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The Zurich Adjustment Disorder Study: Diagnostics and Risk Factors of ICD-11 Adjustment Disorder Following Involuntary Job Loss

Studio di Zurigo sul Disturbo dell'Adattamento: fattori diagnostici e di rischio del disturbo dell'adattamento (DA) nell'ICD-11 in seguito alla perdita indesiderata del lavoro

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ABSTRACT

As part of the trauma and stress-related disorders' category, adjustment disorder is a frequently occurring mental disorder that develops after stressful life events. Preoccupation and failure to adapt are the core symptoms of adjustment disorder in ICD-11. As this is a new definition, we conducted a large-scale study to gain a deeper understanding of the validity and applicability of the revised diagnostic criteria. N=334 individuals who experienced involuntary job loss were interviewed three times one to nine months after the last day at work (immediately, six- and twelve-months follow-up). For measuring adjustment disorder symptoms, a newly developed structured diagnostic interview and a self-report questionnaire evidenced satisfying psychometric properties. Approximately six months after discharge, the prevalence of a tentative diagnosis of adjustment disorder was 27.3% and decreased to 10.5% over the course of 12 months. We identified several event-/person-related, intra- and interpersonal correlates and predictors of adjustment disorder symptoms. The more specific definition of adjustment disorder, which leads to an improved detection of adjustment disorder cases, is in line with WHO's aim of improved ease of use of the disorder.
Keywords: ICD-11; DSM-5; adjustment disorder; stress-related disorders; job loss.

RIASSUNTO

Come parte della categoria dei disturbi trauma e stress - correlati, il disturbo dell'adattamento è un disturbo mentale frequente e ricorrente che si manifesta dopo eventi stressanti della vita. I principali sintomi di questo disturbo, descritti nell'ICD-11, comprendono la preoccupazione e il fallimento all'adattamento. Trattandosi di una nuova definizione, abbiamo condotto uno studio su larga scala per ottenere una comprensione più profonda sulla validità e l'applicabilità dei criteri diagnostici revisionati. 334 soggetti che hanno vissuto la perdita indesiderata del lavoro sono stati intervistati tre volte, da uno a nove mesi dopo l'ultimo giorno di lavoro (follow-up immediatamente dopo la perdita, a sei e dodici mesi). Per misurare i sintomi del disturbo dell'adattamento sono state sviluppate una nuova intervista diagnostica strutturata e un questionario autovalutativo che ha evidenziato buone proprietà psicometriche. Circa 6 mesi dopo la perdita del lavoro, la prevalenza di una presunta diagnosi del disturbo dell'adattamento era del 27,3% ed è diminuita del 10,5% nel corso dei 12 mesi. Abbiamo identificato diversi correlati e predittori associati all'evento-/persona, intra- e interpersonali, dei sintomi del disturbo dell'adattamento. La definizione più specifica del disturbo dell'adattamento, che comporta una migliore individuazione dei casi di disturbo dell'adattamento, è in linea con gli obiettivi dell'Organizzazione Mondiale della Sanità per semplificare la gestione del disturbo.
Parole chiave: ICD-11; DSM-5; disturbo dell'adattamento; disturbi stress-correlati; perdita del lavoro.

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Introduction

The diagnostic category "adjustment disorder" can be assigned if clinically relevant symptomatology occurs in the aftermath of a non-traumatic critical life event (e.g., death of a loved one, separation, job loss, severe poverty). Until recently, this diagnostic label was mostly used for non-specific symptomatology or for subclinical manifestations of other mental disorders (Strain & Diefenbacher, 2008). During the revision of the International Classification of Diseases (ICD; World Health Organisation (WHO), 2018) and the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association (APA), 2013) the concept of adjustment disorder was revised. In order to investigate the validity of the new concept of adjustment disorder, a longitudinal study was conducted at the University of Zurich between 2015 and 2018. As part of the study, the psychometric properties and the usability of two newly-developed instruments for the assessment of adjustment disorder were investigated. On the other hand, prevalence rates for adjustment disorder following the ICD-11 guidelines and correlates of symptomatology following involuntary job loss were explored. The present article will give an overview over the different finding of the "Zurich Adjustment Disorder Study" (Lorenz et al., 2017; Lorenz et al., 2018a,b; Perkonigg et al, 2018).

Background

Adjustment disorder as a diagnostic category

The diagnosis adjustment disorder is typically assigned following critical life events or psychosocial stressors, such as a divorce, job loss, acute (e.g stroke, heart attack) or chronic (e.g. diabetes, organ transplant) illnesses, or medical procedures (Köllner, 2013). The symptoms cause suffering and/or significant impairment in important areas of functioning. Adjustment disorders usually develop within one (ICD-11; WHO, 2018) or three (DSM-5; APA, 2013) months after the onset of the stressor and do not persist for longer than six months after the stressor or its consequences are terminated (APA, 2013; WHO, 2018).

