients were recruited from several different clinics, not all participants were assessed using exactly the same instruments. All patients in the younger ADHD group and 18% of the patients in the older ADHD group were assessed using the second version of the Diagnostic Interview for ADHD in Adults (DIVA 2.0) [20]. Childhood ADHD symptom levels were assessed using the Childhood Symptom Scale [21], the Brown Attention Deficit Disorder Rating Scale (Brown ADD-RS) [22] or the Wender Utah Rating Scale (WURS) [23]. ADHD symptom levels in adulthood were assessed using the 18-item version of the Adult ADHD Self-Report Scale (ASRS) [24]. Comorbid symptoms were assessed using the Mini International Neuropsychiatric Interview (M.I.N.I.) [25]. If comorbid symptoms were identified during this structured interview, it was complemented with one or several standardized rating instruments, depending on the identified symptoms. Finally, current symptom levels were also assessed within the present study using self-ratings on the ASRS [24] and all participants were found to meet the symptom criteria for ADHD according to DSM-5 [1].

Exclusion criteria for both clinical groups were (1) an IQ score <70 on the Wechsler Adult Intelligence Scale (WAIS-IV) [26], (2) ongoing substance-related disorders, and (3) the presence of a serious neurological disorder such as Parkinson disease, amyotrophic lateral sclerosis (ALS), multiple sclerosis (MS), or dementia. Among the older adults, we also collected information about several aspects that are relatively common among older adults, as they could affect cognitive performance and therefore would need to be taken into consideration when examining the relation between executive deficits and quality of life: (1) a score of < 24 on the Mini Mental State Examination (MMSE) [27], which is indicative of cognitive decline; (2) chronic or acute pain, (3) severe physical disabilities, or seriously impaired vision after correction; (4) current use of neuroleptic, sedative, anxiolytic, or antiepileptic drugs. None of the participants in the study were found to have problems related to the aspects mentioned above. Among older adults with ADHD, 22 patients were on stimulant medication, but withdrew the medication for at least 24 hours prior to testing.

Healthy controls were recruited through local health care clinics and local organizations for senior citizens. Exclusion criteria were the same as described above as well as the presence of any psychiatric disorder. The controls did not differ significantly from the older ADHD group on the MMSE, $t = .88$, *ns*. Participants provided informed written consent and the local ethics committee approved the study. All participants received approximately 50 Euros for taking part in the study.

Measures

Ratings of quality of life

Quality of life was assessed using the Adult ADHD Quality of Life measure (AAQoL) [28], which includes four subscales: (1) Life Productivity, (2) Psychological Health, (3) Relationships and (4) Life Outlook. Items were scored on a five-point scale ranging from 1 (Not at all/Never) to 5 (Extremely/Very Often). Scores were then converted into four subscale scores ranging from 0 to 100 with high value always indicates high quality of life. Previous studies have found this scale to have adequate psychometric properties [28].

Neuropsychological deficits

We used neuropsychological tests from the Delis Kaplan Executive System (D-KEFS) [29] and the WAIS-IV [26]. *Working memory* was measured using the backward and sequencing condition from the Digit Span Test and the Letter-Number Sequencing Test, both taken from the WAIS-IV. *Inhibition* was investigated using completion time on the third subtest (i.e. interference trial) of the Color-Word Interference Test from the D-KEFS. *Switching* was measured using the fourth subtest (i.e. shifting trial) from the Color Word Interference. Finally, we used the Adult Executive Functioning Inventory (ADEXI) [30], a self-report measure assessing working memory and inhibition.

