Article:

The potential value of brief waitlist interventions in enhancing treatment retention and outcomes: A randomised controlled trial

Ella Keegan, PhD[a]

Glenn Waller, DPhil[b]

Kate Tchanturia, PhD[c,d]

Tracey D. Wade, PhD[a]

[a] Flinders Institute of Mental Health and Wellbeing, Flinders University, Australia; [b] University of Sheffield, United Kingdom; [c] King's College London, United Kingdom, [d] Illia State University, Tbilisi, Georgia

Corresponding author: Ella Keegan, Discipline of Psychology, Flinders University, GPO Box 2100, Adelaide, 5001, South Australia, Australia. Email: ella.keegan@flinders.edu.au

Abstract

People with eating disorders are often placed on lengthy waitlists for treatment. This is problematic, as increased time spent on waitlists has been shown to predict dropout. We examined whether providing brief interventions to people on a waitlist improved retention or outcomes in treatment. Participants ($N = 85$) were referred to a university training clinic for 10-session cognitive behavioural therapy for non-underweight patients with eating disorders (CBT-T). While waitlisted for CBT-T, participants were randomised to one of two waitlist interventions or a control condition. In one waitlist intervention (CRT-Brief), participants received a cognitive remediation therapy session at the start of the waitlist period. In the other waitlist intervention (brief contact), participants were sent a short supportive email and psychoeducation halfway through the waitlist period. The control condition was waitlist as usual. There was no evidence to suggest that the waitlist interventions improved symptoms during the waitlist period or CBT-T. However, participants who received a waitlist intervention were three times more likely to complete treatment. The present study suggests that providing even brief contact while people are waitlisted for eating disorder treatment significantly improves retention. However, replication in a more adequately powered study is required.

Keywords: waitlist intervention; retention; brief contact; cognitive remediation therapy; eating disorders; 10-session cognitive behavioural therapy.

Introduction

People with eating disorders are often placed on lengthy waitlists for treatment. This is problematic, as time spent on waitlists has been shown to predict dropout from cognitive behavioural therapy for eating disorders (CBT-ED). Specifically, Carter and colleagues (2012) examined the role of patient characteristics and process-based factors in dropout among people on a waitlist for CBT-ED. They found that people who dropped out spent longer on the waitlist than those who completed treatment. The COVID-19 pandemic compounded the issue of lengthy waitlists. For example, information gathered from 25 eating disorder services in Australia revealed increased demand for community and inpatient programs, with people waiting many months to access treatment (National Eating Disorder Collaboration, 2022). This reflects international figures showing quadrupled waiting times for treatment since 2019/2020 (Nuffield Trust, 2022), a 270% increase in people waiting for urgent treatment, and a 315% increase in people waiting for routine treatment (Iacobucci, 2021). Thus, it is clearly important to identify strategies to manage the impact of lengthy waitlists and retain people in treatment.

One potential strategy is to provide brief interventions while people are waitlisted for treatment. While brief interventions have a long history in emergency settings (e.g., Paul & van Ommeren, 2013), little robust evaluation of these approaches exists, and their potential is largely untapped in the eating disorder field (Wade, 2023). In a case series using comparison to a previous cohort, Fursland and colleagues (2018) evaluated the use of a single session intervention comprising assessment and psychoeducation among participants waiting for eating disorder treatment. They found that the intervention increased the likelihood of people entering treatment, and significantly decreased eating disorder psychopathology, clinical impairment, and depression.

It is likely that any waitlist intervention that is effective will be one that has wide-reaching impact for the individual in terms of broad learning or generalisable skills. Thus, an

3

intervention targeting inefficient executive functioning may hold promise for eating disorders. To target these inefficiencies in people with anorexia nervosa, cognitive remediation therapy (CRT) was adjusted in the eating disorder context (Tchanturia, 2015). This adjunct treatment uses cognitive training exercises to "think about thinking," and may improve retention in treatment (Hagan et al., 2020). A recent meta-analysis demonstrated that non-underweight people with eating disorders have executive functioning inefficiencies that do not significantly differ from those observed in people with anorexia nervosa (Keegan et al., 2021), suggesting that they too may benefit from CRT. Despite this, only four studies have examined the use of CRT in non-underweight people with eating disorders (Dingemans et al., 2014; Mac Neil et al., 2016; Raman et al., 2018; Roberts, 2018). Moreover, all these studies used mixed samples, demonstrating the need for a study evaluating CRT predominantly among the non-underweight group.