Both, DSM-5 and ICD-11, classify adjustment disorder in their respective groupings of "trauma- and stress-related disorders" (APA, 2013; WHO, 2018). Both diagnostic classification systems require the presence of a critical life event or psychosocial stressor as main criterion. However, ICD-11 and DSM-5 differ in the description of the symptoms. In contrast to DSM-5, ICD-11 describes disorder-specific symptomatology. An adjustment disorder in ICD-11 is characterised by preoccupation with the stressor and failure to adapt (WHO, 2018). Preoccupation encompasses cognitive changes, such as recurrent distressing thoughts about the stressor or constant worries about its consequences. Failure to adapt describes different symptoms that are signs of a dysregulated stress response that interferes with everyday functioning. Failure to adapt symptoms are not described in more detail in ICD-11 but previous studies used symptoms such as sleep disturbances, concentration problems, loss of self-confidence, or difficulties performing everyday tasks to define failure to adapt (Einsle et al., 2010; Glaesmer et al., 2015). Thus, ICD-11 offers a definition of adjustment disorder symptoms that facilitates the differentiation between adjustment disorders and other mental disorders. However, it is still unclear how the often-observed related symptoms (e.g., depressed mood, anxiety, or conduct problems) that were previously defined as subtypes are integrated into this new disorder definition.

In contrast to ICD-11, the DSM-5 description of the diagnostic criteria of adjustment disorder remained fairly similar to the previous criteria defined in DSM-IV (APA, 2000) and ICD-10 (WHO, 1992). Hence, the symptomatology of adjustment disorder remains unclearly distinguished from other, related mental disorders. It is defined that the symptoms do not meet the threshold for another mental disorder nor do they represent a worsening of a previously existing mental disorder (APA, 2013). The predominant symptomatology can only be described through determination of the subtype. DSM-5 distinguishes between depressed mood, anxiety, conduct problems, and mixed forms (APA, 2013). This unspecific description of the symptomatology allows a flexible use of the diagnosis in clinical practice, e.g. if the symptoms occurring after a life stressor do not yet represent a fully developed mental disorder (Strain & Diefenbacher, 2008). However, it also makes the distinction between adjustment disorder and other mental disorders, e.g., depressive disorder, not otherwise specified, harder (Zimmermann et al., 2013).

Adjustment disorders can be distinguished from posttraumatic stress disorder (PTSD), complex posttraumatic stress disorder (CPTSD), and prolonged grief disorder (PGD) by the intensity of the

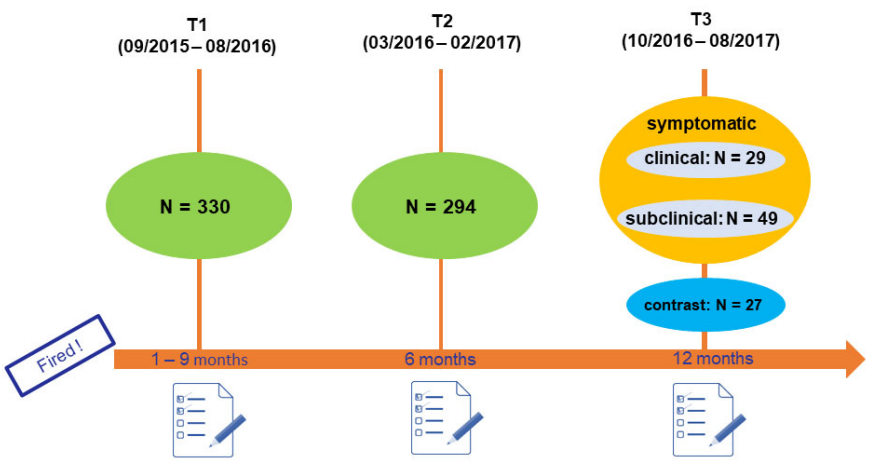
precipitating life event and the quality, i.e. severity, of the symptoms. While the intrusive states in PTSD and CPTSD describe the intense reliving of the event as if it was happening in the present, preoccupation in adjustment disorder refers to cognitive alteration describing the memory of the event. Furthermore, PGD also includes preoccupations, however the related feelings differ between the disorders. While PGD is related to feelings of yearning and longing for the deceased person, the feelings of adjustment disorder rather include states of depression or anxiety, and avoidance. Although it was stated that a differentiation between the stress-related disorder solely based on the precipitating life event is insufficient (Keeley et al., 2015), the index event can be seen as a diagnostic indication for a specific disorder. While the precipitating life event of PTSD and CPTSD is usually severely threatening the personal integrity of a person, e.g. war experiences, sexual violence, or torture, and PGD occurs following the death of a loved one, precipitating life events of adjustment disorders are usually of minor intensity. These stressors can be acute or chronic and require adjustment to altered living circumstances.

