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ORIGINAL PAPER

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Psychiatric comorbidity and functional impairment in a clinically referred sample of adults with attention-deficit/hyperactivity disorder (ADHD)

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Abstract *Objective* This exploratory study aims to compare lifetime psychiatric axis-I-comorbidity and psychosocial functioning in a clinically referred sample of adult patients with attention-deficit/hyperactivity disorder (ADHD) with a population-based healthy control group and to examine whether patients with ADHD and lifetime comorbid diagnoses differ from patients with pure ADHD in their functional impairment. *Method* Seventy adult patients with ADHD according to DSM-IV criteria and a gender- as well as age-matched population based control group underwent diagnostic evaluations with clinical interviews for ADHD, DSM-IV disorders and demographic information. *Results* The prevalence of psychiatric lifetime comorbidity was 77.1% in patients with ADHD and thus exceeded the rate in the control group, which was 45.7%. Significantly more patients suffered from depressive episodes, substance related disorders and eating disorders. Compared to the control group adults with ADHD were significantly impaired in a variety of psychosocial functions (education, occupational training). Patients with ADHD and lifetime diagnosis of comorbid psychiatric disorders differed from patients with pure ADHD in their psychosocial functioning only in the percentage of unemployed individuals, which was higher in patients with psychiatric comorbidity. *Conclusion* Adults with ADHD suffer significantly more often from other psychiatric disorders than individuals of the population-based control group and are impaired in several areas of psychosocial functioning. Poor psychosocial outcome is primarily related to ADHD and not to additional psychiatric disorders. Due to the limited number of assessed patients these results need to be confirmed by studies with larger sample size.

Key words adult attention-deficit/hyperactivity disorder · ADHD · psychiatric comorbidity · psychosocial functioning

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Introduction

Until recently attention-deficit/hyperactivity disorder (ADHD), which is clinically characterised by impaired attention and impulse control, age-inappropriate hyperactive behaviour, inner restlessness and emotional deregulation like temper outbursts or mood swings, has been considered to be a disorder exclusively limited to childhood and adolescence. This concept had to be changed when prospective studies clearly documented the continuation of the disorder into adulthood [22, 27, 37], so that to date ADHD is conceived as a chronic psychiatric syndrome with childhood-onset. According to data assessed in a large epidemiological USA-study (National Comorbidity Survey-Replication [NCS-R]) prevalence of adult ADHD among the general population in the USA (18–44 years) is about 4% [19]. So far there is no data on the prevalence of adult ADHD in Europe.

Primarily based on data from pharmacological intervention studies as well as the epidemiological

study carried out in the USA we know that up to 89% of all adults with ADHD suffer from additional psychiatric diagnoses during their lifetime mainly affective disorders, substance use disorders and eating disorders [19, 21, 34]. This parallels findings in children, in which ADHD is associated in about 60–100% with at least one other child psychiatric disorder mainly oppositional defiant disorders, depressive syndromes and anxiety disorders as well as tic disorders, autism spectrum disorders and developmental disorders [10, 15]. The comorbidity of ADHD and personality disorders is less frequently studied than that with axis-I disorders. There is, however, a sound data base concerning comorbidity of antisocial personality disorders and ADHD, with data from longitudinal and cross sectional studies pointing to an increased co-occurrence of the two disorders with up to 23% of young adults with ADHD presenting with comorbid antisocial personality disorders [22, 37] and up to 45% of young adult prison inmates suffering from ADHD [29].

Under clinical aspects clinically one crucial question is how comorbid psychiatric disorders impact on course and outcome of adults with ADHD. At present there are only a few published American but no European studies dealing with this topic and investigating patterns of psychiatric comorbidity and psychosocial functioning in adults with ADHD [3, 5, 23, 24].

The aim of our exploratory study therefore was to systematically assess the profile of lifetime psychiatric axis-I comorbidity and psychosocial functioning in a German sample of adults with ADHD compared to a population-based gender- and age-matched population-based control group and to examine whether patients with ADHD and lifetime comorbid psychiatric diagnoses differ from patients with pure ADHD in their psychosocial functioning.