Another realistic option is to provide a "brief contact" intervention. These interventions take the form of short supportive emails, SMS, letters, postcards, or phone calls inviting people to reengage with clinical services, expressing support, or providing brief psychoeducation. These interventions do not require a trained mental health clinician to implement, making them a cost-effective option. Brief contact interventions have previously been shown to reduce repetitions of deliberate self-poisoning (Carter et al., 2005) and suicidality (Tay & Li, 2022). Psychoeducational content emphasising the adaptability of genes and the brain may be useful for a brief contact intervention in eating disorders, as this content has been shown to significantly decrease disordered eating among women at risk of developing an eating disorder (Zhou et al., 2020) and restrictive eating among adolescents with depression (Schleider et al., 2022).

The present study evaluated the use of brief waitlist interventions using a randomised controlled trial (RCT). While waitlisted for 10-session cognitive behavioural therapy for non-underweight patients with eating disorders (CBT-T), participants were randomised to one of

two waitlist interventions or to a control condition (waitlist as usual). The waitlist interventions were CRT-Brief (a CRT session with accompanying homework) and brief contact (an email and psychoeducational content). We predicted that participants in the waitlist intervention conditions would be more likely to complete and do better in treatment than those in the control condition. We did not predict any differences between the waitlist interventions in terms of treatment retention or outcomes.

Method

Power Analysis

We considered a moderate (0.50) effect size difference between the waitlist interventions and control condition to be clinically significant. A power analysis using a power level of 0.80 and an alpha of .05 revealed that 114 participants were required (Hedeker et al., 1999). The study was underpowered with a final sample of 85 participants.

Design

The present study was conducted at the Flinders University Services for Eating Disorders (FUSED), a student training clinic in Adelaide, South Australia. People who were referred to FUSED were placed on an initial waitlist before assessment, with a median wait of 48 days (range: 2 to 449 days). As therapist availability appeared, people were invited to attend an initial face-to-face appointment. During this appointment, the information required to determine DSM-5 eating disorder diagnoses and eligibility was gathered using a semi-structured interview following a standardised outline (see Wade & Pellizzer, 2018). At the end of this appointment, people who were eligible were given one week to decide whether they would like to participate.

All people who decided to participate returned one week later for a second appointment and were randomised to one of three waitlist conditions: CRT-Brief, brief contact, or control. Block randomisation was conducted in Excel (block size = 4 participants) by the first author, who generated sealed envelopes containing group allocation for therapists

to open. At the end of the second appointment, all participants were placed on a one-month waitlist. Following the waitlist period, participants in all three conditions received CBT-T. Participant flow is shown in **Figure 1**. Ethics approval was obtained from the Social and Behavioural Research Ethics Committee at Flinders University (Project Number: 8613).

Participants

The 85 participants were drawn from consecutive referrals to FUSED between June 2020 and March 2022. Inclusion criteria were: age ≥15 years; body mass index (BMI) ≥18.5; DSM-5 eating disorder diagnosis; willing for FUSED to communicate with their general practitioner; and agreed to commit to treatment. Exclusion criteria were: substance dependence; active psychosis; high suicidality; and difficulty understanding or speaking English. To manage demand, people with binge eating disorder and those already receiving eating disorder treatment were also excluded. Referrals came from the following sources: the Statewide Eating Disorder Service ($n = 52$, 61.18%); self-referrals ($n = 21$, 24.71%); and other health professionals ($n = 12$, 14.12%). Four people with anorexia nervosa were included despite having a BMI less than 18.5 as they were medically stable and motivated to gain weight. Demographic and clinical characteristics are provided in **Table 1**. There were no significant baseline differences between conditions.

