Towards a new measure of work performance in psychiatric evaluation for attention-deficit/hyperactivity disorder in adulthood

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Abstract

Considering the difficulties often experienced by individuals with attention-deficit/hyperactivity disorder in occupational settings, the present study intended the development of a new instrument measuring work performance and functioning for clinical practice. In contrast to other scales in the field, the present scale was developed to assess not only general difficulties at work but also the underlying problematic behaviors as well as simultaneously considering the demands and characteristics of the individual workplace. The scale construction was based on the Work Design Questionnaire by Morgeson & Humphrey (2006) for Work Design and Campbell's model (1990) for Work Performance. The result was a preliminary beta version of the 57-item Work Performance and Functioning scale (W-PAF) measuring both, work performance and work design. The scale included items from selected instruments and own developed complementing items. Further, a pilot study was conducted on a convenience sample of $N = 92$ individuals following paid work, collecting data on the W-PAF, ADHD symptomatology, psychopathology, subjective cognitive functioning deficits and general functional impairments. Results suggested moderate sensitivity of the Work Performance scale to ADHD symptomatology and subjective cognitive dysfunction. However, extensive further research on the scale is needed in order to derive psychometrically sound factors and determine its utility for clinical research and practice.

Keywords: attention-deficit/hyperactivity disorder, ADHD, work performance, functioning, work design, work demands

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Trouble focusing attention on an assignment for a longer time, being easily distracted by one's surroundings, finding it difficult to sit still, or being forgetful in daily activities. These statements are, amongst others, examples of symptoms of attention-deficit/hyperactivity disorder, short-termed ADHD (5th ed.; DSM–5; American Psychiatric Association, 2013). As the name implies, the disorder is marked by symptoms of inattention, hyperactivity and impulsivity (American Psychiatric Association, 2013). Often wrongly perceived as a childhood disorder only, ADHD frequently persists into adulthood (Weiss & Hechtman, 1993), with an average global prevalence in adults of 3,4% (Fayyad et al., 2007). Often not diagnosed in isolation, psychiatric comorbidities are commonly found in individuals with ADHD, including substance use disorder, mood disorders and anxiety (Perroud et al., 2014; Steinhausen & Bisgaard, 2014; Van Ameringen et al., 2011).

Numerous research showed that ADHD symptomatology is associated with having a negative impact on major areas of life, such as social and romantic relationships, academic career and functioning at work (Arnold et al., 2015; Fuermaier et al., 2021; VanderDrift et al., 2017; Kathju, 2021). Accordingly, Murphy & Barkley (1996) found that individuals with ADHD have indeed been more often dismissed or resigned themselves from a job and performed substandardly at work. This is in line with a review by Gordon and Fabiano (2019) which similarly found occupational instability, lower achievement at work and impaired work performance among individuals with diagnosed childhood ADHD. Moreover, research suggests lower levels of employment and income in adults with ADHD (Gjervan et al., 2012; Biederman & Faraone, 2006). Beyond that, the study by Fuermaier et al. (2021) further specified these issues in work performance, whereby participants diagnosed with ADHD especially report impairments in getting their work done efficiently and reaching one's potential.

These work-related issues do not seem surprising regarding the commonly known cognitive difficulties in ADHD such as attention, executive functioning and memory deficits (Schoechlin & Engel, 2005; Boonstra et al., 2005; Skodzik et al., 2017) and the cognitive abilities needed for most jobs (Barkley & Murphy, 2010). Considering employment as a crucial part of life in most adults and as playing a critical role for economic stability, physical and psychological well-being (McKee-Ryan et al., 2005), there should be a particular interest in illuminating difficulties in occupational settings related to ADHD and associated comorbidities. Therefore, research could support gaining insight into the underlying problematic behaviors responsible for issues at work. Assuming that every workplace makes different demands on the employee, which can play a role in the type of problems an individual may experience, the nature of work should be concomitantly examined in this process. The understanding of work functioning in the context of the respective job may further guide the development of tailored interventions that contribute to an improvement of the respective workplace in favor of the employee. Moreover, it can aid in identifying behaviors that individuals would need to modify in order to be better able to thrive in one's job.

In this context, research on ADHD and other neuropsychological disorders includes instruments attempting to measure performance at work, such as the Weiss Functional Impairment Rating Scale (WFIRS; Weiss, 2000), Sinclair Performance Inventory (SPIN; Sinclair et al., 2005), Work Assessment Scale-Impediments (Gulick, 1991), Work Behavior Inventory (WBI; Lysaker et al., 1993) or the In-Role Performance & Altruism subscales (Goodman & Syvantek, 1999). The mentioned scales represent self-report scales, other-report scales and a combination of both. The length of the scales varies, focusing on different aspects of work performance, such as issues with task performance, punctuality, social skills or physical abilities. Even though there are scales that give a helpful indication about the existence and type of problems an individual experiences (e.g., the WFIRS) by comprising

items ascertaining concrete problems at the workplace (e.g., problems with attendance or problems performing required duties), some do not inquire into behaviors leading to specific problems and others do not contain a throughout measure of the nature of work. More specifically, scales may categorize different jobs based on job complexity (e.g., the SPIN), however, job demands and characteristics are not thoroughly assessed, such as autonomy on the job, task variety, physical demands or the work environment. Additionally, numerous scales may require someone else's evaluation of the client (e.g., In-Role Performance and Altruism Subscales; SPIN; WBI), for instance the employer or a supervisor, which may be difficult to realize in daily clinical practice. Therefore, a self-report scale may be more appropriate and straightforward to use in a clinical context.

It can be argued that an extensive and comprehensive scale measuring work performance in individuals with ADHD does not only need to examine the concrete issues that occur at work (e.g., problems with attendance or problems keeping a job) but should over and above that identify the underlying behaviors of these problems. Moreover, the instrument needs to consider the diverse nature of work, which means examining the demands and features of different jobs. These can vary greatly between jobs and may further aid in explaining and putting the observed issues at the workplace into context. Finally, the scale should be based on psychometrically proven models of work, more specifically, on frameworks that depict central aspects of work performance and work characteristics. To our knowledge so far, none of the scales which are currently in use withstand all of these criteria.

Therefore, the present study presents the rationale and the development of a new instrument measuring work performance and functioning according to the criteria mentioned above, including the empirical pilot work on the new scale. The scale is a self-report rating scale that incorporates subscales measuring work description and work performance and is based on the Work Design Questionnaire (WDQ; Morgeson & Humphrey, 2006) and Campbell's Multifactor Model of behavioral dimensions relevant for work performance

(Campbell, 1990). The Work Design Questionnaire evolved from the framework by Morgeson and Campion (2003) which categorizes work demands and characteristics into three main groups: motivational, social and contextual characteristics. Campbell's Multifactor Model describes eight critical factors for illustrating work performance: 1. Job-specific task proficiency, 2. Non-Job Specific Task Proficiency, 3. Written and Oral Communications, 4. Demonstrating Effort, 5. Maintaining Personal Discipline, 6. Facilitating Team and Peer Performance, 7. Supervision and 8. Management and Administration. Our research team constructed the new scale capturing work performance and work design by choosing, editing and creating items according to these frameworks. On this basis, the suggested scale represents a thorough and comprehensive instrument measuring work performance while separately examining the nature of the job for the assessment of psychiatric outpatients (e.g., individuals with ADHD) in a clinical setting. The corresponding pilot work includes data of 92 employed adults from different working backgrounds who were recruited in the form of a convenience sample.