Methods

Subjects

Data were assessed within an ongoing study on the genetic basis of adult ADHD. The study had been approved by the local ethics committee. All participants had given written informed consent before participating in the study. Seventy adult patients with ADHD, which were recruited from consecutive referrals to the ADHD specialty outpatient clinic of the Central Institute of Mental Health in Mannheim, Germany, and 70 age- and gender-matched controls were included in the study. The population-based control group was recruited in cooperation with the local residents' registration office of Mannheim and comprised in total 188 probands (72 males, 96 female) with a mean age of 46.5 years. The controls whose data were presented in this paper were obtained from the total sample by matching controls with ADHD-patients according to age and gender. To obtain the total control sample 300 male and 300 female local residents had to be contacted.

All subjects with ADHD met the following inclusion criteria: a minimal IQ-score of 85; ADHD during childhood and at present according to DSM-IV criteria [2] as assessed in a structured interview; chronic course of the disorder from child- to adulthood, expert consensus about diagnosis of child and adult ADHD, in which strong emphasis was placed to obtain parallel history data about childhood and current ADHD-symptoms (remarks about behaviour and concentration in grammar school reports, caregiver's and spouse's consultations). Patients who suffered from other axis-I or -II disorders, which required being treated with priority or could explain alternatively the assessed symptoms of impaired functioning as well as patients with stimulant medication within four weeks before assessment were not included in the study.

Assessments

All included participants underwent diagnostic evaluation with structured and unstructured clinical interviews for demographic information and lifetime history of psychiatric symptoms as well as axis-I-disorders. In subjects with ADHD assessments of intellectual functioning and ratings of childhood and adult ADHD-symptoms were additionally performed. Assessments included a demographic interview, the Structured Clinical Interview for DSM-IV axis-I Disorders (SCID-I), a semi-structured interview for present and childhood ADHD (Hypescheme), the short form of the Wender Utah rating scale (Wurs-k), the Brown attention deficit disorder scales (BADDS) and the Leistungsprüfsystem (LPS).

Measures

Demographic interview

Demographic information was assessed with an inventory designed for valid phenotype characterization in genetic epidemiology in psychiatry (for description in detail see Ref. [11]).

Structured clinical interview for DSM-IV axis-I disorders

The German version [38] of the Structured Clinical Interview for DSM-IV axis-I Disorders (SCID-I, [13]) is a semi-structured interview for making the major DSM-IV axis-I diagnoses, which is widely used for scientific and clinical purpose.

Hypescheme

Hypescheme is a semi-structured clinical interview that includes the operational criteria required for both DSM-IV and ICD-10 diagnostic criteria of childhood and adult ADHD [8].

Wender Utah rating scale, short version

The German short form of the Wender Utah rating scale (Wurs-k) is a retrospective dimensional measure of ADHD symptoms, which is based on the Utah criteria for the diagnosis of ADHD and the original version of the Wender Utah rating scale [35]. Using a cut-off score of 30 points its sensitivity and specificity for detection of childhood ADHD was 85% and 76%, respectively [28].

Brown attention deficit disorder scale

The German version (Uwe Ruhl, accepted for publication) of the Brown attention deficit disorder scale (BADDS) assesses current ADHD-symptoms on a basis of 40 self-rated items encompassing the symptom cluster organizing and activating, sustaining attention, sustaining effort, managing affective interference and working memory [7]. It has been shown that using a cut-off-score of 50 points its sensitivity was 96% while its specificity for detection of adult ADHD was 94% [12].

Leistungsprüfsystem

The Leistungsprüfsystem (LPS) is a multi-dimensional intelligence test, evaluating the dimensions general education, reasoning, word

Table 1 Subject characteristics ADHD versus control group

	ADHD (n = 70)	Controls (n = 70)	T	X^2	df	p
Age (years)	36.8 (s.d. = 9.0)	39.8 (s.d. = 10,0)	−1.853		138	0.066
Gender (males)	n = 38 (54.3%)	n = 38 (54.3%)		0.000	1	1.000
IQ	110 (s.d. = 10.6)	not assessed				

fluency, technical talent and perceptual speed with at least 40 items for each dimension, and is widely used throughout Germany for the assessment of cognitive performance [16].

Statistical analysis

All statistical analyses were carried out using SPSS for Windows, version 12. Continuous data were analysed with the students t-test for independent samples. Categorical data were analysed using chi-square analyses. Statistically significant differences were assessed at an alpha level of <0.05.

Results

ADHD versus control group

Subject characteristics

Information on subject characteristics is presented in Table 1. Thirty-six patients (51.4%) were diagnosed as combined, 34 (48.6%) as predominantly inattentive subtype of ADHD. 13 of the patients who were currently diagnosed as predominantly inattentive subtype of ADHD were diagnosed as combined subtype during childhood.