Waitlist Conditions

CRT-Brief

The first and last author developed CRT-Brief, a manualised waitlist intervention based on a 10-session CRT program (Tchanturia et al., 2010). This waitlist intervention comprised a therapist-led session and homework tasks. The session was provided at the start of the waitlist period (at the end of the second appointment) to allow time for homework completion. Prior to the RCT, CRT-Brief was piloted in a qualitative feasibility study ($N = 8$) at the Statewide Eating Disorder Service in April 2020. The eight participants (100% female) were attending a voluntary Day Program, described in Wade and colleagues (2020). Ages

6

ranged from 15 to 30 years, and diagnoses included atypical anorexia nervosa and bulimia nervosa. Feedback on CRT-Brief was positive. All participants reported that the exercise instructions were clear and made sense. They also reported that they *"really enjoyed"* the session and said that it was *"interesting," "brain activating,"* and *"fun."* Participants liked that CRT-Brief did not discuss eating disorder related themes or symptoms, for example, "*I liked that it didn't challenge eating disorder things – it was a lot brighter.*" During the waitlist period, participants in this condition were emailed weekly reminders to complete homework.

Brief Contact

Participants in this condition were sent a short supportive email and psychoeducation halfway through the waitlist period. The email read: "Hello [Name], We hope you are well. Attached to this email is a handout that you might like to read. It discusses eating disorders, and the ability of the brain to recover and regenerate with regular eating. Kind regards, FUSED." The psychoeducation was a Centre for Clinical Interventions handout "Eating Disorders and Neurobiology" (see **Supplementary Figure 1**), outlining that recovery is possible with adequate renourishment. Participants in this condition were not contacted at any other times during the waitlist period.

Control

The control condition was waitlist as usual. FUSED did not contact participants in this condition during the waitlist period.

CBT-T

At the time of the RCT, FUSED was providing CBT-T. This manualised outpatient treatment retains many of the core elements of longer CBT-ED such as psychoeducation, nutritional change, collaborative in-session weighing, and comprehensive relapse prevention. CBT-T usually involves 10 sessions with two follow-up appointments. Treatment targets include establishing regular and adequate eating, eliminating binge eating and compensatory

7

behaviours, tackling body image, and normalising thoughts and beliefs about food. A more detailed description of CBT-T is provided in Keegan and colleagues (2022).

Therapists and Adherence

CRT-Brief and CBT-T were delivered by the first author and seven provisional psychologists who were completing either their Masters or PhD in clinical psychology. All therapists received bi-weekly supervision from the second and last authors. During supervision, adherence was closely monitored using the CBT-T protocol: https://sites.google.com/sheffield.ac.uk/cbt-t/resources?authuser=0 and a CRT-Brief therapist booklet developed for the study.

Assessment

Measures were completed online using Qualtrics at six assessment points: baseline (first appointment), pre-treatment (Session 1), mid-treatment (Session 4), post-treatment (Session 10), 1-month follow-up, and 3-month follow-up.

Eating Disorder Psychopathology and Bingeing Frequency

The global score from the 22-item Eating Disorder Examination Questionnaire (EDE-Q) was used to measure eating disorder psychopathology over the past 28 days (Fairburn & Beglin, 2008). The global score can range from 0 to 6. Higher scores indicate greater psychopathology. The global score has excellent reliability and correlates with the global score from the EDE interview (Mond et al., 2004). In the present study, internal consistency was $\alpha = .78$. The frequencies of objective binge episodes were also obtained from the EDE-Q.

BMI

Height (m) and weight (kg) were used to calculate BMI as kg/m^2. Height was measured at baseline, and weight was objectively measured at baseline, each CBT-T session, and each follow-up appointment.

Clinical Impairment

The global score from the 16-item Clinical Impairment Assessment (CIA) was used to measure psychosocial impairment caused by disordered eating over the past 28 days (Bohn et al., 2008). The global score can range from 0 to 48. Higher scores indicate greater impairment. The global score has good reliability and correlates with clinicians' ratings of impairment (Bohn et al., 2008). In the present study, internal consistency was $\alpha = .87$.

Negative Affect

The total score from the 21-item Depression Anxiety and Stress Scale (DASS-21) was used to measure negative affect (Lovibond & Lovibond, 1995). The total score can range from 0 to 126. Higher total scores indicate greater negative affect. The total score has been shown to discriminate between clinical and non-clinical populations, and to correlate with other validated measures of depression, anxiety, and stress (Antony et al., 1998). In the present study, internal consistency was $\alpha = .94$.