Statistical analyses

All variables included in the study were screened for outliers using the outlier labeling rule [31], with separate analyses being conducted for each one of the three groups. However, no outliers were detected. Next, group differences with regard to background variables and quality of life were investigated using analyses of variances (ANOVAs) for dimensional variables and chi-square analyses for the categorical variables. Post hoc analyses (paired comparisons) were used to compare older adults with ADHD with either the healthy controls or the younger ADHD group. Effect sizes were investigated using Cohen's d , where .30 is considered a small effect, .50 a medium effect, and .80 a large effect [32]. Next, we wanted to examine associations between ADHD symptom levels, executive deficits and quality of life in older adults with ADHD. First, bivariate associations were examined using Pearson correlation analyses. In addition, we used hierarchical regression analyses, with ADHD symptom levels entered in the first step and executive function deficits in the second step. This allowed us to address the question to what extent executive function deficits are significantly related to quality of life beyond the influence of ADHD symptom levels. Finally, correlations (dimensional variables) or t-tests (categorical variables) were used to examine the role of background variables in relation to quality of life among older adults with ADHD.

Results

Descriptive statistics are presented in Table 1. The two groups including older adults did not differ with regard to age, $t = 0.53$, *ns*, and the three groups did not differ regarding male-female ratio, $\chi^2 = 0.41$, *ns*, or general intellectual functioning (assessed using the Block Design Subtest from the WAIS-IV [26]), $F = 2.17$, *ns*. However, significant group differences were found for educational level, $F = 55.35$, $p < .001$, with the healthy controls showing the highest educational level and the younger adults with ADHD the lowest. None of the group differences presented below changed when including educational level as a covariate in the analyses.

When examining group differences with regard to quality of life, the results showed significant main effects of group for all variables (see Table 2). Post hoc analyses showed that older adults with ADHD differed significantly from older controls on all variables. Effect sizes were all well above what is considered a large effect, all d s > 1.52. With regard to the comparison between older and younger adults with ADHD, older patients with ADHD reported significantly higher quality of life for the subscale psychological health, but not for any of the other subscales. The effect size was in the medium to large range for the significant effect and small for the non-significant effects.

Table 3 presents the correlations between executive functioning, ADHD symptom levels, and quality of life. Executive functioning as measured through laboratory test were not significantly correlated with any aspects of quality of life. However, when using self-ratings, working memory was

Table 1. Descriptive data for background variables, ADHD symptom levels, comorbid diagnoses, and general intellectual functioning.

	ADHD older adults (<i>n</i> = 42)	ADHD younger adults (<i>n</i> = 53)	Healthy older controls (<i>n</i> = 58)
Background variables			
Age (years), <i>M</i> (<i>SD</i>)	65.02 (3.58)	28.30 (6.75)	65.52 (4.40)
Gender (% men)	42.9	37.2	48.3
Educational level (%)			
Min requirement (≤ 9 years)	9.5	28.3	5.2
High school	26.2	50.9	22.4
University/college	64.3	20.8	72.4
ADHD symptom levels			
Hyperactivity/impulsivity	3.12 (0.74)	3.61 (0.77)	1.92 (0.46)
Inattention	3.57 (0.57)	3.88 (0.57)	2.16 (0.39)
Comorbid diagnoses (%)			
Depression	31.8	17.8	0
Anxiety disorders	15.9	5.3	0
Bipolar disorder	6.8	5.3	0
Social phobia	0	1.7	0
Panic disorder	0	3.5	0
Personality disorders	0	7.0	0
Autism spectrum disorders	2.2	0	0

Table 2. Results of the ANOVAs, post hoc analyses, and effects sizes (*d*) for the comparison between the older ADHD group (1), the younger ADHD group (2), and older healthy controls (3).

	ADHD older adults (<i>n</i> = 42)	ADHD younger adults (<i>n</i> = 53)	Healthy older controls (<i>n</i> = 58)	ANOVA <i>F</i>	Planned comparisons (<i>d</i>)	
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		Older ADHD vs. younger ADHD	Older ADHD vs. older controls
Quality of life						
Life productivity	53.16 (19.46)	47.82 (19.91)	84.37 (16.13)	62.91***	ns (.27)	1 < 3 (1.77)
Psychological health	47.38 (20.13)	33.27 (17.01)	76.54 (16.44)	86.11***	1 > 2 (.76)	1 < 3 (1.61)
Life outlook	53.86 (15.82)	49.42 (14.10)	76.09 (13.67)	53.83***	ns (.30)	1 < 3 (1.52)
Relationships	54.67 (17.72)	50.45 (19.30)	81.25 (14.98)	50.91***	ns (.23)	1 < 3 (1.65)

****p* < .001.

ns: non-significant.