Methods

Research Goal and Team

The goal of developing a new and comprehensive scale assessing work-related performance and functioning was aimed to be achieved by using the advantages of existing instruments in this field, adapting them if indicated, complementing with new items and integrating them into an appropriate and psychometrically valid model. To work towards this goal, an interdisciplinary research team was formed for the design and conduct of the present study, consisting of (1) clinicians working in psychiatric practice with adults with ADHD and related disorders, (2) researchers in the field of clinical neuropsychology specialized in the assessment of adults with ADHD and real-life functioning, (3) a researcher in the field of work and organizational psychology, and (4) a graduate student specializing in the field of clinical neuropsychology.

Scale Development Work Design

To get an overview of the various job attributes and demands, PsycInfo was searched for articles about and scales measuring "*work design*", "*job characteristics*", "*work characteristics*", "*work description*", "*work demands"* or "*job complexity*". After going through numerous approaches to capture different demands and characteristics of jobs, the decision to utilize the already existing Work Design Questionnaire (WDQ) by Morgeson and Humphrey (2006) was made. The WDQ is based on the framework by Morgeson and Campion (2003), which suggests differentiating between motivational, social and contextual characteristics of work. Morgeson and Humphrey (2006) further disassembled this framework into individual subcategories, providing a better illustration of what each of the three main categories represents. Accordingly, motivational characteristics consist of Task Characteristics (including *Autonomy*, *Task Variety*, *Task Significance*, *Task Identity* and *Feedback from Job*) and Knowledge Characteristics (including *Job Complexity*, *Information Processing*, *Problem Solving*, *Skill Variety* and *Specialization*). Social Characteristics include *Social Support, Interdependence*, *Interaction Outside the Organization* and *Feedback from Others*. Lastly, Contextual Characteristics are subdivided into *Ergonomics*, *Physical Demands*, *Work Conditions* and *Equipment Use*. Including all the subcategories, the WDQ contains 77 items in total, showing high reliability in addition to convergent and discriminant validity (Morgeson & Humphrey, 2006). On this basis, the WDQ represents a comprehensive, theoretically driven and empirically supported instrument to measure work demands and characteristics and hence being a suitable basis for our scale. However, the decision was made to include an adapted, shorter and more concise version of the WDQ in our scale in order to accommodate to time constraints in clinical practice. This was done by reviewing the scale and identifying items that seemed to measure similar aspects of work and summarizing them into one item or choosing the item which most precisely described the respective aspect. Similarly, subcategories were reduced by merging comparable categories. Further, items that

were considered as of low relevance for our target group of individuals with ADHD and associated comorbidities (e.g., assessing if the job occurs in a clean environment) were left out. Finally, own developed items were included if indicated, the wording of items was changed, or examples were added to make statements easier to understand.

Scale Development Work Performance

To get an overview of existing instruments measuring work performance and similar concepts, PsycInfo was searched for related scales and scientific articles by scanning the database using corresponding terms: "*work performance*", "*work assessment*", "*employee performance*", "*work functioning*" *and* "*executive functioning & work*". Numerous instruments assessing work performance or work functioning in various (neuro)psychological disorders were found by reviewing the proposed scientific articles. A preselection was made from these scales, choosing those that were estimated as being most relevant for the purpose of measuring work performance in ADHD and associated comorbidities, more specifically: Work Role Functioning Questionnaire (WRFQ; Abma et al., 2012), Sinclair Performance Inventory (SPIN; Sinclair et al., 2005), Work Behavior Inventory (WBI; Lysaker et al., 1993), Barkley's Deficits in Executive Functioning Scale (BDEFS; Barkley, 2011) and the ABGS (ABGS is an abbreviation of the German scale title which translates to "Work-related resilience and conscientiousness scales"; Moldzio et al., 2019). To facilitate item choice and allocation based on a psychometrically proven model, Campbell's Multifactor model was used (Campbell, 1990). Campbell's model was developed by factor analysis of behavioral aspects critical for job performance and consists of eight dimensions determining performance at the workplace. The dimensions of Campbell's model comprise (as defined by Campbell, 1990, and as outlined in Motowidlo & Kell, 2012):

1. *Job-Specific Task Proficiency*: How well someone can do tasks that make up the core technical requirements of a job and that differentiate one job from another.

2. *Non-Job-Specific Task Proficiency*: How well someone can perform tasks that are not unique to the job but that are required by most or all jobs in an organization.
3. *Oral and Written Communications*: How well someone can write or speak to an audience of any size.
4. *Demonstrating Effort*: How much someone commits to job tasks and how persistently and intensely someone works at job tasks.
5. *Maintaining Personal Discipline*: How much someone avoids negative behavior such as alcohol abuse, rule-breaking, and absenteeism.
6. *Facilitating Team and Peer Performance*: How well someone supports, helps, and develops peers and helps the group function as an effective unit.
7. *Supervision*: How well someone influences subordinates through face-to-face interaction.
8. *Management and Administration*: How well someone performs other, non-supervisory functions of management such as setting organizational goals, organizing people and resources, monitoring progress, controlling expenses, and finding additional resources.

Job-Specific Task Proficiency, *Demonstrating Effort* and *Maintaining Personal Discipline* are thought to be integral in every job; other domains however, may only be part of some occupations (Campbell, 1990; Campbell et al., 1993). Hence, Campbell's Multifactor model was assumed to capture the whole range of behaviors relevant for work performance across all professions. Campbell's framework was evaluated to suit our intention to develop an instrument with sensitivity to characteristics of various jobs. For our use of the model, we summarized *Job-Specific Task Proficiency* and *Non-Job Specific Task Proficiency* under the umbrella term *Task Proficiency*, creating a more general dimension on task performance. With this framework in mind, items were selected from the WRFQ, SPIN, WBI, BDEFS and ABGS and allocated to one of the now seven dimensions. A major goal at this point was to choose a constellation of items that would best describe each respective domain. For this

purpose, the pre-existing items and additional self-developed items were used to achieve a comprehensive picture of work performance.

The combination of the Work Performance and Work Design scales resulted in a preliminary beta version of our scale requiring empirical validation and psychometric investigation. Through feedback from clinicians and researchers outside our group, further optimization of linguistic aspects and scale content was enabled by rewording, rephrasing, or adding explanatory examples for some items. At this stage, three language versions of the scale have been created with the support of native speakers who were all expertised in this research field: German, English and Dutch.