Statistical Analyses

Analyses were conducted using IBM Statistical Package for the Social Sciences. Logistic regression was used to examine potential predictors of missing data. Treatment retention was defined as completing all 10 CBT-T sessions (unless an earlier finish was agreed upon as treatment had met the targets outlined above). Participants completing fewer than 10 sessions without collaborative agreement with their therapist were defined as dropouts. Logistic regression was used to examine whether retention differed between waitlist conditions. Linear mixed model (LMM) analyses were used to examine whether change over time in continuous treatment outcomes differed between waitlist conditions. LMM analyses assume data are missing at random and retain all participants even if they are missing data at different time points. All LMM analyses were adjusted for baseline observations and days on the initial waitlist. LMM was not used to analyse BMI as directional change is not predicted in the non-underweight group. Bonferroni corrections

were applied for all comparisons. Given the transdiagnostic nature of the sample where only a proportion were experiencing each behavioural item, only completer objective binge episodes were examined using an ANOVA to test group differences. Within-group effect sizes were calculated as Cohen's *d* and were adjusted for the correlation between observations (Lakens, 2013). Cohen's (1992) benchmarks were used to interpret effect sizes as small (0.2), moderate (0.5), and large (0.8).

Results

Missing Data

Waitlist condition did not predict missing data, *Wald* (2) = 2.81, *p* = .25. Additionally, as shown in **Table 2**, there were no significant baseline predictors of missing data, suggesting that data were missing at random.

Treatment Retention

Of the 82 people who started CBT-T, only 37 (45.12%) completed treatment. Completion rates were similar for CRT-Brief (51.72%) and brief contact (55.56%). In contrast, only 26.92% of participants in the control condition completed treatment. Given the equivalent results of the waitlist interventions, these two conditions were collapsed, and logistic regression showed that participants who received a waitlist intervention were three times more likely to complete treatment than those in the control condition (OR = 3.13, 95% CI = 1.14 to 8.63, *p* = .03).

Treatment Outcomes

For continuous variables, both completer and intent-to-treat LMM analyses showed significant main effects of time (**Table 3**). These indicated that eating disorder psychopathology, clinical impairment, and negative affect significantly decreased over time (**Table 4**). From pre- to post-treatment, effect sizes were very large for eating disorder psychopathology and clinical impairment, and medium to very large for negative affect. Moreover, the mean EDE-Q and CIA global scores began in the clinical range and fell below

the clinical cut-offs of 2.77 and 16 at post-treatment. Objective binge episodes (over the past 28 days) reduced from a mean of 9.78 (SD = 12.88) at baseline to 0.81 (SD = 1.68) at end of treatment (ES = -0.57, 95% CI: -0.27 to -0.90). No other main effects or interactions were significant, and the reduction in objective binge episodes did not differ by group, indicating no impact of waitlist condition on outcomes. BMI data were available for 32 of the 37 completers. Among the non-underweight participants, BMI increased from pre- to post-treatment for 20 participants from 28.71 (SD = 9.76) to 29.42 (SD = 9.79), decreased for 10 participants from 29.87 (SD = 8.38) to 29.11 (SD = 8.26), and did not change for one participant (pre- and post-treatment BMI = 20.15). Only one of the four participants with anorexia nervosa completed treatment. This participant successfully restored their weight (post-treatment BMI = 19.25).

Discussion

The present study examined the impact of waitlist interventions on treatment retention and outcomes. Contrary to Fursland and colleagues (2018), there was no evidence that receiving a waitlist intervention produced substantial improvements during the waitlist period or treatment. However, there was evidence that receiving a waitlist intervention improved retention, with those in the waitlist intervention conditions being three times more likely to stay in treatment. This finding is clinically important given as many as one out of four clients can be expected to drop out of CBT-ED (Linardon et al., 2018).

