Eating behaviour and symptom trajectories in patients with a history of binge eating disorder during COVID-19 pandemic

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Abstract
Objective: A history of an eating disorder (ED) might constitute a risk for symptom deterioration and relapse during COVID-19 pandemic. This longitudinal study investigates ED symptom trajectories until the first COVID-19 lockdown in Spring 2020 in patients with a history of binge eating disorder (BED).

Method: Participants of the randomised-controlled BED treatment trial IMPULS participated in a re-assessment directly after the first COVID-19 lockdown in Germany. We used expert-rated clinical interviews and self-report to investigate binge eating (BE) frequency, ED and general psychopathology, distress, emotion regulation and sense of coherence. Symptom trajectories were analysed for baseline when entering the trial, end of trial participation and the time point directly after lockdown. BE frequency was assessed on a recall basis for 4 weeks directly before lockdown and 4 weeks during lockdown.

Results: BE frequency, general ED pathology and depressive symptoms markedly increased after as compared to before the COVID-19 outbreak. Individuals scoring high on reappraisal as emotion regulation strategy and sense of coherence scored lower on general ED pathology.

Conclusion: Individuals with a history of an ED are at risk for symptom deterioration and relapse during the pandemic. Intervention and service dissemination strategies are needed to support vulnerable groups throughout the pandemic.

Keywords
binge eating, COVID-19, eating disorder, pandemic, psychopathology

Abbreviations: BE, binge eating; BED, binge eating disorder; BMI, body mass Index; CBT, cognitive behavioral therapy; DSM, diagnostic and statistical manual of mental disorders; ED, eating disorder; EDE, eating disorder examination; GEE, generalized estimating equations; SCID, structured clinical interview for DSM; SPSS, statistical package for social sciences.

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Highlights

- A well-described sample of previously treatment-seeking patients with binge eating disorder was reassessed directly after the first COVID-19 lockdown in spring 2020.
- Binge eating frequency was markedly increased after as compared to before the COVID-19 outbreak.
- General eating disorder pathology and depressive symptoms were markedly increased after the COVID-19 outbreak as compared to trial termination.
- Individuals with a history of an eating disorder are at risk for symptom deterioration and relapse during the pandemic.

1 INTRODUCTION

The outbreak of COVID-19 pandemic has led to major restrictions in economic, public and private life around the world. The profoundly changed life circumstances and the ongoing threat by the pandemic impacts population mental health. Representative data show an overall increase in mental distress early after the outbreak of COVID-19 in the general population (Pierce et al., 2020), and individuals with a history of mental disorders are especially vulnerable to experience distress (Iob et al., 2020).

Elevated stress levels are one major potential pathway by which the pandemic impacts vulnerable subgroups. Vulnerable individuals might experience a loss of protective factors and an increase in risk factors for distress (Rodgers et al., 2020). They might show dysfunctional coping strategies which deteriorate mental health, foster and maintain mental disorders. One such dysfunctional coping pathway might comprise eating behaviour, for instance, negative emotions and stress are antecedents of dysfunctional eating patterns such as overeating and binge eating (BE) which might serve as dysfunctional emotion regulation strategies (Leehr et al., 2015). Accordingly, French students from a large convenience sample who reported higher perceived stress or greater levels of anxiety and depression early during the first COVID-19 lockdown, were more likely to report BE in the past week (Flaudias et al., 2020). Students who screened positive for a clinical eating disorder (ED) in the survey were more likely to report more severe BE (Flaudias et al., 2020). Already early in the pandemic, it has been outlined that individuals with a history of ED might be at an elevated risk to suffer (Fernandez-Aranda et al., 2020). This is supported by data from Italy and Germany showing aggravation or reoccurrence of ED psychopathology in patients with anorexia nervosa and bulimia nervosa (Castellini et al., 2020; Schlegl, Maier et al., 2020; Schlegl, Meule et al., 2020). Likewise, an international online survey reveals worsening of ED symptoms in a self-selected sample of people with a history of ED (Termorshuizen et al., 2020); and service-utilization data from Canada indicates increased ED-related help-seeking behaviour (Richardson et al., 2020).

Research on the effects of the COVID-19 pandemic on vulnerable subgroups such as people with a history of ED is urgently needed to inform policy decisions as well as prevention and health service strategies (Rodgers et al., 2020).