Psychiatric lifetime comorbidity

The results for psychiatric lifetime comorbidity are presented in Table 2. The overall lifetime prevalence for psychiatric disorders, affective disorders, major depressive episodes, substance use disorders and eating disorders was higher in ADHD-patients than in controls. The frequency of psychiatric diagnoses other than ADHD was more prevalent in ADHD-patients than in controls. Twenty-five patients (35.8%) compared to 16 controls (22.9%) had one, 12 patients (17.1%) compared to 8 controls (11.4%) had 2, 12 patients (17.1%) compared to 7 controls (10.0%) had 3 and 5 patients (7.1%) compared to one control subject (1.4%) had four or more comorbid lifetime psychiatric diagnoses (X^2[5] = 17.066; p = 0.004). Neither ADHD-patients nor controls reported bipolar affective disorders. A gender bias was observed for depressive episodes, eating disorders and substance related disorders. Twenty-five female (35.8%) compared to 15 male patients (21.4%) suffered from comorbid depressive episodes (X^2[1] = 5.277; p = 0.022), 6 (8.6%) females as opposed to 2 (2.9%) males from eating disorders (X^2[1] = 4.960; p = 0,026) and 15 male (21.4%) compared to 6 female patients (8.6%) from substance related disorders (X^2 = [1] = 6.312; p = 0,011). No gender differences were observed for anxiety disorders, which were found in 12 females (17.2%) and 12 males (17.2%) respectively.

Most of the ADHD-patients with substance use disorders had a double diagnosis of substance and alcohol use disorders. Only one patient reported pure abuse of alcohol, 9 reported abusing substances only and 12 reported abusing both alcohol and substances.

Table 2 Lifetime psychiatric comorbidity ADHD versus control group

	ADHD (n = 70)	Controls (n = 70)	X^2	df	p
Overall lifetime comorbidity	n = 54 (77.1%)	n = 32 (45.7%)	15.603	1	<0.0001
Affective disorders total	n = 44 (60.7%)	n = 18 (25.7%)	18.462	1	<0.0001
Major depressive episodes	n = 40 (55%)	n = 17 (24.3%)	15.010	1	<0.0001
Dysthymia	n = 4 (5.7%)	n = 1 (1.4%)	1.912	1	0.167
Substance related disorders total	n = 21 (30.0%)	n = 5 (7.1%)	12.397	1	<0.0001
Alcohol total	n = 12 (17.2%)	n = 5 (7.1%)	3.400	1	0.065
Alcohol abuse	n = 6 (8.6%)	n = 3 (4.3%)	1.116	1	0.291
Alcohol dependence	n = 6 (8.6%)	n = 2 (2.9%)	2.184	1	0.139
Substances total	n = 20 (28.5%)	n = 2 (2.9%)	17.806	1	<0.0001
Substance abuse	n = 12 (17.1%)	n = 2 (2.9%)	8.104	1	0.005
Substance dependence	n = 8 (11.4%)	n = 0 (0%)	8.612	1	0.003
Anxiety disorders	n = 24 (34.3%)	n = 18 (25.7%)	1.355	1	0.244
Social phobia	n = 13 (18.6%)	n = 7 (10.0%)	2.205	1	0.138
Specific phobia	4 (5.7%)	9 (12.9%)	3.190	1	0.074
Panic disorders (with/without agoraphobia)	n = 3 (4.3%)	n = 2 (2.9%)	0.223	1	0.637
Agoraphobia	n = 1 (1.4%)	n = 2 (2.9%)	0.326	1	0.568
Generalized anxiety disorder	n = 2 (2.9%)	n = 1 (1.4%)	0.356	1	0.551
Obsessive-compulsive disorders	n = 6 (8.7%)	n = 4 (5.7%)	0.463	1	0.496
Eating disorders total	n = 8 (11.4%)	n = 1 (1.4%)	5.930	1	0.015
Others	n = 2 (2.9%)	n = 2 (2.9%)	0.000	1	0.988