Job Loss as critical life event

One typical example of precipitating life events for adjustment disorder is job loss. Losing employment implies several changes, such as a loss of daily structure, the stresses of finding a new position, or questioning the chosen career path. Job loss can threaten the basic individual needs and personal goals, which can create stress. Studies found that job loss can result in worse physical health, such as an increased risk of cardiovascular failures (Gallo et al., 2004), increased smoking (Falba, Teng, Sindelar, & Gallo, 2005; Golden & Perreira, 2015), increased alcohol consumption (Eliasen & Storrie, 2009; Gallo, Bradley, Siegel, & Kasl, 2001), and decreased work ability (Maier et al., 2006). Another consequence of job loss can be worse general mental health (Ziersch, Baum, Woodman, Newman, & Jolley, 2014), more depressive symptoms (Brand, Levy, & Gallo, 2008; Paul & Moser, 2009; Riumallo-Herl, Basu, Stuckler, Courtin, & Avendano, 2014), an increased risk of the development of a mental disorder (Barbaglia, ten Have, Dorsselaer, Alonso, & de Graaf, 2014), and even lead to suicidality (Nordt et al., 2015; Milner et al., 2014).

With the aim to advance research into adjustment disorder, a longitudinal study on people experiencing such a life stressor, i.e. involuntary job loss, was conducted at the University of Zurich between 2015 and 2018. So-called homogenic samples allow to investigate a phenomenon without the necessity to control for the possibility of confounding influences due to differences in experienced life events. This elevates the statistical power and allows for more complex statistical analysis. The main research questions for the present article were: 1) are the newly developed assessment instrument for adjustment disorder valid and reliable?; 2) which risk and protective factors for adjustment disorder can be identified?

Figure 1: Study Design of the Zurich Adjustment Disorder Study



Diagnostic instruments for adjustment disorder

Diagnostic interviews: Due to the subordinate status of adjustment disorder in the classification systems and the non-specific definition of criteria, there is only limited availability of structured assessment of adjustment disorder. Adjustment disorders are only limitedly included in common diagnostic interview schedules. The Structured Diagnostic Interview for DSM (SCID; e.g. First et al., 2015) includes an optional section for adjustment disorder at the end of the interview. This section should only be conducted if symptoms are present but the criteria for another mental disorder are not met. Thus, the SCID is following the logic of DSM that adjustment disorders can only be given if no other mental disorder is present. However, this necessitates that the whole SCID is conducted before a diagnosis of adjustment disorder can be made and information of the other sections is needed to determine the symptomatology. In the adjustment disorder section itself only the criteria regarding the presence of a critical life event or psychosocial stressor and regarding significant impairment or suffering are examined. The Schedules for Clinical Assessment in Neuropsychiatry (SCAN; Wing et al., 1990) follows a similar logic as it compares the symptom definition to a glossary.

One structured interview for the assessment of adjustment disorder that does not require the assessment of other mental disorders was developed by Cornelius et al. (2014). The Diagnostic Interview Adjustment Disorder (DIAD; Cornelius et al., 2014) assesses adjustment disorder after DSM-IV but could be used for a diagnosis after DSM-5. The DIAD asks for the presence of critical life events or psychosocial stressors first and then proceeds to the assessment of 16 different symptoms and their frequency. At the end of the interview, questions regarding the time of occurrence and the impairment in functioning are asked. The DIAD can be used to diagnose adjustment disorder after DSM-IV without the exclusion criterion for another mental disorder and without the specification of a subtype.

There are two other new developments for the Composite International Diagnostic Interview (CIDI; Wittchen & Pfister, 1997). The CIDI did not include a section for adjustment disorders before. A German workgroup adapted the CIDI for the assessment of comorbid psychiatric disorders in cancer patients so that they can also assess adjustment disorders (CIDI-O; Hund et al., 2016). This adapted version asks in the sections for anxiety disorders and depression whether the symptoms occurred in the aftermath of the cancer diagnosis. The CIDI-O can assess DSM-IV and DSM-5 adjustment disorder with depressed mood, with anxiety, and with mixed symptoms of depression and anxiety. Moreover, for the Zurich Adjustment Disorder Study, a new adjustment disorder module (AD-CIDI) for the assessment of adjustment disorder after ICD-11 and DSM-5 was developed that can be used without any other modules. The AD-CIDI is described in more detail in the methods section of this paper.

