

Correspondence

Cite this article: Schag K, Schlatter JE, Martus P, Zipfel S, Giel KE (2023). Reduction of impulsivity after an impulsivity-focused group intervention in patients with binge eating disorder in a long-term follow-up of the randomized controlled IMPULS trial. *Psychological Medicine* 53, 4821–4822. <https://doi.org/10.1017/S0033291722000368>

Received: 27 December 2021

Revised: 27 January 2022

Accepted: 31 January 2022


First published online: 18 April 2022

Author for correspondence:

Kathrin Schag,

E-mail: kathrin.schag@med.uni-tuebingen.de

Reduction of impulsivity after an impulsivity-focused group intervention in patients with binge eating disorder in a long-term follow-up of the randomized controlled IMPULS trial

Kathrin Schag^{1,2} , Johanna E. Schlatter¹, Peter Martus³, Stephan Zipfel^{1,2} and Katrin E. Giel^{1,2}

¹Department of Psychosomatic Medicine and Psychotherapy, Medical University Hospital Tübingen, Tübingen, Germany; ²Centre of Excellence for Eating Disorders Tübingen (KOMET), Tübingen, Germany and ³Medical University Hospital Tübingen, Institute for Clinical Epidemiology and Applied Biometry, Tübingen, Germany

About 50% of patients with binge eating disorder (BED) do not benefit from treatment as usual (Linardon, 2018). Therefore, investigating disease mechanisms remains a priority. Recently, Boswell, Gueorguieva, and Grilo (2021) found reduced impulsivity, a putative vulnerability factor for BED, post-treatment in patients with BED after receiving cognitive-behavioral therapy (CBT) and/or fluoxetine treatment, but increased impulsivity at 12 months follow-up.

We have conducted the randomized-controlled IMPULS trial (Schag et al., 2019) in which we investigated a novel CBT-oriented outpatient group program that especially targets impulsive eating behavior. We compared patients of the treatment group (TG) with a control group (CG) that did not receive any treatment. Unexpectedly, binge eating frequency was reduced in both groups directly after treatment (T1) compared with baseline (T0), but a stronger reduction occurred in TG compared with CG at 3 months follow-up (T2). However, trait impulsivity was not reduced at T1 and T2 in both groups.

Recently, we completed a long-term follow-up (T3) of the IMPULS trial, in which 43 (54%) of the initially 80 trial participants with BED according to DSM-5 participated on average 33 months after end of treatment. We expected that patients from TG vs. CG might further reduce binge eating frequency and trait impulsivity. The rater was blinded to the treatment condition and assessed eating disorder diagnosis and binge eating frequency in the past 4 weeks based on the Eating Disorder Examination (EDE; Hilbert & Tuschen-Caffier, 2016b). Body mass index (BMI), eating disorder pathology (EDE-Q; Hilbert & Tuschen-Caffier, 2016a), trait impulsivity (BIS-15; Meule, Vögele, & Kübler, 2011), and depression (BDI II; Hautzinger, Keller, & Kühner, 2006) were assessed by self-report. After multiple imputation of missing data, generalized estimating equations were computed for hypothesis testing. According to Boswell et al.'s (2021) results, we explored associations between change from T0 to T3 in binge eating frequency, trait impulsivity, BMI, eating disorder pathology, and depression with Spearman correlations.

The sample at T3 consisted of $N = 22$ in the TG and $N = 21$ in the CG with a drop-out rate of 46% (TG $N = 19$, CG $N = 18$). Participants were predominantly female ($N = 36$, 84%) with an age of $M = 43.3$ years (s.d. = 12.8). Average BMI was $M = 35.4$ kg/m² (s.d. = 9.8). Fifteen (34.9%) participants reported full remission and 15 (34.9%) reported partial remission from BED. Nineteen participants (44.4%) reported that they had received further treatment since trial termination.