Table 3 Psychosocial functioning ADHD versus control group

	ADHD (n = 70)	Controls (n = 70)	X^2	df	p
Partnership					
Stable partnership	n = 35 (50%)	n = 47 (67.1%)	4.122	1	0.042
Divorced	n = 15 (21.4%)	n = 8 (11.4%)	2.806	1	0.094
Children	n = 39 (55.7%)	n = 36 (51.4%)	0.654	1	0.419
Education			12.919	2	<0.0001
O-Levels	n = 51 (72.9%)	n = 30 (42.9%)			
A-Levels	n = 19 (27.1%)	n = 40 (57.1%)			
Professional training					
None	n = 12 (17.1%)	n = 5 (7.1%)	3.281	1	0.07
Incomplete	n = 6 (8.6%)	n = 5 (7.1%)	0.099	1	0.753
Completed	n = 43 (61.4%)	n = 42 (60.0%)	0.030	1	0.863
University degree	n = 6 (8.6%)	n = 18 (25.7%)	7.241	1	0.007
University course drop-out	n = 3 (4.3%)	n = 0 (0.0%)	3.066	1	0.080
Occupational status					
Unemployed	n = 20 (28.6%)	n = 16 (22.9%)	0.598	1	0.439

In the control group two subjects reported abusing both alcohol and substances and three reported abusing alcohol only.

Neither the frequency of anxiety disorders in the entire group nor the number of anxiety disorders in one individual differed between patients with ADHD and controls. Seventeen patients (24.3%) compared to 12 controls (17.1%) suffered from one, 7 patients (10.0%) compared to 5 controls (7.1%) suffered from two or more anxiety disorders (X^2 [2] = 1.441; ns). Five of the eight ADHD-patients with lifetime diagnosis of eating disorder reported binge eating disorders and three reported bulimia nervosa.

Functional impairment

Table 3 presents the results for major daily living functions including partnership, education, professional training and occupational status in ADHD-patients and control probands. ADHD-patients of both subtypes were more impaired in three of the assessed domains. They had fewer partnerships, were less educated and had a lower level of professional training than controls. None in the ADHD- or in the control group reported having ever been arrested.

ADHD with psychiatric lifetime comorbidity versus ADHD pure

Personal characteristics

Among the 70 patients with ADHD we found 55 patients with (ADHD+) and 15 without psychiatric lifetime comorbidity (ADHD-). Personal characteristics of both groups are shown in Table 4.

ADHD-symptoms in patients in ADHD+ versus ADHD−

Table 5 compares ADHD-symptoms in patients with ADHD+ and ADHD−. Patients with ADHD+ reported slightly more inattentive symptoms than ADHD− did not differ in the number of reported symptoms of childhood ADHD.

Functional impairment in patients in ADHD+ versus ADHD−

Patients with ADHD+ and ADHD− did not differ in partnership functioning, educational and professional training:

Table 4 Personal characteristics of ADHD-patients with (ADHD+) and without lifetime psychiatric comorbidity (ADHD−)

	ADHD+ (n = 55)	ADHD− (n = 15)	X^2	T	df	p
Age (years)	37.2 (s.d. = 9.45)	35.5 (s.d. = 7.7)		−0.645	67	0.521
Gender (males)	n = 27 (49%)	n = 11 (73.3%)	2.994		1	0.084
IQ	111.8 (s.d. = 0.9)	106.2 (s.d. = 7.2)		−1.436	39	0.159

Table 5 ADHD-symptoms in patients with ADHD+ versus ADHD−

	ADHD+ (n = 55)	ADHD− (n = 15)	T	df	p
Wurs-k	43.4 (s.d. = 15.3)	42.8 (s.d. = 10.6)	−0.115	55	0.909
BADDS	87.7 (s.d. = 17.3)	75.4 (s.d. = 18.9)	−2.310	60	0.024
Hypescheme: inattentive	22.3 (s.d. = 3.6)	19.9 (s.d. = 4.0)	−2.157	63	0.035
Hypescheme: impulsivity	5.8 (s.d. = 3.0)	6.4 (s.d. = 2.5)	0.5931	63	0.555
Hypescheme: hyperactivity	9.7 (s.d. = 5.6)	8.4 (s.d. = 6.1)	−0.784	61	0.463

- Twenty-six (47.3%) compared to 9 (60%) had permanent partnerships ($X^2[1] = 0.754$; ns).
- 12 (21.8%) compared to three (20%) were divorced ($X^2[1] = 4.291$, ns).
- 31 (56.4%) compared to 8 (53.8%) had children ($X^2[1] = 0.256$; ns).
- 40 (72.7%) compared to 11 (73.3%) had achieved O-Levels respectively 8–10 years of school education (43.6%),
- 14 (25.5%) compared to 5 (33.3%) had achieved A-Levels respectively university entrance qualification ($X^2[2] = 0.323$; ns).
- 9 (16.4%) compared to 3 (20%) had never undergone occupational training,
- 5 (9.1%) compared to one (6.7%) had not completed occupational training,
- 33 (60%) compared to 10 (66.7%) had completed occupational training,
- three (5.6%) compared to none had broken off university education,
- 5 (9.3%) compared to one (6.7%) had achieved an university degree. $X^2[4] = 0.196$, ns).