Questionnaires: Besides structured clinical interviews, there are only a few possibilities to measure adjustment disorder symptoms in self-report questionnaires. The few studies assessing adjustment disorders with questionnaires used items from other scales to determine symptom severity and diagnostic status (e.g., O'Donnell et al., 2016). During the revision of the adjustment disorder definition, Einsle et al. (2010) developed the first self-report questionnaire for adjustment disorder. The Adjustment Disorder – New Module (ADNM, Einsle et al., 2010) can be used to assess critical life events or psychosocial stressors and adjustment disorder symptomatology following the DSM-5 and the ICD-11 concept. The first version contained 29 items (ADNM-29; Einsle et al., 2010) and was shortened to 20 items (ADNM-20; Glaesmer et al., 2015). The 20-item version was used in the present study and is described in more detail in the methods section. An even shorter 8-item version that only contains items for the assessment ICD-11 adjustment disorder also possessed satisfactory psychometric properties (ADNM-8; Kazlauskas et al., 2018; Ben-Ezra et al., 2018).

The structured assessment of adjustment disorders in clinical interviews and self-report questionnaires played a tangential role. One reason could be the previous definition of adjustment disorder that was unspecific and made it a subordinate exclusive disorder. On the other hand, the exclusion of the presence of any other mental disorder made it hard to assess adjustment disorder in a stand-alone interview schedule. Therefore, one aim of the Zurich Adjustment Disorder Study was to validate the newly developed measurement instruments of adjustment disorder.

Risk and protective factors for the development of adjustment disorder

For many mental disorders there are models of risk and protective factors that ground on epidemiological research. However, for adjustment disorder there are only a few studies that investigate predictive factors for disorder development. Some findings point to female gender and higher age as factors associated with elevated risk for the development of adjustment disorder following psychosocial stress (e.g,, Hund et al., 2016). There are also biological alterations that could be identified in those affected by adjustment disorder (e.g., Myung et al., 2016). Moreover, there are intraindividual risk factors that are relevant in stress management, such as a low self-efficacy (Fankhauser et al., 2010) or low cognitive reappraisal of the experience (Hu et al., 2014). Previous studies also identified interpersonal predictive factors, such as stronger interpersonal distance (Ponizovsky et al., 2011) or lower cooperativeness (Chen et al., 2011). Like the other trauma- and stress-related disorders, i.e. PTSD, CPTSD, and PGD, the socio-interpersonal framework model could be used to describe risk and protective factors of disorder development (Maercker & Horn, 2013). The second aim of the Zurich Adjustment Disorder Study was to investigate predictive factors for adjustment disorders on theoretical and empirical grounds.

Methods

Design and analyses

The Zurich Adjustment Disorder study was a longitudinal study with a sample of individuals who lost their jobs involuntarily due to changes in the market. The assessments took place 1-9 months after the last day of work, and six and twelve months later (figure 1). For the third assessment it was planned to only include extreme groups, i.e. individuals with low or high adjustment disorder symptom severity. The analyses regarding the first assessment were published by Lorenz et al. (2017), Lorenz et al. (2018b) and Perkonigg et al. (2018); analysis that included data from the second assessment were published by Lorenz et al. (2018a); the publications regarding the third assessment are still pending.

Sample

Study participants were mainly recruited through local employment offices in the greater Zurich area. Other means of recruitment were local newspaper articles and mailing lists from the University of Zurich. Inclusion criteria were as follows: at least 18 years of age, fluent in German language, experience of an involuntary job loss within the past nine months. Individuals were excluded if they showed severe physical or mental impairments that made participation in the study impossible. We were able to assess N=334 individuals at the first assessment (50.6% male, 49.4% female; mean age M =43.8 years, SD=10.7). A total of 37% reported to have a high school diploma and 43.2% had an academic education. Almost one third (31.5%) of participants were married or in a registered relationship and 37.9% reported a household budget above 4000 SFr. N=303 individuals took part in the second assessment (dropout-rate = 9.3%). As mentioned above, only individuals with clinical or subclinical forms of adjustment disorder and individuals with maximum of one symptom were invited to take part in the third assessment. The sample at the third assessment was N=105.

Assessment

For the diagnostics of adjustment disorder, a new module for the CIDI (Wittchen & Pfister, 1997), based on the ICD-11 and DSM-5 concept, was developed (AD-CIDI; Perkonigg et al., 2018). The first part of this module contains a list of acute and chronic psychosocial stressors and individuals are asked to indicate which of these stressors occurred in the past twelve months. At the end of the list, the participant had to indicate the most distressing event. The second part of the AD-CIDI then assesses the presence of adjustment disorder symptoms (preoccupation, failure to adapt, avoidance, depression, anxiety, impulsivity). In the last part, the participants were asked questions about onset and course of symptoms as well as functional impairment due to the symptoms. If the participant didn't endorse any symptoms, the third part was not applied. The adjustment disorder diagnosis after ICD-11 can be given if the following criteria were applied: a) occurrence of a psychosocial stressor; b) presence of at least one symptom of preoccupation with the stressor (recurrent distressing thoughts, constant worries); presence of at least two symptoms of failure to adapt (concentration problems, difficulties

performing everyday tasks, loss of interest in work, social life or hobbies, sleep disturbances, loss of self-worth); d) frequency of symptoms at least 10-15 times a month of clinical relevance (impairment at least 'considerable' or contact to a health professional); e) exclusion criteria (if other modules are assessed as well). The test-retest reliability and construct validity of the CIDI and the new AD-CIDI is satisfactory to good (Wittchen & Pfister, 2997; Perkonigg et al., 2018).