Empirical Pilot Study

To test the preliminary version of our instrument on a convenience sample of the general working population, a pilot study was conducted. In addition to our suggested scale and a measure of ADHD symptomatology, a self-report measure of depression, anxiety and stress was added to examine the sensitivity of our instrument in the context of general psychopathology. To assess difficulties in various areas of life, including work, a scale measuring functional impairment was used. Further, a self-report measure of cognitive functioning to evaluate correlations between the subjective estimation of one's cognitive functioning and reported difficulties at the workplace was added. To check for careless responding, three control questions were included in the survey (e.g., *Please select the answer option "not at all, never*").

Participants

Initially, 164 participants took part in the study. A convenience sample was recruited via an online link to a Qualtrics Software questionnaire. Requirements for participation included an age of 18 or above, being employed and working at least eight hours per week on average. Seventy-two participants were excluded from the study due to incomplete or carelessly filled out questionnaires or by not meeting the requirements for participation. The

final dataset then consisted of ninety-two participants, including seventy-four women and eighteen men with ages ranging from 21 to 62 years and a mean age of 34 years. 12% of participants reported to have finished compulsory schooling or intermediate secondary school, 34% went to college or vocational training, 25% finished higher secondary school with university entrance qualification and 29% held a university degree. Jobs in several areas were represented (for an overview see Table 1) and the average working hours per week across all participants were 33 hours.

Table 1

Occupational Domains Pilot Work

Job Title	
Junior Consultant International Sales	Nanny
Engineer	Accountant
Board Member	Working Student
Physiotherapist	Paramedic
Administrative Inspector	School Assistant
Carpenter	Administrative Staff
Human Resources Specialist	Industrial Master
Commercial Clerk	Technician
Occupational Therapist	Waiter/Waitress
Educator	Junior Manager
(Geriatric) Nurse	Medical Assistant
Building Superintendent	Chemical Laboratory Assistant
Nursing Expert	Farmer
Police Officer	Product Developer
Salesperson	Team Leader
Media Designer	Corporate Client Consulting
Cashier	Trainee
Business Economist	Sales Manager
Secretary	Corona Rapid Test Station Employee
Curative Teacher	Pharmacist
Project Manager/ Marketing Manager	Social Worker
Electrician	Quality Manager
Two-Wheel Mechatronics Technician	

Material

Work Performance and Design

To measure performance at work and simultaneously considering the characteristics of the respective workplace, the preliminary beta version of our new scale, the Work Performance and Functioning Scale (W-PAF), was used. It consists of two subscales, one measuring work performance and the other one capturing characteristics and demands of the respective job, with a total length of 57 items. Each item had to be answered on a four-point Likert scale (1 = *not at all, never*, 2 = *a bit, sometimes*, 3 = *much, often*, 4 = *very much, always*), with the possibility to leave out items in case one is not able to provide an answer (e.g., because the situation does not exist at one's workplace). Scoring of the W-PAF was done by calculating mean scores for the total Work Performance scale and each of its subscales as well as for each subscale of the Work Design scale. More specifically, all items that were answered for a particular domain or category were summarized and the sum was then divided by the number of items, excluding the items that participants left out.

Attention-Deficit/Hyperactivity Disorder

To measure the degree of ADHD symptomatology in participants, a self-report measure of ADHD symptoms according to DSM-V (5th ed.; DSM–5; American Psychiatric Association, 2013) criteria was applied. This scale includes 23 items that had to be answered in consideration of the past six months on a four-point Likert scale (1 = *never or seldom*, 2 = *sometimes*, 3 = *frequently*, 4 = *very frequently*). Items contain statements like "*I get distracted easily*" or "*I lose things needed for tasks and activities*" representing typical symptoms in individuals with ADHD. A mean scale score was calculated by summing all responses and dividing it by the number of items.

Functional Impairment in Life

The Weiss Functional Impairment Rating Scale (WFIRS; Weiss, 2000) was used to estimate general difficulties individuals with ADHD often experience in everyday life. The scale includes 69 items which are unevenly distributed on seven subscales measuring functional impairment in various areas, namely: *Family*, *Work*, *School*, *Life Skills*, *Self-*

Concept, *Social*, and *Risk*. For each domain, except for work, only one item that we rated most representative for that respective area was included in the survey. Based on the main focus on problems at work, all 11 items of the *Work* area were included. For each statement (e.g., *I have problems with my attendance at work*), participants reported how often it applied to them in the past six months on a four-point Likert scale (1 = *never or not at all*, 2 = *sometimes or somewhat*, 3 = *often or much*, 4 = *very often or very much*). Besides, there is a "*Not applicable*" answer option provided. A WFIRS total mean score was calculated from all responses to *Family*, *School*, *Life Skills*, *Self-Concept*, *Social* and *Risk* items and a WFIRS work mean score resulted from all items of the *Work* domain. Hereby, items for a particular domain (total or work) were summed and divided by the number of endorsed items. All items responded to as *Not applicable* were excluded from the calculation. The WFIRS demonstrated excellent internal consistency $\alpha > 0.9$ in total and good to excellent internal consistency for the subscales (Canu, Hartung, Stevens & Lefler, 2020).

Subjective Cognitive Functioning

To assess self-reported cognitive deficits, the Fragebogen zur Geistigen Leistungsfähigkeit (FLei; Beblo et al., 2010), a German scale which translates to "Questionnaires for Complaints of Cognitive Disturbances", was utilized. The FLei comprises 35 items describing difficulties in everyday situations (e.g., *I find it difficult to organize a birthday party*). In particular, the scale measures memory, attention and executive functioning deficits in daily life. To get a brief overview of everyday difficulties, three items for each cognitive domain from the FLei were chosen for the survey. Respondents indicated on a five-point Likert scale (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*, 5 = *very often*) how frequently one experienced these difficulties during the past six months for each statement. The FLei was scored by calculating the total mean score of answered items. By this means, item responses were summarized and divided by the item count. Beblo and colleagues (2010) found high internal consistency for the FLei.

General Psychopathology

The Depression-Anxiety-Stress Scales (DASS-21; Lovibond & Lovibond, 1995) is a self-report scale that was used to assess general psychopathological abnormalities. The DASS-21 is the short version of the 42-item DASS by Lovibond & Lovibond (1995) and includes 21 items assessing the degree of symptoms for depression, anxiety and stress on a four-point Likert scale from 1 (*not at all*) to 4 (*very much*). Items are statements such as "*I could not seem to experience any positive feelings at all*" or "*I found it difficult to relax*". To keep the survey more concise, only three items for each domain were used and therefore, the scale was shortened to nine items. In the present sample participants were asked to report their experience of symptoms in the past six months. A total mean score for psychopathology was calculated by summarizing scores of all items and dividing the sum by nine. Antony and colleagues (1998) found excellent reliability for the depression and stress subscales with Cronbach's alpha > 0.8 and good reliability for the anxiety subscale with $\alpha > 0.9$.