Patients with ADHD+ were more often unemployed ($n = 19$ [34.5%]) than patients with ADHD− ($n = 1$ [6.7%]), but this finding did not reach statistical significance ($X^2[1] = 2.937$; $p = 0.087$).

Discussion

At present systematic data of comorbid psychiatric disorders and psychosocial impairment in adults with ADHD are only available from USA-studies. The present investigation is the first European study, which systematically assesses psychiatric lifetime comorbidity and functional impairment in adults with ADHD compared to a gender- and age-matched population-based control group

Assessing 70 German adults with ADHD combined and predominately inattentive subtype according to DSM-IV-criteria with a mean age of 36.8 (±9.0) years and a gender- and age-matched population-based control group our study clearly shows a significantly higher prevalence of comorbid lifetime psychiatric disorders in adults with ADHD (77.1%) than in control probands (45.7%) even though the controls were slightly older (39.8 ± 10 years) and thus might have had a higher risk for additional lifetime psychiatric disorders. The lifetime prevalence of psychiatric disorders in our ADHD-group also exceeds considerably the lifetime prevalence rate of psychiatric disorders in the general population of 46.5% as obtained from the recently published NCS-R [20] and is in line with former studies which consistently report high lifetime rates of comorbid psychiatric disorders in up to 88.6% of adults with ADHD [5, 19, 34].

The significantly elevated lifetime prevalence rates of depressive disorders (55% vs. 24.3%), substance related disorders (30% vs. 8.6%) and eating disorders (11.4% vs. 1.4%) in the ADHD compared to the control group is consistent with the results obtained in other studies in ADHD-adults reporting lifetime prevalence rates of depressive episodes in up to 50% [5, 17, 19, 21, 34], substance-related disorders in up to 50% [5, 21, 34, 35] and eating disorders in up to 9% [21, 33]. The obtained lifetime prevalence rates in the ADHD-group differ considerably from lifetime prevalence rates in the general population obtained in the NCS-R, which are 16.6, 14.6 and 3.9% for major depressive episodes, any substance use disorder and any eating disorder respectively [20].

ADHD subjects demonstrated significantly earlier onset for major depressive episodes than controls (26.9 ± 8.1 years vs. 32.4 ± 10.6 years) pointing to an elevated vulnerability in ADHD subjects for the development of depressive disorders [23]. In agreement with findings in the general population, in which the risk for affective disorders is twice as high in females than in males [4] significantly more female than male ADHD-patients suffered from affective disorders (60.7% vs. 25.7%). With none of the ADHD-patients suffering from bipolar disorder, which is within the prevalence rate in the general population of 1% [1] we did not find elevated rates of bipolar disorders in our adult ADHD-patients. The comorbidity of bipolar disorders and ADHD is a matter of current discussion. Studies in children report high rates of ADHD in children with bipolar disorders [14, 38], whereas the risk of bipolar disorders in adult ADHD is discussed more controversial [18]. Recently an investigation of 1,000 adults with bipolar disorder failed to prove an elevated ratio for comorbidity with current ADHD, which was 5.3% [25] and thus did not exceed the prevalence for adult ADHD assessed in the general population [19]. Vice versa another two recently published investigations reported in adults with ADHD a lifetime prevalence rate of bipolar disorders of 4% [23] and 4.5% respectively [32] which points to a higher prevalence of bipolar disorders in adults with ADHD than in the general population.

The rate of drug-use disorders (28.5% vs. 4.3%) as well as alcohol use disorders (17.2% vs. 7.1%) was higher in ADHD-patients than in controls though the latter finding did not reach statistical significance. Sole abuse of alcohol was only found in one of 12 ADHD-patients with alcohol use disorders whereas all others reported combined alcohol and drug abuse. This corresponds to the results of Biederman et al. [6], who pointed out that adult with ADHD present more often with combined alcohol and drug abuse than with pure abuse of alcohol.