The present study complements previous evidence which was mainly based on self-report by self-selected convenience samples using online survey approaches. Regarding clinical ED diagnoses, there is a lack of research in people suffering from the most prevalent ED which is binge eating disorder (BED). The goal of the present study was to investigate ED symptoms as well as general psychopathology directly after the first COVID-19 lockdown in spring 2020 in patients with a history of BED who were previously seeking treatment in the randomised-controlled IMPULS trial (Schag et al., 2019). We used a combination of expert-rated structured clinical interview diagnosis as well as self-report data and additionally explored potential influencing factors on ED symptom trajectories. For most outcomes, we compared three measurement time points: baseline assessment data when entering the trial, data at end of trial participation and data assessed directly after lockdown in spring 2020. BE frequency as primary outcome was assessed using the expert-rated structured clinical interview Eating Disorder Examination (EDE) (Hilbert & Tuschen-Caffier, 2016) which assesses ED symptoms for the last 28 days. Based on this measure and to estimate changes due to COVID-19 outbreak, we assessed BE frequency for 4 weeks directly before lockdown on a recall basis and for 4 weeks during lockdown. We hypothesised that (a) BE frequency (primary outcome) would be higher after as compared to directly before the first COVID-19 lockdown; patients would suffer from increased (b) ED
psychopathology and (c) general psychopathology after COVID-19 lockdown as compared to the assessment at end of trial participation.

2 | METHODS

2.1 | Study design

We conducted a follow-up assessment of the study cohort of the IMPULS study. IMPULS is a two-arm randomised-controlled trial investigating the efficacy of a novel psychotherapy for individuals with BED (Schag et al., 2019). IMPULS compared a treatment group with a no-treatment control group. The primary outcome of the treatment trial was the frequency of BE episodes in the last 4 weeks.

2.2 | Participants

The sample consists of patients who had previously participated in the IMPULS trial. Inclusion criteria comprised a diagnosis of BED according to DSM-5 and an age of at least 18 at inclusion into the trial; exclusion criteria were suicidality, pregnancy or lactation, a severe mental or somatic disorder (Schag et al., 2019). The IMPULS treatment consisted of eight sessions of a CBT-oriented group therapy approach adapted from addiction and ED treatment approaches with a specific focus on interventions targeting impulsivity (Schag et al., 2019).

2.3 | Study procedure

Data assessment took place between May and July 2020, shortly after the first lockdown in Germany, and this was on average 3 years after treatment trial participation. The IMPULS participants were approached and invited via phone or email. After providing written informed consent, participants were asked to fill in an online questionnaire and to participate in two structured clinical interviews (EDE, Standardized Clinical Interview for DSM-5 [SCID]) via phone call. The clinical interviews were conducted by a trained rater. The study protocol was approved by the local ethics committee.

2.4 | Outcome assessment

Baseline demographic and clinical characteristics were assessed via a semi-structured interview via phone call. ED pathology was assessed via expert rating using the structured clinical interview EDE (Hilbert & Tuschen-Caffier, 2016) including the diagnosis of ED according to DSM-5 and the frequency of objective BE episodes. BE episodes as primary outcome was assessed for the 4 weeks immediately before lockdown on a recall basis and for 4 weeks during lockdown in Germany in order to be able to estimate potential pandemic-related changes. The EDE questionnaire was used to assess self-reported ED pathology in the past 4 weeks (Hilbert et al., 2007). General psychopathology was assessed via expert rating based on the SCID (Falkai et al., 2015). Participants were screened using the SCID screening questions, and the respective SCID section was administered in case of a positive screening. The Beck Depression Inventory (BDI-II) (Hautzinger et al., 2009) was used to assess self-reported depressive symptoms in the last 2 weeks. As potential influencing factors on ED symptoms, we assessed stress via the Perceived Stress Questionnaire (Fliege et al., 2001), emotion regulation capacities via the Emotion Regulation Questionnaire (Abler & Kessler, 2009) as well as sense of coherence via the SOC-L9 (Schumacher et al., 2000). Body mass index (BMI) was calculated based on self-reported weight and height data from the trial data.