We also used the Adjustment Disorder – New Module 20 (ADNM-20; Einsle et al, 2010; Glaesmer et al., 2015) to assess adjustment disorder symptom severity in response to the job loss. The items measure preoccupation, failure to adapt, avoidance, affective reactions, and impulsivity. The response format of the 20 items is a four-point Likert scale (1=never, 4=often). There are several evaluation possibilities for the ADNM-20. On the one hand, we calculated a sum score of all 20 items to determine adjustment disorder symptom severity in general. On the other hand, we calculated a sum score of the eight items for the ICD-11 definition of adjustment disorder (ADNM-8; Kazlauskas et al., 2018; Ben-Ezra et al., 2018). Previous studies found satisfactory psychometric properties regarding factor structure, internal consistency, construct validity, and reliability for the ADNM (Einsle et al, 2010; Glaesmer et al., 2015; Bley et al., 2008).

General self-efficacy was assessed with the General Self-Efficacy Scale (SWE; Schwarzer & Jerusalem, 1999) at first and second assessment. It contains 10 items with a four-point Likert scale response format (1, not at all – 4, exactly true) that are summed up to build a total score.

The work-specific self-efficacy was measured using the Occupational-Self-Efficacy Scale (OcSe; Schyns & Collani, 2010). The six items refer to the management of occupational difficulties and challenges and are answered on a six-point Likert scale (1, not at all true – 6, absolutely true). A sum scored is built to determine the overall occupational self-efficacy.

Emotion regulation competencies were assessed using the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003; Abler & Kessler, 2009). This questionnaire measures suppression and reappraisal with ten items that are answered on a seven-point Likert scale (1, not at all – 7, absolutely). The total score of each subscale is built by taking the sum score of the respective items (Gross & John, 2003).

Sense of coherence was measured by the sense of coherence scale – revised (SOC-R; Bachem & Maercker, 2016). It consists of 13 items that are answered on a five-point Likert scale (1, not at all – 5, exactly). The items refer to manageability, reflection and balance and are summed up to build a total score.

The Daily Hassles Scale (DH; Perkonigg & Wittchen, 1995) was used to measure daily hassles and their appraisal. It consists of 24 items with a four-point Likert scale response format (1, often – 4, never). The overall score was built by taking the mean score of all items.

The Disclosure of Trauma Questionnaire (DTQ; Mueller & Maercker, 2006; Pielmaier & Maercker, 2011) was used in an adapted version at the first and second assessment. The twelve items refer to the urge to talk, the reluctance to talk, and emotional reactions while disclosing. The response format is a six-point Likert scale ranging from 0 (not at all) to 5 (absolutely). A total score for the whole scale as well as the subscales can be built by taking the mean score of the respective items.

The Social Support Questionnaire, short version (FSozU-K ; Fydrich, Sommer, Tydeck & Brähler, 2009) was used to measure perceived social support. The questionnaire consists of 14 items that are answered on a five-point Likert scale (1, not at all – 5, exactly true) and the mean of all items is used as the total score.

The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996; Maercker & Langner, 2001) contains 21 items with a six-point Likert scale response format (0, not at all – 5, very strong). The sum score of all items reflects personal growth in the aftermath of a stressful life event.

Social acknowledgement, i.e. the reaction of the social surroundings of an individual, were measured with the Social Acknowledgement Questionnaire (SAQ; Maercker & Mueller, 2004) at the second and third assessment. It measures general disapproval, family disapproval, and acknowledgement as a victim on 16 items. The response format is a four-point Likert scale (1, not at all true – 4, exactly true) and all items referred to the job loss. The total score is built by summing up all items.