Results delivered no group differences in the course of binge eating frequency and trait impulsivity between T0 and T3, i.e. contrary to our hypothesis, no interactions occurred [binge eating frequency: Wald $\chi^2(1) = 0.270$, $p = 0.737$, $B = -0.057$, 95% CI -0.39 to 0.28 ; trait impulsivity: Wald $\chi^2(1) = 0.224$, $p = 0.855$, $B = 0.009$, 95% CI -0.09 to 0.11]. Instead, both groups reduced binge eating frequency at T3 compared with T0 [see Fig. 1; TG: Wald $\chi^2(1) = 47.36$, $p < 0.001$, $B = 1.28$, 95% CI 0.90 – 1.65 ; CG: Wald $\chi^2(1) = 43.99$, $p < 0.001$, $B = 0.71$, 95% CI 0.49 – 0.94], and trait impulsivity [TG: Wald $\chi^2(1) = 7.18$, $p = 0.021$, $B = 0.08$, 95% CI 0.01 – 0.15 ; CG: Wald $\chi^2(1) = 9.23$, $p = 0.005$, $B = 0.09$, 95% CI 0.03 – 0.16].

Thus, patients from both groups did find a way to reduce impulsivity, though impulsivity as a personality trait is often understood as a stable variable. Directly after treatment, we were only able to show reductions of impulsive behavior, i.e. concerning external eating (Schag et al., 2019), impulsive eye movements (Schag et al., 2021), and brain activity (Veit et al., 2021), but not concerning trait impulsivity. Contrary, impulsivity in Boswell et al.'s (2021) study was reduced post-treatment, but not at 12 months follow-up. They used another

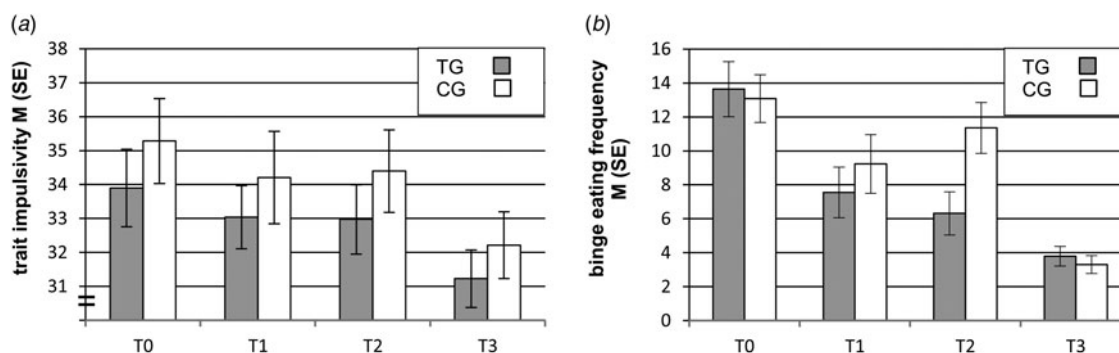


Fig. 1. Treatment course of (a) trait impulsivity (BIS-15) and (b) binge eating frequency in the past 4 weeks (EDE) in the treatment group (TG) v. control group (CG) at baseline (T0), end of treatment (T1), 3 months follow-up (T2) and 2.75 years follow-up (T3).

impulsivity scale that might measure more flexible impulsive behavior compared to the BIS-15 scale which we used. Concerning binge eating, we speculate that patients from the CG were able to compensate the initial advantage of TG by other treatments, as 44% of the whole sample received further care. Around 70% achieved partial or full remission from BED, which means that around 25% might have achieved improvements by other ways, for instance self-help approaches.

Correlational analyses yielded no association between the change of trait impulsivity and binge eating frequency from T0 to T3 ($\rho = 0.025$, $p = 0.840$), but change of eating disorder pathology was related to trait impulsivity ($\rho = 0.248$, $p = 0.028$) and binge eating frequency ($\rho = 0.314$, $p = 0.007$). Change in depression was related to trait impulsivity ($\rho = 0.349$, $p = 0.003$) and eating disorder pathology ($\rho = 0.372$, $p = 0.005$). These findings are in line with Boswell et al.'s (2021) results post-treatment, but not at 12 months follow up, which might again be due to the different impulsivity scales. Both studies imply that eating disorder pathology and depression might represent moderators of change between binge eating episodes and trait impulsivity. Contrary to Boswell et al. (2021), we did not find a significant association between the change of BMI with any of these variables (all $p > 0.05$). Taken together, impulsivity, depression, and eating disorder pathology might closely interact in disease and recovery processes related to BED, though the exact path of these relations has to be validated.