2.5 | Statistical analyses

Data were analysed using SPSS version 26. Normal distribution of data was assessed using the Kolmogorov–Smirnov test. We applied generalised estimating equations (GEE) in order to analyse time effects in the variables related to the development of BE frequency, ED pathology and general psychopathology. As the frequency of objective BE episodes was not normally distributed, GEE was analysed based on the Poisson distribution and log-function. Exploratory correlation analyses was performed in order to analyse potential relationships between variables of ED pathology and risk and protective factors, and this was based on Pearson correlations for normally distributed data and on Spearman correlations for non-normality. Significance level was set at $\alpha = 0.05$. To control for family-wise error rate due to multiple testing, we applied the Bonferroni–Holm procedure for correction of the $\alpha$-level regarding the analyses related to the three hypotheses, and are reporting corrected $p$ values where applicable. All tests were performed two-tailed.

3 | RESULTS

3.1 | Study sample

Forty-two participants (52%) of the IMPULS trial sample participated in the follow-up assessment after the COVID-19 lockdown, eight of them were male. Twenty-three
participants of the treatment group and nineteen of the control group participated in the reassessment. Two participants had previously dropped out, nine participants did not provide consent and twenty-five participants were unavailable. Table 1 displays demographic and clinical characteristics of the study sample.

### 3.2 | ED pathology

Table 1 shows that significantly fewer individuals fulfilled a BED diagnosis at follow-up after COVID-19 lockdown based on EDE interview data as compared to T0 and T1. Figure 1 displays findings for BE frequency. Participants showed a significant increase of BE episodes for the 4 weeks during lockdown as compared to immediately before COVID-19 outbreak (Wald-$\chi^2$ = 15.22; corrected $p < 0.001$). BE frequency at during lockdown was significantly lower as compared to when entering the trial (T0; Wald-$\chi^2$ = 12.20; $p < 0.001$), and comparable to frequency at T1 assessment (end of treatment; Wald-$\chi^2$ = 0.01; $p = 0.907$). Self-reported ED pathology at the lockdown follow-up assessment was significantly higher as compared to both previous assessments, when entering the trial (T0) and at end of treatment (T1) (Table 1).

### 3.3 | General psychopathology

Table 1 shows that significantly fewer individuals fulfilled a comorbid mental health diagnosis at follow-up as compared to both previous assessment points. Self-reported depressive symptoms at follow-up were significantly more severe as compared to end of treatment (T1) and comparable to severity when entering the trial (Table 1).
3.4 Exploratory analyses on factors influencing ED symptom trajectories

No significant correlations were found between BE frequency as primary outcome and self-reported distress, emotion regulation capacities and sense of coherence. Self-reported general ED pathology as expressed by the EDE-Q total score was negatively associated with the use of reappraisal as emotion regulation strategy ($r = -0.381$; $p = 0.032$) and with sense of coherence ($r = -0.371$; $p = 0.036$).

4 DISCUSSION

We report data on symptom trajectories in a previously treatment-seeking population of patients with a history of BED and how these were affected by the first COVID-19 lockdown in spring 2020. Long-term data shows that the sample made a positive development in terms of a significant reduced BMI, fewer BED and comorbid mental health diagnoses since trial termination. However, considering frequency of BE episodes in the last 4 weeks as central psychopathology of BED and the primary outcome of the treatment trial (Schag et al., 2019), there was a marked increase after as compared to directly before the COVID-19 outbreak. BE frequency did not return to baseline levels when entering the trial, but was comparable to end-of-trial severity. Self-reported general ED pathology also deteriorated and was even more severe as when entering the trial. This increase in BE frequency and general ED pathology is likely to translate into relapse into BED on the medium-term, especially given the ongoing pandemic. The course of ED pathology is in accordance with severity of self-reported depressive symptoms which also showed a marked deterioration after the COVID-19 outbreak. Exploratory analyses suggest that reappraisal as a coping strategy and sense of coherence might play a role as protective factors in the development of general ED pathology.

Our results are in line with previous evidence suggesting re-occurrence and deterioration of symptoms in people with a history of an ED (Castellini et al., 2020; Clark Bryan et al., 2020; Schlegl, Maier et al., 2020; Schlegl, Meule et al., 2020; Termorshuizen et al., 2020). Our data points towards symptom deterioration which puts also people in (partial) remission at risk for relapse. This is worrying as the COVID-19 outbreak might be associated with risk of relapse into mental disorders (Fernandez-Aranda et al., 2020; Termorshuizen et al., 2020).