Analysis

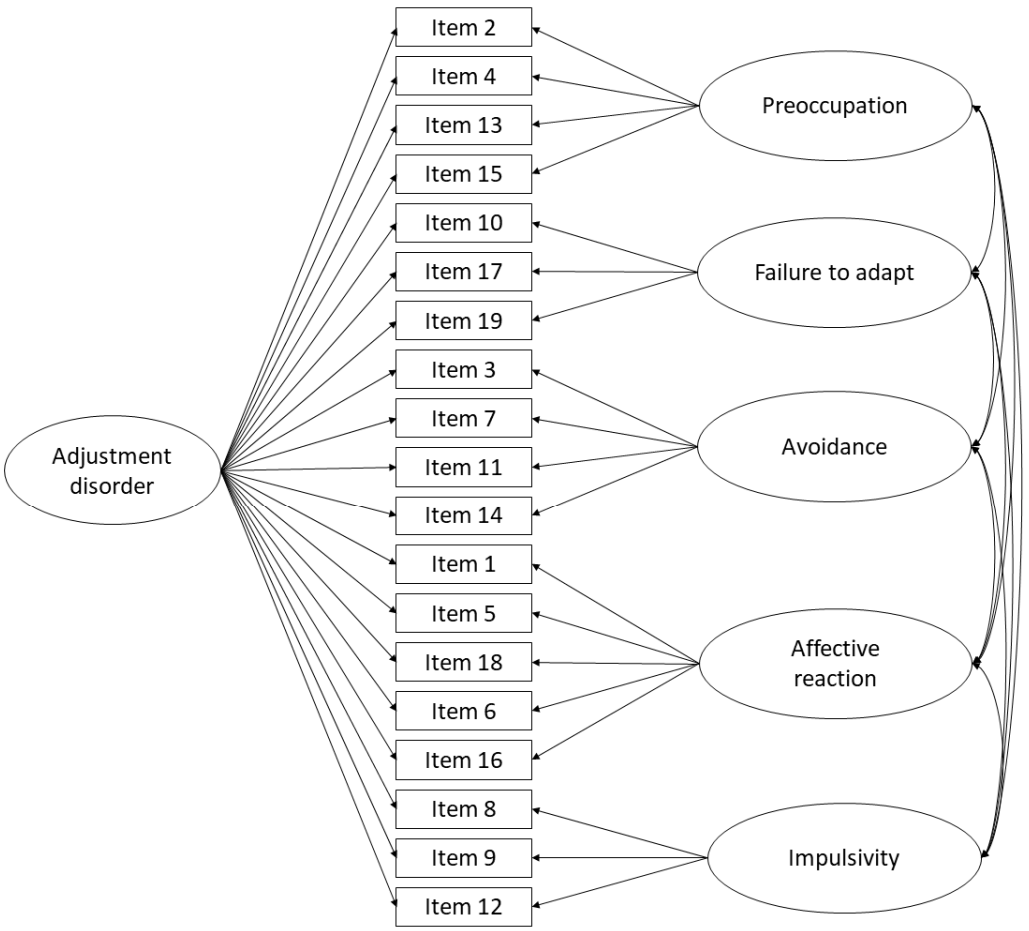
The statistical analysis for the Zurich Adjustment Disorder Study included several elements. The calculation of prevalence rates was based on the diagnostic algorithms for the ADNM-8 and the AD-CIDI. Linear and logistic regressions were used to identify correlates and predictors of adjustment disorders. Path modelling was used to develop an etiological model for adjustment disorder. A latent-class-latent-change-(LCLC-)model was defined to determine subgroups of the course of adjustment disorder symptoms. The specific statistical procedures are described elsewhere (Lorenz et al., 2017; Lorenz et al., 2018a, 2018b; Perkonigg et al., 2018).

Results

Psychometric properties of the ADNM-20

In the present study we used a contextualised version of the ADNM-20, i.e. all items referred to the reaction to the job loss. This allowed us to assess event-specific symptomatology. First, we evaluated the scaling of the items (Lorenz et al., 2017). Using confirmatory factor analysis, we compared different uni- and multidimensional measurement models for the ADNM-20 regarding their fit with the data. A non-restricted bifactor model with a general factor and five group factors showed the best fit with the data ($\chi 2 = 259$, df = 123, CFI = .98, TLI = .97, RMSEA = 0.6 [0.5 – 0.7]) and is presented in figure 2.

Figure 2: Measurement model of the Adjustment Disorder New Module – 20 (Lorenz at al., 2017)



All 19 symptom indicators loaded significantly onto the general factor that was labelled adjustment disorder. The five group factors represented the symptom areas of ICD-11 and DSM-5. Depressive and anxiety symptoms were grouped together as a factor labelled affective reaction. The standardized factor loadings pointed towards a dominance of the general factor which points towards unidimensionality of the scale and suggests building an overall sum score (Lorenz et al., 2017). This sum score showed a high internal consistency at all measurements (αt1 = .93; αt2 = .94; αt3 = .94). The sum score of the ADNM-8 also evidenced a high internal consistency at all measurements (αt2 = .94; αt2 = .87; αt3 = .87; Lorenz et al., 2018a, 2018b).

Prevalence of life events and adjustment disorder

As part of our inclusion criteria, all participants reported the presence of a job loss. Further frequently reported life events were financial problems (n=106, 32.2.%), family conflicts (n=98; 29.8%) and illness of a loved one (n=66; 20.1%). Three quarter of the participants (n=257; 77.9%) reported having experienced more than one life event and almost half or the participants (n=156; 47.3%) reported the occurrence of at least two psychosocial stressors within the twelve months before the first assessment (Perkonigg et al., 2018). Between the first and second assessment the participants experienced a mean of M=1.0 (SD = 1.1, Mdn = 1.0, min – max = 0.0 – 6.0) new life events and between the second and third assessment they reported M = 0.4 (SD = 0.7, Mdn = .00, min – max = 0.0 – 2.0) new life events.