Procedure

After the research project was approved by the ethics committee of the Faculty of Behavioral and Social Sciences of the University of Groningen, the research team began recruiting participants via social media and e-mail. Participants were invited to take part in a study about work behavior and occupational strengths and weaknesses which they could access via a link to a Qualtrics survey. The survey started with a language selection (either English or German) and the informed consent form. Further, demographic and general information were collected: age, gender, highest education, employment, job title, average working hours per week and yearly gross salary (optional item). In case a participant indicated no current employment, he/she was immediately directed to the end of the survey. The next part included the Work Design and Work Performance scales of the W-PAF, which led to the WFIRS, the ADHD symptomatology scale, the FLei and finally to the DASS-21. In the last part of the survey, participants were asked to report any current psychiatric or neurological

diagnosis, however, this question was optional to answer. Participants did not receive any compensation for taking part in the research.

Statistical Analysis

For statistical analysis, mean scores for each instrument (i.e., ADHD scale, DASS-2, FLei and WFRIS (work and total)) and the Work Performance and Work Design scales of the W-PAF were used. Except for the Work Design scale, a high score indicated impairment or difficulties related to the particular construct for all scales. The scores of the Work Design subscales rather fulfilled the function of describing characteristics and demands of the respective job. On this basis, descriptive statistics for each scale and subscale were calculated. Further, correlations and intercorrelations were examined among scales and subscales of the W-PAF and all survey instruments. Parametric test assumptions were not all met by data and therefore, bivariate correlation analyses were carried out using Spearman's rank-order correlation coefficient. The following values categorize the strength of the relationships according to Cohen (1988): $\rho \leq .29$ (weak correlation), $.3 < .5$ (moderate correlation) and $.5 \leq \rho$ (strong correlation). Moreover, internal consistency of the W-PAF scales and subscales was measured and item contribution to reliability was calculated for each subscale with Cronbach's alpha. Cronbach's alpha indicated the degree of internal consistency as follows: $\alpha > .5$ (unacceptable), $.60 > \alpha \geq .50$ (poor), $.70 > \alpha \geq .60$ (questionable), $.80 > \alpha \geq .70$ (acceptable), $.90 > \alpha \geq .80$ (good), $\alpha \geq .90$ (excellent) (George & Mallery, 2005).

Results

Work Performance and Functioning Scale

After all complements and changes, the Work Performance and Functioning scale subsequently comprises 58 items. The items were divided upon two scales, the Work Design and the Work Performance scale. The Work Design scale includes 18 items, divided into four main scales from which two were further subdivided into more specific subscales, namely: Task Characteristics (eight items including *Autonomy*, *Task Variety*, *Task Identity*, *Physical*

Demands, *Time Pressure* and *Feedback from Job and Others*), Job Complexity (four items), Social Characteristics (three items including *Social Support*, *Interdependence* and *Interaction Outside the Organization*) and Work Context (three items). The majority of items were taken in original or modified form from the Work Design Questionnaire (WDQ; Morgeson & Humphrey, 2006). Additionally, four newly developed items were added by the research team.

Further, the Work Performance scale comprises 40 items, including seven subscales. More specifically, *Task Proficiency* (eight items), *Written and Oral Communications* (five items), *Demonstrating Effort* (eight items), *Maintaining Personal Discipline* (seven items), *Facilitating Peer and Team Performance* (four items), *Supervision* (four items) and *Management and Administration* (four items). Regarding the origin of items, the Work Performance scale consists of seven items of the Work Role Functioning Questionnaire (WRFQ; Abma et al., 2012), five items of the Work Behavior Inventory (WBI; Lysaker et al., 1993), six items of Sinclair's Performance Inventory (SPIN; Sinclair et al., 2005), four items of the Barkley's Deficits in Executive Functioning Scale (BDEFS; Barkley, 2011), four items of the Work-related resilience and conscientiousness scales (ABGS; Moldzio et al., 2019) and fourteen newly developed items by the research team. The wording of some items was changed, facilitating a better fit for the present scale. An overview of all items of the W-PAF with the corresponding sources can be found in Table 4 and the Appendix.

Rating of the W-PAF is done on a four-point Likert scale (1 = *not at all, never*, 2 = *a bit, sometimes*, 3 = *much, often*, 4 = *very much, always*). The scale is scored by summarizing all responses (excluding the items that were left out) and dividing the sum by the number of endorsed items, calculating the mean of responses. The scoring should be done separately for work performance and work design. In preparation for the calculation, the following items need to be reverse coded: items 19-25, 27, 33, 34, 40, 43, 45, 47-53, 55-58 for the Work Performance scale and items 9 and 12 for the Work Design scale.

In this context, scores of the Work Design scale play a rather descriptive role, aiding in classifying the respective job. As a result, it is most beneficial to look at the response mean of each subscale separately to get an overview of job characteristics and demands, rather than at the scale as a whole. However, for the Work Performance scale, a mean response score for the whole scale should be calculated to estimate general performance at work. In addition, mean scores for each subscale can be calculated to evaluate specific performance deficits in a particular dimension. A mean response of ≥ 3 for the whole scale or one of the subscales can indicate a performance impairment.

Descriptives

Minimum, maximum, mean and median response rates were calculated for each scale (i.e., W-PAF Work Performance and Work Design scales, ADHD symptomatology scale, DASS-21, WFIRS (work domain and total) and FLei). They can be found together with the corresponding standard deviations in Table 2. Further, descriptive statistics for all subscales of the Work Performance and Work Design scales are reported in Table 3.

Table 2

Descriptive Statistics of W-PAF and all Survey Instruments

	N	Minimum	Maximum	Mean	SD	Median
1. W-PAF (WP)	92	1.18	2.33	1.74	.22	1.76
2. W-PAF (D)	92	2.11	3.50	2.77	.27	2.78
3. ADHD	92	1.00	2.83	1.55	.26	1.57
4. DASS-21	92	1.00	2.89	1.47	.40	1.33
5. WFIRS (Work)	92	1.00	1.91	1.19	.18	1.18
6. WFIRS (Total)	92	1.00	2.67	1.37	.31	1.33
7. FLei	92	1.00	4.22	1.97	.58	1.89

Note. Mean response scores for each scale were used for calculation. W-PAF (WP): Work Performance and Functioning Scale (Work Performance scale); W-PAF (D): Work Performance and Functioning Scale (Work Design Scale); ADHD: Attention-

Deficit/Hyperactivity Disorder Symptomatology Scale; DASS-21: Depression-Anxiety-Stress Scales; WFIRS (Work): Weiss Functional Impairment Rating Scale (Work Domain); WFIRS (Total): Weiss Functional Impairment Rating Scale (Total Score of selected items); FLei: Questionnaires for Complaints of Cognitive Disturbances

Table 3

Descriptive Statistics for Subscales of the Work Performance and Work Design Scales