It should be a research priority to unravel potential pathways by which the pandemic impacts ED pathology in order to tailor prevention and intervention efforts. Disruption of daily routines, a lack of social support, elevated stress and negative affectivity have been suggested (Fernandez-Aranda et al., 2020; Rodgers et al., 2020) and preliminary qualitative data on patient experiences supports that these factors are indeed major drivers of ED symptom deterioration during COVID-19 pandemic (McCombie et al., 2020).

The present study complements earlier evidence on the course of EDs by reporting data from a well-characterised clinical sample of treatment-seeking BED patients. Mental health assessment was based on structured clinical interviews as well as self-report. Limitations comprise that there was a dropout of participants for the follow-up assessment 3 years after trial termination. The follow-up sample was a mixed group of participants of the treatment as well as control condition. Receiving treatment could have had influence on symptom deterioration and relapse risk, however, the subsamples were too small to analyse subgroup differences. Data on BE frequency for the period directly before lockdown could be prone to recall biases. Body weight at follow-up was self-reported. It would have been additionally insightful to have data on ED and general psychopathology from an assessment point directly before the COVID-19 outbreak.

In times of the global COVID-19 outbreak, it is a public concern to support those who are vulnerable to experience distress. Our data show that individuals with a history of an ED are at risk for a deterioration of their mental health and to experience relapse during the pandemic. This is especially important for patients with BED, since obesity is a risk factor for severe courses of COVID-19 (Cornejo-Pareja et al., 2020). Moreover, it suggests that we might face a surge in service needs additionally to new onset cases, and this poses specific challenges towards the resources of mental healthcare providers. Novel and adapted interventions and dissemination strategies are needed, including remote and low-threshold services (Castellini et al., 2020; Fernandez-Aranda et al., 2020; Termorshuizen et al., 2020), to offer support to vulnerable individuals throughout the pandemic.

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CONFLICTS OF INTEREST

The authors declare that there are no conflict of interests.