The prevalence of adjustment disorder was determined using the ADNM-8 (Lorenz et al., 2018b) and the AD-CIDI (Perkoingg et al., 2018). The diagnostic algorithm led to a tentative adjustment disorder diagnosis of 25.6% (n=81) at the first assessment, 18.2% (n=55) at the second assessment, and 10.5% (n=11) at the third assessment. The diagnostic algorithm for the AD-CIDI resulted in a prevalence of adjustment disorder of 15.5% if the exclusion criteria were applied and 27.3% without application of the exclusion criteria at first assessment. Higher prevalence rates were observed for women (17.2%) compared to men (13.8%).

Course of adjustment disorder

The course of adjustment disorder across six months was investigated using a LCLC model (Lorenz et al., 2018a). Two- to six-class solutions were tested. The 3-class model showed the best fit with the data (AIC = 1426, BIC = 1464, entropy = .764, LMRA-LRT = 50.8, $p < .001$). The three classes differed in the sum score of the ADNM-20 at initial assessment and their course over time. One group of participants expressed low symptom severity at first (M = 33.0, SD = 8.5) and second assessment (M = 27.6, SD = 5.0). The second group evidenced moderate scores on the ADNM-20 at first (M = 46.9, SD = 7.9) and second (M = 42.5, SD = 5.4) assessment. Both groups had significantly lower scores at the second assessment compared to the first assessment (group 1: $t(135) = 7.005$, $p = .000$, $d = 0.77$; group 2: $t(94) = 4.273$, $p = .000$, $d = 0.65$). The third group was characterized by relatively high scores on the ADNM-20 at first assessment (M = 57.3, SD = 9.5) and showed a tendency of worsening of symptoms over time (M = 60.1, SD = 5.8, $t(37) = –1.506$, $p = .141$, $d = –0.36$). The group with low symptom severity was the largest (n = 149, 49.2 %), followed by the group with moderate (n = 108, 35.6 %) and high (n = 46, 15.2 %) symptom severity (Lorenz et al., 2018a).

Risk and protective factors

Table 1 displays an overview over the correlates of adjustment disorder that were identified by the Zurich Adjustment Disorder Study. Adapting the socio-interpersonal framework model for stress-response syndromes (Maercker & Horn, 2013), we formulated an adjustment disorder specific socio-interpersonal model (Lorenz et al., 2018b) and extend this model here with further correlates. The main hypothesis was that person-specific, event-specific, intrapersonal, and interpersonal factors play a crucial role in the development of an adjustment disorder. The interpersonal factors are divided into social affects, behaviour and experience in close relationships, and culture and values.

As person-specific correlates of higher symptomatology in the questionnaire and higher odds for a diagnosis of adjustment disorder, we were able to identify higher age, female gender, a worse self-rated financial situation and a household budget below 4000 Swiss francs. Among the event-specific correlates of higher symptomatology and higher risk for a diagnosis were first job loss, a job that

requires "brainwork", a previous job with high responsibility, and a higher amount of job applications written to get a new position (Lorenz et al., 2018a, 2018b; Perkonigg et al., 2018).

A lower general and occupational self-efficacy, a lower sense of coherence, and low reappraisal of the job loss were associated with higher symptomatology and/or higher odds for an adjustment disorder diagnosis on the intrapersonal level of the model. Furthermore, stronger feelings of loneliness and higher dysfunctional disclosure were associated with higher symptomatology and higher risk of diagnosis. As part of the close relationship dimension of the model, we identified perceived social support and more negative social interactions as correlates for adjustment disorder symptoms. Lower social acknowledgement was associated with stronger symptomatology as part of the culture and value dimension of the model (Lorenz et al., 2017; Lorenz et al., 2018a, 2018b).

Table 1- Correlates and predictors of higher symptomatology of adjustment disorder, identified by the Zurich Adjustment Disorder Study

Person-specific correlates/predictors	Event-specific correlates/predictors	Intrapersonal correlates/predictors	Interpersonal correlates/predictors
Higher age	Mostly brainwork (compared to physical labour)	Higher burden of distress	Strong feelings of loneliness
Female gender	Last position with high responsibility	Higher functional impairment	Higher dysfunctional disclosure
Appraisal of own financial situation as 'bad'		Low self-rated work ability	Low perceived social support
Household budget below 4000 Swiss francs		Little hope for the future	More negative social interactions
		Low self-efficacy	Low social acknowledgement
		Low sense of coherence	

Note: Detailed information in Lorenz et al. (2017), Lorenz et al. (2018a, 2018b), Perkonigg et al. (2018)

Discussion

The present article summarizes the main findings of the Zurich Adjustment Disorder Study and provides an overview over the new diagnostic instruments for adjustment disorder after ICD-11. As part of this study, a structured clinical diagnostic interview, the AD-CIDI, was developed and a self-report questionnaire, the ADNM-20, was validated. The prevalence of life events and adjustment disorder symptoms in individuals who experienced involuntary job loss were investigated. Using both instruments, we were able to identify different correlates and predictors of adjustment disorder symptomatology.