As a limitation, the drop-out rate of this follow-up is high, and most variables have been assessed by self-report. Nevertheless, this is one of the few long-term investigations of patients with BED that delivers insights into impulsivity as a potential underlying mechanism of BED, and we investigated a specific treatment focusing on impulsive eating behavior.

To conclude, our data complement the results of Boswell et al. (2021) by showing that even long-term changes in trait impulsivity are possible in treatment-seeking patients with BED and that they are associated with some of the central treatment goals, i.e. eating disorder pathology and depression. Thus, we agree with Boswell et al. (2021) that focusing on impulsivity in the treatment of BED might enhance treatment outcomes of this often long-lasting and burdensome disease.

Acknowledgements. Thanks to Marisa Schurr for her support while data entry.

Author contributions. KS, KEG, and SZ participated in the design of the study. JS and KS performed the data analysis with support from PM. KS

drafted the manuscript, and all co-authors revised the manuscript critically for important intellectual content. All authors read and approved the final version of the manuscript.

Financial support. This work was supported by the Medical Faculty Tübingen within the applied clinical science funding, grant number 323-0-1. KS is supported by the Ministry of Science, Research and the Arts Baden-Württemberg.

Conflict of interest. None.

References

- Boswell, R. G., Gueorguieva, R., & Grilo, C. M. (2021). Change in impulsivity is prospectively associated with treatment outcomes for binge-eating disorder. *Psychological Medicine*, 1–9. <https://doi.org/10.1017/s003329172100475x>
- Hautzinger, M., Keller, F., & Kühner, C. (2006). *BDI-II. Beck Depressions Inventar Revision – Manual*. [Beck Depression Inventory – German version]. Frankfurt: Harcourt Test Services.
- Hilbert, A., & Tuschen-Caffier, B. (2016a). *Eating Disorder Examination Questionnaire – Deutschsprachige Übersetzung. 2. Auflage* [Eating Disorder Examination Questionnaire – German version]. Tübingen: dgvt Verlag.
- Hilbert, A., & Tuschen-Caffier, B. (2016b). *Eating Disorder Examination: Deutschsprachige Übersetzung. 2. Auflage* [Eating Disorder Examination – German version]. Tübingen: dgvt Verlag.
- Linardon, J. (2018). Rates of abstinence following psychological or behavioral treatments for binge-eating disorder: Meta-analysis. *International Journal of Eating Disorders*, 51(8), 785–797. <https://doi.org/10.1002/eat.22897>
- Meule, A., Vögele, C., & Kübler, A. (2011). Psychometrische Evaluation der deutschen Barratt Impulsiveness Scale – Kurzversion (BIS-15). [Psychometric evaluation of the German Barratt Impulsiveness Scale – short version (BIS-15)]. *Diagnostica*, 57(3), 126–133.
- Schag, K., Lehr, E. J., Meneguzzo, P., Martus, P., Zipfel, S., & Giel, K. E. (2021). Food-related impulsivity assessed by longitudinal laboratory tasks is reduced in patients with binge eating disorder in a randomized controlled trial. *Scientific Reports*, 11(1), 8225. <https://doi.org/10.1038/s41598-021-87231-w>
- Schag, K., Rennhak, S. K., Lehr, E. J., Skoda, E. M., Becker, S., Bethge, W., & Giel, K. E. (2019). IMPULS: Impulsivity-focused group intervention to reduce binge eating episodes in patients with binge eating disorder – A randomized controlled trial. *Psychotherapy & Psychosomatics*, 88, 141–153. <https://doi.org/10.1159/000499696>
- Veit, R., Schag, K., Schopf, E., Borutta, M., Kreutzer, J., Ehrlis, A. C., & Kullmann, S. (2021). Diminished prefrontal cortex activation in patients with binge eating disorder associates with trait impulsivity and improves after impulsivity-focused treatment based on a randomized controlled IMPULS trial. *Neuroimage Clinical*, 30, 102679. <https://doi.org/10.1016/j.nicl.2021.102679>