	N	Minimum	Maximum	Mean	SD	Median
Task Proficiency (WP)	92	1.25	2.50	1.84	.28	1.88
Communications (WP)	92	1.00	3.00	1.81	.45	1.80
Demonstrating Effort (WP)	92	1.00	2.63	1.72	.34	1.75
Maintaining Discipline (WP)	92	1.00	2.14	1.30	.25	1.29
Peer and Team Performance (WP)	92	1.00	3.00	1.54	.46	1.50
Supervision (WP)	92	1.00	2.50	1.71	.34	1.75
Management and Administration (WP)	92	1.00	4.00	2.49	.72	2.50
Autonomy (WD)	92	1.00	4.00	2.88	.68	3.00
Task Variety (WD)	91	1.00	4.00	3.36	.66	3.00
Task Identity (WD)	83	1.00	4.00	2.42	.96	2.00
Physical Demands (WD)	91	1.00	4.00	2.13	1.18	2.00
Time Pressure (WD)	92	1.00	4.00	2.50	.76	2.00
Feedback (WD)	92	1.00	4.00	2.71	.74	2.75
Job Complexity (WD)	92	1.50	4.00	3.05	.50	3.00
Social Support (WD)	92	1.00	4.00	3.54	.72	4.00
Interdependence (WD)	91	1.00	4.00	2.03	.98	2.00
Interaction Outside Organization (WD)	92	1.00	4.00	3.02	.99	3.00
Context (WD)	92	1.33	4.00	2.5	.61	2.67

Note. Mean response scores for each subscale were used for calculation. WP = Work Performance Scale, WD = Work Design Scale.

Reliability

Internal consistency was determined for the W-PAF Work Performance scale and for each of its seven dimensions by calculating Cronbach's alpha. Looking at each subscale individually, results showed that reliabilities varied widely between them. For items measuring *Management and Administration*, internal consistency was high with Cronbach's alpha >.8. Further, the subscales *Written and Oral Communications, Peer and Team Performance* and *Demonstrating Effort* showed moderate internal consistency with $\alpha > .6$. At the lower end, subscales measuring *Task Proficiency* and *Maintaining Personal Discipline* showed a relatively low Cronbach's alpha of $\alpha \geq .5$. Finally, items assessing *Supervision* were found to have insufficient internal consistency with $\alpha = .07$. Nevertheless, overall, the Work Performance scale demonstrated sufficient reliability with $\alpha = .77$.

Further, internal consistency for the Work Design scale and its four main scales (i.e., Task Characteristics, Job complexity, Social Characteristics and Work Context) was determined. Results show low internal consistency for *Task Characteristics* ($\alpha = .44$) and *Work Context* ($\alpha = .52$) and an insufficient Cronbach's alpha of .02 for *Social Characteristics*. For *Job Complexity*, moderate internal consistency was determined with $\alpha = .61$. The overall reliability of the Work Design Scale was $\alpha = .47$. To additionally examine item contribution to reliability for each subscale, Cronbach's alpha was calculated for each item if deleted. A summary of the results is reported in Table 4.

Correlations

A correlational analysis of all survey scales (i.e., ADHD symptomatology scale, DASS-21, WFIRS (work domain and total) and FLei) and the W-PAF Work Performance scale using Spearman's rank-order correlation coefficient was conducted. Results showed moderate significant positive correlations of the Work Performance scale with the WFIRS

work domain ($r(90) = .46$, $p < .001$) and the WFIRS total ($r(90) = .35$, $p < .01$). Moreover, though to a lower degree, the ADHD symptomatology scale and the FLei showed positive and significant relationships with the W-PAF Work Performance scale ($r(90) = .31$, $p < .01$; $r(90) = .39$, $p < .001$). However, no significant correlation between the DASS-21 and work performance was found.

Further, correlational analyses of the Work Performance scale, Work Design scale and all subscales were carried out. Examination of relationships between the Work Performance scale and subscales of the Work Design scale showed a significant negative medium correlation of the Work Performance scale and *Feedback from Job and Others* ($r(90) = -.33$, $p < .01$) and significant negative small correlations with *Social Support* ($r(90) = -.26$, $p < .05$) and *Interaction Outside the Organization* ($r(90) = -.23$, $p < .05$). Moreover, analysis of the Work Performance scale and its seven subscales showed significant moderate to high positive correlations with all subscales. Results also showed significant intercorrelations among some of the Work Performance subscales in the low to moderate range.

Between the Work Design scale and its subscales, significant positive correlations in the low to high range were found for eight of the eleven subscales. Regarding intercorrelations of the Work Design subscales, significant relationships in the small to moderate range were found for *Autonomy*, *Task Variety*, *Physical Demands*, *Feedback from Job and Others*, and *Social Support* with several other work characteristics. A detailed summary of all correlations is illustrated in Table 5.

An additional correlational analysis of all instruments (i.e., ADHD scale, DASS-21, FLei and the WFIRS (total and work)) and all subscales of the Work Performance Scale showed significant low to moderate relationships for some subscales and instruments. An overview can be found in Table 6.

Table 4

Scale Reliabilities W-PAF

Scale	Item Number (Survey Pilot Work)	Source	Item	α	α if Item Deleted
Work Design Scale				.47	
Task Characteristics				.44	
Autonomy	9	WDQ	1. The job allows me to make my own decisions about how to schedule my work.		.44
	3	WDQ (A)	2. The job allows me to make decisions on my own.		.37
Task Variety	5	WDQ	3. The job involves performing a variety of tasks.		.30
Task Identity	2	WDQ	4. The job is arranged so that I can do an entire piece of work from beginning to end.		.54
Physical Demands	4	WDQ (A)	5. My job demands physical work.		.47
Time Pressure	1	O.D.	6. I work under time pressure.		.44
Feedback	6	WDQ (A)	7. I have a job where I get feedback on whether I am doing well.		.24
	11	WDQ	8. I receive feedback on my performance from other people in my organization.		.38
Job Complexity				.61	
Complexity	12	WDQ	9. The tasks on the job are simple and uncomplicated.		.46
	8	WDQ	10. The job requires me to keep track of more than one thing at a time.		.59
	7	WDQ (A)	11. The job involves dealing with problems that I have not met before.		.51
	10	O.D.	12. My job follows clear structures and routines, so that I always know what to do next.		.58
Social Characteristics				.02	
Social Support	16	WDQ	13. I have the opportunity to meet with others in my work.		-.41
Interdependence	17	WDQ	14. In my job, I have to accomplish		.51

		(A)	my work before others can continue and complete their work.		
Interaction Outside Organization	19	WDQ	15. The job involves interaction with people who are not members of my organization.		-.22
Work Context				.52	
Context	18	O.D.	16. The seating arrangements on the job are free from sources of distraction.		.32
	14	WDQ	17. The workplace is free from excessive noise.		.42
	13	O.D.	18. My workplace is tidy.		.51
Work Performance Scale				.77	
Task Proficiency				.56	
	8	WRFQ	19. I do my work without making mistakes.		.57
	1	WRFQ (A)	20. People who judge my work are satisfied with it.		.55
	2	O.D.	21. I work productively.		.46
	7	SPIN	22. I learn new job skills quickly.		.45
	6	WBI (A)	23. I look for and recognize mistakes I made.		.53
	3	WBI (A)	24. I do my work accurately.		.46
	4	WRFQ (A)	25. I finish work tasks on time.		.53
	5	O.D.	26. I get easily frustrated and stuck at work when things do not work out as planned.		.60
Written & Oral Communications				.64	
	10	SPIN (A)	27. I can communicate my ideas effectively in oral presentations.		.58
	11	BDEFS	28. I find myself at loss for words when I want to explain something to others.		.50
	12	BDEFS (A)	29. I have trouble putting my thoughts down in writing.		.56
	9	BDEFS (A)	30. I find it hard to differentiate between what is important and what is not important.		.72