Table 3. Correlations between quality of Life and executive functioning (EF) among older adults with ADHD.

	Quality of Life			
	Life outlook	Life productivity	Psychological health	Relationships
EF laboratory test				
Working memory	.10	.02	.25	.23
Inhibition	.13	.03	.02	.10
Switching	-.17	-.06	-.19	-.09
EF Self-ratings				
ADEXI Working memory	-.42**	-.50***	-.28	-.58***
ADEXI Inhibition	-.08	-.13	-.26	-.32*
ADHD symptom levels				
Hyperactivity/impulsivity	-.12	-.07	-.44**	-.39*
Inattention	-.28	-.53***	-.34*	-.49***

p* < .05.*p* < .01.****p* < .001.

shown to be significantly related to all aspects of quality of life, except for psychological health. In addition, self-rated inhibition was significantly related to the relationship subscale. With regard to ADHD symptom levels, symptoms of inattention were significantly related to all aspects of quality of life except for life outlook and hyperactivity/impulsivity was significantly related to psychological health and relationships.

Next, we used regression analyses to investigate to what extent self-ratings of executive functioning were significantly related to quality of life beyond the influence of ADHD

symptom levels. ADHD symptom levels were therefore entered in Step 1 and executive deficits in Step 2. Only the self-ratings were included in these analyses as executive function deficits as measured through laboratory tests were not significantly related to quality of life in the correlation analyses. The regression analyses (see Table 4) showed that ratings of executive functioning explain additional variance beyond the effects of ADHD symptom levels for the subscales Life Outlook and Relationships, but not with regard to Life Productivity and Psychological Health. In both cases, it was working memory that contributed to the effect. In line

Table 4. Results of the regression analyses predicting quality of life in older adults with ADHD.

	R^2	ΔR^2	β
Life productivity	.42		
Step 1		.37***	
Inattention			-.66***
Hyperactivity/impulsivity			.32*
Step 2		.05	
Working memory deficits			-.32
Inhibitory deficits			.19
Psychological health	.24		
Step 1		.23**	
Inattention			-.20
Hyperactivity/impulsivity			-.37*
Step 2		.01	
Working memory deficits			-.11
Inhibitory deficits			.13
Life outlook	.23		
Step 1		.08	
Inattention			-.27
Hyperactivity/impulsivity			-.02
Step 2		.15*	
Working memory deficits			-.57*
Inhibitory deficits			.32
Relationships	.42		
Step 1		.29***	
Inattention			-.40**
Hyperactivity/impulsivity			-.24
Step 2		.13*	
Working memory deficits			-.53**
Inhibitory deficits			.23

* $p < .05$, ** $p < .01$, *** $p < .001$.

with expectations, higher ADHD symptoms and higher executive deficits were related to lower quality of life. The exception was the association between hyperactivity/impulsivity and life productivity. In the correlation analysis, no association was found between hyperactivity/impulsivity and life productivity. However, when controlling for the overlap between the two ADHD symptom domains in the regression analyses, higher levels of hyperactivity/impulsivity was significantly related to higher, rather than lower, life productivity.

Finally, the role of background variables was examined. No significant group differences in quality of life among older adults with ADHD were found with regard to gender or education (university education or not), both $t_s < 1.17$. In addition, age was not associated with quality of life (r_s ranging between $-.19$ and $.24$), except that lower age was associated with higher quality of life with regard to psychological health, $r = -.31$, $p < .05$.