ICD-11 and DSM-5 differ significantly in the diagnostic criteria for adjustment disorder. While ICD-11 requires specific core symptoms, the DSM-5 remains with the vague definition of symptoms through exclusion of other disorders. The AD-CIDI is the first structured diagnostic interview schedule that enables the assessment of adjustment disorder following both diagnostic criteria. While the ICD-11 was the main purpose of study until now, future studies could use the AD-CIDI to compare the ICD-11 and the DSM-5 definition and gather information about the best way to conceptualize adjustment disorder.

The ADNM-20 is a further instrument that was used and validated in the course of the Zurich Adjustment Disorder Study. The confirmatory factor analysis pointed towards a unidimensional structure of the items, indicating a homogenic underlying construct. Which items best represent adjustment disorder after ICD-11 or DSM-5 should be subject to further research. Reliability and discriminant construct validity of the instrument were supported in the present study. The findings generally support the application of the ADNM-20 among individuals who experienced job loss.

Psychosocial stressors that co-occur with job loss were highly prevalent with 78%, however prevalence declined over the course of the three assessments. These findings show that job loss comes together with further challenges that require adjustment and to be dealt with. In line with this high prevalence of psychosocial stressors, the prevalence of adjustment disorder was high at 16%. The prevalence of adjustment disorder symptoms likewise declined across the three measurements, which supports the concept of a transitory mental disorder. In line with previous research (Hund et al., 2016;

Maercker et al., 2012), adjustment disorder symptoms were more prevalent in women and older study participants compared to male and younger participants. Many elderly participants reported that they were struggling to find a new job. One reason could be that the social payments for individuals older than 50 years in Switzerland are higher and younger employees are preferred on the job market. On the other hand, some older participants reported that their job they were trained in didn't exist anymore so that they would be required to do a reorientation training before getting a new job. Our findings support previous findings of higher challenges of older employees in the Swiss job market (Office for Economy and Labour, 2016). Furthermore, it seems as if individuals in higher and executive functions are more challenged by the job loss. A previous position that required more "brainwork" and included high responsibilities were associated with a higher risk for an adjustment disorder diagnosis. It could be that these individuals experienced a higher stress level before they had to leave their post and therefore were particularly vulnerable for the development of a stress-related disorder. Another reason could be that those people identify themselves stronger with their jobs and that the loss of it threatens the self-image in a stronger manner. These hypotheses could be investigated in future studies using appropriate measures.

The findings regarding intra- and interpersonal correlates of adjustment disorder support previous findings (e.g., Fankhauser et al., 2010) and theoretical assumptions. The socio-interpersonal framework model for stress-response syndromes (Maercker & Horn, 2013) built the theoretical foundation for assumptions about the aetiology of adjustment disorder. Apparently, stress management on a social level is also important after experiencing non-traumatic life events. Therefore, future studies should also include interpersonal factors such as loneliness or dysfunctional disclosure besides traditional intrapersonal stress management resources such as self-efficacy.

Limitations

One limitation of this study is that it used a very specific sample. The experience of a job loss is not representative for all index events for adjustment disorder and job loss in Switzerland probably differs from job loss in other countries and therefore could lead to different reactions around the world. The results of this study should therefore be transferred to other populations with caution. However, this very specific sample allowed us to conduct sophisticated statistical analysis because we expected a high prevalence of adjustment disorder symptoms. A further limitation is that we mainly used self-report instruments, which could have resulted in self-report bias. Other sources of information such third-party assessment or behavioural observations could help to deepen the understanding of social and cultural influences on adjustment disorder symptoms. Furthermore, we did not collect information about whether participants received treatment between the assessments which should be assessed in future studies. Moreover, we only collected information after the job loss and not before. Future studies could use a prospective design to further separate cause and effect of job loss.

Conclusion

The Zurich Adjustment Disorder Study was one of the first studies to systematically investigate adjustment disorder following the ICD-11 proposal. The results regarding assessment instruments, prevalence, and predictors support the validity of this new approach. One major aim in the development of ICD-11 was the improvement of applicability and clinical utility of the diagnostic criteria (International Advisory Group, 2011). The development of structured assessment instruments that can be used by trained laymen point towards an improvement in assessment of adjustment disorder symptomatology. The development of a diagnostic algorithm for these instruments should facilitate the manageability of the diagnosis. The improvement of clinical utility remains yet to be seen with use of the new ICD-11 adjustment disorder criteria in clinical practice.

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