	13	ABGS (A)	31. When holding a presentation, I have trouble presenting my topic calmly and clearly.		.54
Demonstrating Effort				.62	
	14	O.D.	32. I usually get going easily at the beginning of a task but drop in performance over time.		.57
	19	SPIN (A)	33. At work, I am reliable and consistent in what I do.		.60
	15	WBI	34. I take the initiative when work is available.		.59
	17	BDEFS	35. I procrastinate or put off things until the last minute.		.58
	18	O.D.	36. I tend to deal with tasks quickly and pragmatically, which could have a negative impact on the quality of my work.		.64
	20	O.D.	37. I have trouble keeping my motivation up at work.		.55
	16	ABGS (A)	38. During a working day I quickly feel exhausted and need breaks frequently.		.53
	22	ABGS (A)	39. After a long intense work assignment, it is hard for me to take on additional tasks.		.61
Maintaining Personal Discipline				.50	
	23	WRFQ	40. I work the required number of hours.		.48
	24	WRFQ (A)	41. I take more breaks than allowed at work.		.44
	21	O.D.	42. I have trouble sticking to agreements.		.48
	25	SPIN (A)	43. I follow workplace rules and regulations.		.37
	31	O.D.	44. I come late to work.		.50
	26	WRFQ (A)	45. I can control my temper around people at work.		.49
	27	O.D.	46. I lie to my co-workers or supervisors.		.49
Peer & Team Performance				.63	

	29	WRFQ	47. I help other people to get work done.		.56
	33	O.D.	48. I join social activities with co-workers.		.56
	32	WBI (A)	49. I try to maintain positive relationships with my co-workers.		.47
	28	O.D.	50. I am a teamplayer.		.62
Supervision				.07	
	35	SPIN	51. I listen to the advice of others.		.11
	30	SPIN (A)	52. I can work well without supervision.		.23
	37	WBI (A)	53. I can accept constructive criticism without being upset.		-.10
	40	O.D.	54. I have trouble to provide supervision and/or feedback to co-workers.		-.11
Management & Administration				.81	
	34	O.D.	55. I monitor my progress at work.		.75
	41	O.D.	56. One of my goals at work is to get promoted to a higher position.		.77
	38	O.D.	57. I seek for opportunities to get more responsibility in my job position.		.77
	36	ABGS (A)	58. I persist in pursuing my goals.		.76

Note. WDQ = Work Design Questionnaire; WBI = Work Behavior Inventory; SPIN = Sinclair Performance Inventory; WRFQ = Work Role Functioning Questionnaire; ABGS = Work-related resilience and conscientiousness scales; O.D. = own development; (A) = adapted; α = Cronbach's Alpha

Table 5

Inter-Correlations between (Sub)Scales

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19	20.
1.	1																			
2.	.70**	1																		
3.	.56**	.31**	1																	
4.	.72**	.42**	.41**	1																
5.	.36**	.24*	.12	.30**	1															
6.	.43**	.34**	-.01	.16	.08	1														
7.	.65**	.42**	.34**	.33**	.13	.34**	1													
8.	.49**	.24*	.07	.11	-.20	.21*	.32**	1												
9.	-.21*	-.16	-.03	.06	.07	-.05	-.21*	-.42**	1											
10.	.03	.19	-.04	.02	.22*	.12	-.06	-.16	.39**	1										
11.	-.12	-.10	-.07	.05	.00	-.03	-.10	-.32**	.61**	.29**	1									
12.	-.08	-.18	-.09	-.12	-.05	.12	-.02	.06	.04	-.14	-.02	1								
13.	-.06	-.11	.16	.02	-.01	.07	-.20	-.15	.26*	-.04	.19	-.16	1							
14	.09	.02	.10	.20	.12	.03	-.02	-.06	.30**	-.02	.12	.04	.16	1						
15.	-.33**	-.22*	-.18	-.06	.08	-.24*	-.32**	-.46**	.62**	.22*	.39**	-.08	.22*	.11	1					
16.	.02	.10	.05	.13	.17	-.05	.03	-.27**	.62**	.30**	.42**	-.20	.06	.36**	.28**	1				
17	-.26*	-.22*	-.12	-.09	-.18	-.12	-.39**	-.14	.46**	.04	.24*	-.00	.23*	.22*	.33**	.23*	1			
18.	.06	.06	-.07	.12	.21	-.12	.18	-.07	.10	-.05	.03	.16	-.19	-.04	.08	-.06	-.12	1		
19.	-.23*	-.20	-.04	-.10	-.19	.00	-.14	-.17	.44**	.10	.22*	-.05	.29**	.12	.18	.12	.43**	-.22*	1	
20.	-.14	-.26*	-.01	-.10	-.15	-.06	.01	-.00	.06	-.31**	-.13	.17	-.30**	-.23*	-.12	-.25*	-.14	.09	-.12	1

Note. Each number represents one of the scales/subscales of the Work Performance and Functioning Scale, i.e.: **1.** Work Performance Scale (WP) Total, **2.** *Task Proficiency* (WP), **3.** *Oral and Written Communications* (WP), **4.** *Demonstrating Effort* (WP), **5.** *Maintaining Discipline* (WP), **6.** *Facilitating Team and Peer Performance* (WP), **7.** *Supervision* (WP), **8.** *Management and Administration* (WP), **9.** Work Design Scale (WD) Total,

10. *Autonomy* (WD), **11.** *Task Variety* (WD), **12.** *Task Identity* (WD), **13.** *Physical Demands* (WD), **14.** *Time Pressure* (WD), **15.** *Feedback from Job and Others* (WD), **16.** *Job Complexity* (WD), **17.** *Social Support* (WD), **18.** *Interdependence* (WD), **19.** *Interaction Outside Organization* (WD), **20.** *Work Context* (WD).