Discussion

The main findings of the present study were that older adults with ADHD rated their quality of life as significantly lower in comparison with healthy controls the same age with regard to all four domains: life productivity, life outlook, relationships, and psychological health. Effect sizes were all large. Older adults with ADHD rated their quality of life as comparable to those of younger adults with ADHD, except for a higher score with regard to psychological health. Both ADHD symptom levels and executive deficits were related to quality of life when using self-ratings. However, none of the relations between laboratory tests of executive functioning

and quality of life were significant. Higher self-rated working memory deficits were significantly related to lower levels of quality of life regarding the subscales Life Outlook and Relationships, also beyond the influence of ADHD symptom levels. In total, ADHD symptom levels and executive functioning deficits explained about 40% of the variance in Life Productivity and Relationships among older adults with ADHD and about 20% in Life Outlook and Psychological Health. Finally, the results indicated that there might be a positive aspect of having high levels of hyperactivity/impulsivity for life productivity.

Quality of life in older adults with ADHD

Previous studies of quality of life and in ADHD have proposed that a vicious circle is often created as many individuals with ADHD used maladaptive coping strategies that both maintain and reinforce their dysfunctional self-beliefs, which in turn leads to increased levels of stress, disappointments, depressive symptoms and poor quality of life [12]. The results of the present study extend previous findings of children [6] and younger adults with ADHD [13] by showing that poor quality of life is an important aspect also in ADHD patients above age 60 years.

The results of the present study are also in line with the two previous studies that have examined quality of life in older adults. However, there are also some interesting differences between the present study and previous research. Brod et al. [11] showed that older adults with ADHD experienced a better life outlook but poorer life productivity compared to younger adults with ADHD. In the present study, older adults had higher quality of life compared to younger adults with ADHD with regard to psychological health, but no significant group differences were found for the other subscales. These differences can most likely be attributed to the characteristics of the samples in these two studies. In the study by Brod et al., the younger adults with ADHD consisted of large validation sample of which it is unclear if all met the full criteria for ADHD. In line with this, our young ADHD sample showed much lower quality of life compared to that of Brod et al. With regard to the older adults with ADHD, Brod et al. were only able to recruit 24 individuals despite being in contact with 188 ADHD psychiatrist. Thus, to what extent this sample is representative is unclear and the older and younger samples differed in how they were recruited, making group comparisons between ages difficult. The result of the present study therefore contributes with new valuable information by being the first study to investigate quality of life in a clinically referred ADHD sample of older adults and by showing that this patient group is just as impaired as younger adults with ADHD within most domains and much more impaired compared to age-matched controls.

The only aspect of quality of life for which we found a significant difference between older and young adults with ADHD was the subscale psychological health. When trying to interpret this finding, it is important to first acknowledge what this subscale includes several items related emotional

functioning (e.g. overwhelmed/fluctuations in emotions/overreacted in difficult situations). As previous research has shown the older adults have a higher ability to use effective strategies for regulating emotions compared to younger adults [33], this could be interpreted as a general effect of age.

Underlying factors related to quality of life in ADHD

As noted by for example Danckaerts et al. [6], strong correlations between ADHD symptom levels and quality of life should be expected, but symptom levels and quality of life are clearly separate constructs and both are required in order to give a full picture of the patient's difficulties. In line with this, the present study showed high correlations, but certainly not a total overlap, between ADHD symptom levels and quality of life. Interestingly, higher levels of hyperactivity/impulsivity were associated with higher quality of life with regard to life productivity when controlling for the overlap between the two ADHD symptom domains. This is consistent with the study by Brod et al. [11] showing that nearly half of their sample of older adults with ADHD identified positive sides of ADHD that are related to life productivity such as creativity, enthusiasm and being able to hyper-focus and multitask when interested in a topic.

Another interesting finding was that executive function deficits were related to some aspects of quality of life also when controlling for ADHD symptom levels. This finding is in line with previous research [4,10]. The present study adds new knowledge by showing that working memory deficits were consistently related to all aspects of quality of life except for psychological health, whereas inhibitory deficits were only significantly related to the subscale Relationships.