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REFERENCES
Abler, B., & Kessler, H. (2009). Emotional Regulation Questionnaire – Eine deutschsprachige Fassung des ERQ von Gross und John. Diagnostica, 55(9), 144–152.
Castellini, G., Cassioli, E., Rossi, E., Innocenti, M., Gironi, V., Sanfilippo, G., Felciá, F., Monteleone, A. M., & Ricca, V. (2020). The impact of COVID-19 epidemic on eating disorders: A longitudinal observation of pre versus post psychopathological features in a sample of patients with eating disorders and a group of healthy controls. International Journal of Eating Disorders, 53(11), 1855–1862. https://doi.org/10.1002/eat.23368
Clark Bryan, D., Macdonald, P., Ambwani, S., Cardi, V., Rowlands, K., Willmott, D., & Treasure, J. (2020). Exploring the ways in which COVID-19 and lockdown has affected the lives of adult patients with anorexia nervosa and their carers. European Eating Disorders Review, 28(6), 826–835. https://doi.org/10.1002/erv.2762
Cornejo-Pareja, I. M., Gomez-Perez, A. M., Fernandez-Garcia, J. C., Barahona San Millan, R., Aguilar Luque, A., de Hollandia, A., Jiménez A., Jimenez-Murcia S., Munguia L., Ortega E., Fernandez-Aranda F., Real J. M. F., & Tannahones F. (2020). Coronavirus disease 2019 (COVID-19) and obesity. Impact of obesity and its main comorbidities in the evolution of the disease. European Eating Disorders Review, 28(6), 799–815. https://doi.org/10.1002/erv.2770
Flaudias, V., Iceta, S., Zerhouni, O., Rodgers, R. F., Billieux, J., Llorca, P.-M., Boudesseul, J., de Chazeron, I., Romo, L., Maurage, P., Samalin, L., Béguè, L., Naassila, M., Brousse, G., & Guillaume, S. (2020). COVID-19 pandemic lockdown and problematic eating behaviors in a student population. Journal of Behavioral Addictions, 9(3), 826–835. https://doi.org/10.1556/2006.2020.00053
Fliege, H., Rose, M., Arck, P., Levenstein, S., & Klapp, B. F. (2001). Validierung des “Perceived Stress Questionnaire” (PSQ) an einer deutschen Stichprobe. Diagnostica, 47(3), 142–152.
Hautzinger, M., Keller, F., & Kühner, C. (2009). Depressions-Inventar Revision. 2. Auflage. Hogrefe.
Hilbert, A., & Tuschen-Caffier, B. (2016). Eating Disorder Examination. dgvt Verlag.
Hilbert, A., Tuschen-Caffier, B., Karwautz, A., Niederhofer, H., & Munsch, S. (2007). Eating Disorder Examination-Questionnaire. Diagnostica, 53, 144–154.
Iob, E., Frank, P., Steptoe, A., & Fancourt, D. (2020). Levels of severity of depressive symptoms among at-risk groups in the UK during the COVID-19 pandemic. JAMA Network Open, 3(10), e2026064. https://doi.org/10.1001/jamanetworkopen.2020.26064
Leehr, E. J., Krohmer, K., Schag, K., Dresler, T., Zipfel, S., & Giel, K. E. (2015). Emotion regulation model in binge eating disorder and obesity—A systematic review. Neuroscience & Biobehavioral Reviews, 49, 125–134. https://doi.org/10.1016/j.neubiorev.2014.12.008
McCombie, C., Austin, A., Dalton, B., Lawrence, V., & Schmidt, U. (2020). “Now It’s Just Old Habits and Misery”—Understanding the impact of the Covid-19 pandemic on people with current or life-time eating disorders: A qualitative study. Frontiers in Psychiatry, 11, 589225. https://doi.org/10.3389/fpsych.2020.589225
Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., Kontopantelis, E., Webb, R., Wessely, S., McManus, S., & Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. The Lancet Psychiatry, 7(10), 883–892. https://doi.org/10.1016/S2215-0366(20)30308-4
Richardson, C., Patton, M., Phillips, S., & Paslakis, G. (2020). The impact of the COVID-19 pandemic on help-seeking behaviors in individuals suffering from eating disorders and their caregivers. General Hospital Psychiatry, 67, 136–140. https://doi.org/10.1016/j.genhosppsych.2020.10.006
Rodgers, R. F., Lombardo, C., Cerolini, S., Franko, D. L., Omori, M., Fuller-Tyszkiewicz, M., Linardon, J., Courtet, P., & Guillaume, S. (2020). The impact of the COVID-19 pandemic on eating disorder risk and symptoms. International Journal of Eating Disorders, 53(7), 1166–1170. https://doi.org/10.1002/eat.23318
Schag, K., Rennhak, S. K., Leehr, E. J., Skoda, E.-M., Becker, S., Bethge, W., Martus, P., Zipfel, S., & Giel, K. E. (2019). Impuls: Impulsivity-focused group intervention to reduce binge eating episodes in patients with binge eating disorder—A randomised controlled trial. Psychotherapy and Psychosomatics, 88(3), 141–153. https://doi.org/10.1159/000499696
Schlegl, S., Maier, J., Meule, A., & Voderholzer, U. (2020). Eating disorders in times of the COVID-19 pandemic—Results from an online survey of patients with anorexia nervosa. International Journal of Eating Disorders, 53(11), 1791–1800. https://doi.org/10.1002/eat.23374
Schlegl, S., Meule, A., Favreau, M., & Voderholzer, U. (2020). Bulimia nervosa in times of the COVID-19 pandemic—Results from an online survey of former inpatients. European Eating Disorders Review, 28(6), 847–854. https://doi.org/10.1002/erv.2773
Schumacher, J., Wilg, Z., Gunzelmann, T., & Brühl, E. (2000). Die Sense of Coherence Scale von Antonovsky. Psychotherapie Psychosomatik Medizinische Psychologie, 50(12), 472–482. https://doi.org/10.1055/s-2000-9207
Termorshuizen, J. D., Watson, H. J., Thornton, L. M., Borg, S., Flatt, R. E., MacDermod, C. M., Harper, L. E., Furth, E. F., Peat, C. M., & Bulik, C. M. (2020). Early impact of COVID-19 on individuals with self-reported eating disorders: A survey of ~1,000 individuals in the United States and The Netherlands. International Journal of Eating Disorders, 53(11), 1780–1790. https://doi.org/10.1002/eat.23353

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