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6

Correlations of ADHD, DASS-21, FLei and WFIRS (work & total) with Subscales of Work Performance Scale

	Task Proficiency	Oral & Written Communications	Demonstrating Effort	Maintaining Discipline	Peer & Team Performance	Supervision	Management & Administration
ADHD	.09	.30**	.47**	.27**	-.10	.17	-.07
DASS-21	-.13	.32**	.24*	.03	-.11	.10	-.18
FLei	.19	.44**	.40**	.23*	.06	.23*	.07
WFIRS work	.31**	.15	.52**	.32**	.25*	.31**	.07
WFIRS total	.07	.35**	.37**	.14	.14	.21*	.09

Note. ADHD: Attention-Deficit/Hyperactivity Disorder Symptomatology Scale; DASS-21: Depression-Anxiety-Stress Scales; WFIRS (Work): Weiss Functional Impairment Rating Scale (Work Domain); WFIRS (Total): Weiss Functional Impairment Rating Scale (Total Score of selected items); FLei: Questionnaires for Complaints of Cognitive Disturbances

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed)

Discussion

Item and Scale Development

The present research intended to develop a preliminary beta version of the Work Performance and Functioning Scale (W-PAF) assessing work performance and simultaneously considering the nature of work. Development of the scale was based on the Work Design Questionnaire (Morgeson & Humphrey, 2006) and the corresponding framework by Morgeson & Campion (2003) for work design and Campbell's Multifactor model (Campbell, 1990) for work performance. Hence, the Work Design scale was created by using the Work Design Questionnaire (Morgeson & Humphrey, 2006) as the basis of the scale. The WDQ was then shortened, a few items were adapted, and own developed items were integrated. Similarly, the Work Performance scale was constructed by choosing items from existing instruments measuring the construct of work performance, adapting some to fit the framework and then allocating adapted and original items to Campbell's model. Subsequently, complementing new items were developed by the research team according to the framework and added to the scale.

The result was a comprehensive self-report scale containing both, a measure of work performance and an assessment of work characteristics. Work performance is measured across seven domains: *Task Proficiency, Written and Oral Communications, Demonstrating Effort, Maintaining Personal Discipline, Supervision* and *Management and Administration*. Work design is subdivided into three broad categories (Task Characteristics, Job Complexity, Social Characteristics and Work Context). Task Characteristics and Social Characteristics are further subdivided into more detailed subcategories: *Autonomy, Task Variety, Task Identity, Physical Demands, Time Pressure* and *Feedback from Job and Others* (Task Characteristics) and *Social Support, Interdependence* and *Interaction Outside the Organization* (Social Characteristics). This facilitates the capturing of work demands across a variety of jobs.

Pilot Study for Exploratory Analysis of Psychometric Properties

A pilot study on a community sample was performed to examine its initial psychometric characteristics. Participants were of legal age and employed for an average of 33 hours a week. This pilot study addressed work performance and functioning as assessed with the W-PAF in association with ADHD symptomatology, functional impairments in different life areas, subjective cognitive functioning and psychopathology concerning depression, stress and anxiety. An exploratory analysis of the data presented an overview of scale properties and relations across the constructs of the W-PAF and the survey. It is emphasized that the present explorative analysis was not directed towards hypotheses, and therefore, no conclusions can be drawn but that rather a ground for future research was established.

The W-PAF Work Performance scale overall appeared to be internally consistent. However, the consistency of most of the individual subscales was not sufficient. Therefore, further analysis of items is suggested and, if indicated, revision of subscales to increase internal consistency. Further, the Work Design scale could neither demonstrate sufficient internal consistency for the total scale nor for the scales of the main categories (Task Characteristics, Job Complexity, Social Characteristics and Work Context). Nevertheless, this is not surprising considering the descriptive nature of the Work Design scale, whereby items in one category may assess characteristics that contradict each other but still fit in the same category.

As could be expected for a measurement of a similar construct, the correlational analysis showed that work performance was significantly associated with functional impairment in the work domain of the WFIRS, indicating convergent validity. Additionally, impaired work performance was also linked to general functional impairment in life outside the work context, suggesting that performance impairments are also present in other aspects of life. Similarly, subjective experience of cognitive functioning was significantly related to work performance, especially performance in *Oral and Written Communications* and

Demonstrating Effort. This implies that self-reported difficulties in cognition are, to some extent, related to performance at work. Regarding ADHD symptomatology, the present data pointed to a moderate relationship with overall work performance, which is in line with research by Fuermaier et al. (2021), even though their research team found a stronger link between the two constructs. Nevertheless, this confirmed our expectation that there seems to be indeed a relation between ADHD symptoms and performance at work. Particularly, *Demonstrating Effort* is associated with symptoms of ADHD. Given that the subscale *Demonstrating Effort* measures, amongst others, difficulties with procrastination, performance drop over time or trouble keeping motivation up at work, a link to ADHD symptomatology seems plausible. Surprisingly, our data analysis did not demonstrate a significant correlation of psychopathology and overall work performance, contrary to expectations from related research (Lerner et al., 2010; Waghorn et al., 2005). However, regarding the subdomains of work performance independently, psychopathology was significantly linked to *Oral and Written Communications* and, even though to a small degree, to the *Demonstrating Effort*. The results imply that the W-PAF Work Performance total scale appeared to be to some degree sensitive to ADHD symptomatology and subjectively experienced impairments in cognitive functioning. Regarding psychopathology, only a few subscales seemed to be sensitive to depression, anxiety and stress symptoms.

The subdomains of work performance were all at least moderately related to the total work performance score, demonstrating usefulness in capturing aspects of functioning at work. Considering interrelations between subdomains of work performance, the skill of *Task Proficiency* was related to *Demonstrating Effort*, *Team & Peer Performance* and *Supervision.* This suggests that an individual with impairments in *Task Proficiency* may also show additional impairments in other areas or vice versa. Similarly, performance in *Written & Oral Communications* is related to *Supervision* and *Demonstrating Effort*. Especially the relation between communication and supervision is reasonable, considering the need for the ability to

express oneself when giving supervision and the capability to filter important information when receiving supervision.

Reflecting on aspects of work design in relation to work performance, results suggest that to some degree high *Task Variety* on the job is related to high performance in *Management and Administration*. Further, *Feedback from Job and Others* relates to overall work performance, *Supervision* and *Management and Administration*. Additionally, meeting others at work (*Social Support*) seemed to be positively linked to performance in *Supervision*. Data analysis of interrelations of different work demands of the Work Design scale suggests that a job high in *Complexity* is somewhat likely to be high in *Autonomy*, *Task Variety*, *Feedback from Job and Others*, and *Time Pressure*.

Pilot Study Limitations

The findings of the present pilot study should be considered with several limitations in mind. First, the correlations found in this research do not necessarily suggest a causal relationship. To determine causality, an experimental study design would be required (Imai et al., 2013). Second, a high number of participants were excluded due to incomplete questionnaires, resulting in a small sample size. Further, the sample was a convenience sample from the research team's circle of acquaintances and the sex ratio was unbalanced with females being overrepresented. This all may interfere with an accurate presentation of the population. Therefore, caution is advised for generalizing the results to the general working population and especially for drawing inferences to a clinical population. A third point to acknowledge is the use of self-report data. Especially when reporting one's performance at work, responses might be prone to self-report bias such as an over-or underestimation of one's performance which is not unusual (Kruger & Dunning, 1999; Kruger, 1999; Kim et al., 2016). Fourth, despite controlling for careless responding using control questions, the possibility of leaving out questions as equal to a "not applicable" option may lead some responders to leave out questions because of other reasons, such as lack of

motivation. Finally, it should be mentioned that due to the shortening of the DASS-21, the FLei and parts of the WFIRS, the concepts of psychopathology, subjective cognitive functioning and general functional impairment were not assessed in depth. As a result, data may not precisely reflect these concepts.