We did not find neither significant differences in the lifetime comorbidity for any anxiety disorder in ADHD-patients compared to healthy controls (34.3% vs. 24.2%) nor considerable differences compared to lifetime prevalence rates in the general population (NCS-R any anxiety disorder: 28.8% [20]) were

prominent. Consistent with the results of other investigations [5, 19, 21, 34] we also found elevated rates of social phobia in adults with ADHD compared to controls (18.8% vs. 10%), although this finding did not reach statistical significance. In contrast to other studies reporting lifetime prevalence rates of generalized anxiety in adult ADHD-patients between 10–45% [5, 19, 21, 34] we could not find elevated prevalence rates of generalized anxiety disorders when comparing ADHD-patients to controls (2.9% vs. 1.4%). Although this difference cannot be fully explained it may mirror the fact that according to epidemiological data prevalence rates for generalized anxiety disorders also vary widely in the general population between 1.9–31.1% [26].

While in our study ADHD-patients did not present with eating disorders characterized by restrictive eating behaviour, eating disorders with impulsive eating attacks, such as bulimia nervosa and binge eating disorders were more prominent in the ADHD than in the control group. Case reports that describe the efficacy of methylphenidate in reducing binge eating in adult patients with bulimia and ADHD point out that the two disorders might be linked by elevated impulsivity underlying both disorders [31, 9].

Our data further show that adults with ADHD are impaired in a multitude of daily living functions including fewer permanent partnerships (50% vs. 67.1%), more divorces (21.4% vs. 11.4%), less education (O-Levels: 72.9% vs. 42.9%; A-Levels: 27.1% vs. 57.1%), more often no professional training (17.1% vs. 7.1%) and fewer university degrees (8.6% vs. 25.7%) compared to healthy controls. While so far there are no data assessing psychosocial functioning of adult ADHD-patients in a European sample, USA-studies had consistently shown an association of adult ADHD with academic underachievement, lower socioeconomic status as well as employment and partnership problems [3, 5, 24]. Data published by Biederman et al. [5] shows lower socioeconomic status, higher rate of divorce and more repeated classes in ADHD-patients compared to healthy controls. While Murphy et al. [24] reported ADHD-patients to be less educated, to graduate less frequently from college and to have more police arrests, they did not find differences in the number of married individuals or socio economic status when compared to a healthy control group. According to the results of the Milwaukee Young Adult Outcome Study [3] significantly more adult patients with ADHD never completed their high school education, were more likely to be fired from a job and had significantly fewer entered and graduated from college. In contrast to USA-studies, which report arrests in up to 30% of adult ADHD-individuals [3, 30] no subject of our ADHD-group reported having been arrested. This finding may reflect different legal practices in Germany and the USA (e.g. arrests due to public drinking) but possibly results from the social structure of our ADHD-group as well, which comprised mainly well-informed, self-referred middle-class adults.

ADHD-patients with lifetime comorbid psychiatric disorders differed only in some aspects from those without. Patients with ADHD and lifetime comorbid psychiatric disorders showed slightly more inattentive symptoms and were more frequently unemployed than individuals with pure ADHD. No differences were found with regard to gender distribution, age, intelligence and other areas of daily living associated with social functioning. These findings support the conclusion that poor psychosocial outcome of affected adults is mainly due to ADHD and not the result of additional psychiatric disorders.

The results reported in this study should be viewed in light of its methodological limitations. The findings are based on observations from a clinically referred population of one ADHD specialty-clinic, which raises the question of the influence of referral bias. Furthermore we did not examine the prevalence and influence of axis-II disorders on the psychosocial outcome. The results of our study are of exploratory character and were not corrected for multiple testing. Further studies with larger sample size are needed for evaluation of the obtained results. Especially the sample size of subjects with pure ADHD was small and may thus not provide enough statistical power to detect significant differences to ADHD subjects with psychiatric lifetime comorbidity.

Despite these methodological shortcomings our study was appropriate to accomplish our primary research goal and to provide pilot information of psychiatric comorbidity and adaptive functioning in a German adult ADHD-sample. It shows that ADHD is even more heterogeneous than assumed, with the majority of all adult ADHD-patients suffering from comorbid psychiatric disorders. While our results suggest that comorbid psychiatric disorders do not influence the psychosocial outcome of adult ADHD, future studies and basic research ae needed to examine the impact of ADHD on the course and treatment of concurrent psychiatric disorders and to elucidate the links between adult ADHD and psychiatric comorbidity.

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