Finally, it should be mentioned that we found no significant relations between laboratory measures of executive functioning and quality of life, which is in line with one previous study of adult ADHD [4]. In addition, this is consistent with other ADHD research claiming that laboratory measures of executive functioning have much lower ecological validity compared to ratings as they are poorly related to different aspects of daily life functioning such as educational activities, money management, social interactions and handling daily responsibilities [34]. It is beyond the scope of the present paper to have a discussion regarding differences between test and ratings. However, the interested reader is referred to the excellent review on this topic by Toplak et al. [35].

Limitations and future directions

One limitation of the present study is that it is to a large extent based on self-reports. Quality of life is a construct that is probably best assessed using self-reports as this construct is usually defined as the individual's subjective perception of functioning with regard to different aspects of life. However, when assessing executive deficits, lack of self-awareness or minimization of difficulties on the part of the rater is always a possibility. In addition, associations between quality of life and ADHD symptom levels and executive deficits could have been exaggerated due to shared method

variance. However, a number of specific relations were found (e.g. working memory deficits was more consistently associated with quality of life compared to inhibitory deficits), which could indicate that the participants really did complete the ratings with care and that they were able to distinguish between the different constructs assessed through ratings.

Another issue that should be discussed is the representativeness of our sample. It should be noted that all ADHD patients included in this study had been diagnosed in adulthood and we therefore do not know to what extent our findings can be generalized to all patients with ADHD in older adulthood. The proportion of patients with comorbid disorders is relatively low compared to what can be expected in a clinically-referred ADHD sample. It is therefore likely that our sample is somewhat less severely affected compared to individuals who are diagnosed with ADHD early in life and who still meet the criteria in older adulthood. However, our sample is likely to better reflect the ADHD population in general compared to many previous studies of older adults as they have often used population-based samples and/or included individuals not meeting the full diagnostic criteria for ADHD.

With regard to future studies, it would be of great interest to conduct a longitudinal follow-up to assess whether (1) differences in quality of life increase between individuals with ADHD increase or decrease with age and (2) executive deficits are predictive of future levels of quality of life. For our sample of older adults with ADHD, we expect quality of life to become worse as most of our participants were still below 70 years of age and they are therefore not so likely to already have experienced the serious negative events associated with older life (e.g. losing one's partner, serious somatic illness). It is reasonable to assume that the challenges associated with older adulthood could be especially difficult to handle for individuals with ADHD. Previous research has for example shown that adults with ADHD have lower self-esteem, lower self-efficacy, as well as lower internal and external resources [36]. It has also been shown that these factors are related to lower quality of life [37]. It is therefore possible that differences in quality of life between older adults with ADHD and controls could grow even larger over time, although this is an issue that needs to be addressed in future research. Another important avenue for future studies is treatment. Behavioral treatment studies are starting to address this age group [38], but much more research is clearly needed in order to determine what professional support that is needed for this increasingly larger patient group. In order to provide the best possible care, it will be valuable if future research could include broader measures of how older adults with ADHD perceive their daily life. An important construct to consider in this context is personal recovery, which is defined as the process of trying to live a meaningful life despite the limitations of psychiatric symptoms [39].

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Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Lisa B Thorell, PhD is an Associate Professor and a research group leader at the Karolinska Institutet. She is the author of about 50 original peer-reviewed publications on ADHD. Her research interests include developmental aspects, neuropsychological deficits, behavioral interventions and functional impairments in relation to ADHD across the life span.

Ylva Holst, PhD is a clinical psychiatrist and a specialist in neuropsychology. She received her PhD in 2017 with a thesis focusing on the link between neuropsychological deficits and functional impairments in adult ADHD.

Douglas Sjöwall, PhD is a post doctoral researcher at the Karolinska Institutet and Stockholm County Council. His research interests include ADHD in relation to neuropsychological deficits, functional impairments, cognitive interventions and physical exercise.

ORCID

Lisa B. Thorell  <http://orcid.org/0000-0002-7417-6637>

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