Future Work and Considerations of the W-PAF

Overall, the present pilot study provided an overview of scale properties and correlations of work performance with work design and other constructs. The results form the basis and set directions for future research. To address the low reliability of the Work Performance subscales, confirmatory factor analysis is suggested to investigate if the proposed structure of items is an adequate representation of the seven domains of work performance. If not confirmed, exploratory factor analysis can be beneficial to facilitate restructuring or, if necessary, exclusion of items. These analyses should be performed on larger samples, ideally clinical and non-clinical population samples, that allow for comparison of the two populations. A clinical sample has the advantage of showing greater diversity of, for example, ADHD or related psychopathology symptomatology compared to a non-clinical sample that is likely to reflect merely a restricted range of symptoms. Especially in the process of developing and validating an instrument that is intended for clinical use, gathering data from a clinical population is essential. Furthermore, the W-PAF should be compared to other instruments measuring work performance, such as the SPIN or the WBI, to establish convergent reliability. The demonstration of discriminant validity might not be as straightforward, considering the numerous concepts related to functioning. Still, it can be expected that correlations of the W-PAF with non-work related areas of daily functioning (e.g., household management or maintenance of interpersonal relationships) will be smaller than correlations with measures of work functioning. It would also be valuable to relate work performance and design to cognitive performance, to identify critical cognitive domains for work performance across work demands. One approach to examine cognition is the use of

neuropsychological performance test batteries such as the Vienna Test System (Schuhfried, 2010), which amongst others, includes measures of attention, memory and executive functioning. Regarding the Work Design scale structure, future work on the W-PAF should make an effort to develop subscales for the Work Context category to make it easier to relate the aspects of work context to work performance. Even though the self-report format was previously mentioned as a limitation, and other-report data (e.g., from colleagues or supervisors) is beneficial in getting a more realistic impression of work performance, the inclusion of an other-report scale could be problematic for the following reasons: First, due to time limitations in clinical practice, adding an other-report measure may exceed the time frame for an assessment of work performance. Second, considering the sensitive nature of assessment in mental health care, the client may prefer not to involve one's colleagues or supervisors in that process. Finally, numerous jobs are not supervised closely or do not involve a high amount of interaction with colleagues and therefore, other-report data is probably not always complete. As already suggested, the W-PAF might be most suitable for a clinical context. In this setting, the scale can be useful in assessing work performance impairments in psychiatric outpatients, for example, clients with ADHD and related disorders. Assessing work performance and functioning against the background of work demands can facilitate the identification of challenges at work, support personalized interventions and provide a reference point for occupational training. Additionally, the W-PAF could be utilized as an outcome measure in psychiatric treatment research for individuals with ADHD or related comorbidities.

To sum up, the present study described and explained the development of a tentative version of the W-PAF. Exploratory data analysis of the corresponding pilot work supported the suitability of the W-PAF in the context of ADHD assessment and sensitivity of the instrument in relation to subjective cognitive impairments. Nevertheless, opportunities for improvement of our scale include further examination and increase of scale reliability of the

Work Performance scale as well as the refinement of the Work Design scale. Finally, future research requires larger population and clinical samples to be able to draw conclusions about scale functionality.

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Appendix

Work Performance and Functioning Scale (W-PAF)

Items Work Design Scale

Task Characteristics

Autonomy

1. The job allows me to make my own decisions about how to schedule my work.
2. The job allows me to make decisions on my own.

Task Variety

3. The job involves performing a variety of tasks.

Task Identity

4. The job is arranged so that I can do an entire piece of work from beginning to end.

Physical Demands

5. My job demands physical work.

Time Pressure

6. I work under time pressure.

Feedback From Job and Others

7. I have a job where I get feedback on whether I am doing well (e.g., by seeing the end product; or knowing whether it functions).
8. I receive feedback on my performance from other people in my organization (such as managers, supervisors or co-workers).

Job Complexity

9. The tasks on the job are simple and uncomplicated.
10. The job requires me to keep track of more than one thing at a time.
11. The job involves dealing with problems that I have not met before.
12. My job follows clear structures and routines, so that I always know what to do next.

Social Characteristics

Social Support

13. I have the opportunity to meet with others in my work.

Interdependence

14. In my job, I have to accomplish my work before others can continue and complete their work.

Interaction Outside Organization

15. The job involves interaction with people who are not members of my organization.

Work Context

16. The seating arrangements on the job are free from sources of distraction.
17. The workplace is free from excessive noise.
18. My workplace is tidy.

Items Work Performance Scale

Task Proficiency

19. I do my work without making mistakes.
20. People who judge my work are satisfied with it.
21. I work productively.
22. I learn new job skills quickly.
23. I look for and recognize mistakes I made.
24. I do my work accurately.
25. I finish work tasks on time (e.g., adhering to deadlines).
26. I get easily frustrated and stuck at work when things do not work out as planned.

Written and Oral Communications

27. I can communicate my ideas effectively in oral presentations.
28. I find myself at loss for words when I want to explain something to others.
29. I have trouble putting my thoughts down in writing (e.g., in an e-mail or report).
30. I find it hard to differentiate between what is important and what is not important (e.g., in group meetings or conversations).
31. When holding a presentation, I have trouble presenting my topic calmly and clearly.

Demonstrating Effort

32. I usually get going easily at the beginning of a task but drop in performance over time.
33. At work, I am reliable and consistent in what I do.
34. I take the initiative when work is available.
35. I procrastinate or put off things until the last minute.
36. I tend to deal with tasks quickly and pragmatically, which could have a negative impact on the quality of my work.
37. I have trouble keeping my motivation up at work.
38. During a working day I quickly feel exhausted and need breaks frequently.
39. After a long intense work assignment, it is hard for me to take on additional tasks.

Maintaining Personal Discipline

40. I work the required number of hours.
41. I take more breaks than allowed at work.
42. I have trouble sticking to agreements.
43. I follow workplace rules and regulations.
44. I come late to work.

45. I can control my temper around people at work.
46. I lie to my co-workers or supervisors (e.g., to cover up a mistake I made).

Facilitating Peer & Team Performance

47. I help other people to get work done.
48. I join social activities with co-workers.
49. I try to maintain positive relationships with my co-workers.
50. I am a teamplayer.

Supervision

51. I listen to the advice of others.
52. I can work well without supervision.
53. I can accept constructive criticism without being upset.
54. I have trouble to provide supervision and/or feedback to co-workers.

Management and Administration

55. I monitor my progress at work (e.g., my career steps).
56. One of my goals at work is to get promoted to a higher position.
57. I seek for opportunities to get more responsibility in my job position.
58. I persist in pursuing my goals.