We also found that the minimal waitlist intervention (brief contact) was as effective in improving retention as a more intensive waitlist intervention involving an in-person session and homework (CRT-Brief). This finding is consistent with research conducted among people with obesity, where minimal support (text messages not requiring a response) was found to be as effective in maintaining weight loss as more intensive support including therapist involvement (Zwickert et al., 2016). This finding highlights that waitlist interventions do not need to be resource-intensive or delivered by expert clinicians to be

beneficial, thereby addressing concerns raised by Fursland and colleagues regarding clinician burden. Further research should investigate whether simply keeping in touch with clients over the waitlist period rather than providing an intervention or psychoeducation also significantly retains people in treatment.

The present study also fills a substantial gap in the literature by being the first to evaluate a form of CRT and a brief contact intervention in a sample predominantly comprising non-underweight people with eating disorders. Overall, we received positive qualitative feedback on CRT-Brief in the feasibility study. This aligned with research demonstrating that CRT is well-received by people with anorexia nervosa, parents, and eating disorder clinicians (e.g., Easter & Tchanturia, 2011; Giombini et al., 2017; Giombini et al., 2018; Whitney et al., 2008). The present findings also provided further support for brief contact interventions (Tay & Li, 2022), and extended the use of these interventions from self-harm and suicide to eating disorders. Together, these findings provide justification for future work investigating the utility of CRT and brief contact interventions for non-underweight people with eating disorders.

More broadly, the present study adds to the growing evidence base for CBT-T. From pre- to post-treatment, we observed very large reductions in eating disorder psychopathology and clinical impairment, and medium to very large decreases in negative affect. These positive findings aligned with those reported in a recent meta-analysis of CBT-T (Keegan et al., 2022). Findings for treatment retention were less positive. Specifically, our dropout rate (54.88%) was substantially higher than the estimated dropout rate in the meta-analysis of CBT-T (39%), which was derived from 10 studies. This discrepancy suggests that the dropout rate in the present study was an outlier rather than reflecting the usual dropout rate from CBT-T. Reasons for dropout included fear of weight gain, physical illness, not feeling ready to make changes, and other commitments (e.g., work, study, and family), Taken as a whole, our findings suggest that CBT-T can produce clinically significant reductions in

symptoms, but that future work is required to improve retention.

The results should be interpreted in the context of some limitations. First, we did not reach our planned sample size of 114 due to COVID-19 disruptions and data collection ending within the duration of the first author's PhD candidature. The study was, therefore, underpowered to detect a moderate between-group effect size. An additional limitation was the high dropout rate from CBT-T, further limiting power. Thus, replication in a more adequately powered study is required. The present study also did not measure homework compliance in CRT-Brief or whether participants in the brief contact intervention read and comprehended the psychoeducation. Future studies including such measures are, therefore, required to determine whether it was the specific content of the waitlist interventions or simply keeping in touch with clients over the waitlist period that improved retention in treatment.

In conclusion, the present study examined whether providing brief interventions to people on a waitlist for CBT-T improved treatment retention and outcomes. While outcomes were not influenced, the waitlist interventions tripled retention in treatment. Comparability of CRT-Brief and brief contact suggests that such interventions do not need to be resource-intensive or clinician-led to be effective, and that simply contacting clients on waitlists may improve retention in eating disorder treatment.

References

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998).
Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment*, *10*(2), 176. https://doi.org/10.1037/1040-3590.10.2.176

Bohn, K., Doll, H. A., Cooper, Z., O'Connor, M., Palmer, R. L., & Fairburn, C. G. (2008).
The measurement of impairment due to eating disorder psychopathology. *Behaviour Research and Therapy*, *46*(10), 1105-1110. https://doi.org/10.1016/j.brat.2008.06.012

Carter, G. L., Clover, K., Whyte, I. M., Dawson, A. H., & Este, C. D. (2005). Postcards from the EDge project: randomised controlled trial of an intervention using postcards to reduce repetition of hospital treated deliberate self poisoning. *British Medical Journal, 331*(7520), 805. https://doi.org/10.1136/bmj.38579.455266.E0

Carter, O., Pannekoek, L., Fursland, A., Allen, K. L., Lampard, A. M., & Byrne, S. M. (2012). Increased wait-list time predicts dropout from outpatient enhanced cognitive behaviour therapy (CBT-E) for eating disorders. *Behaviour Research and Therapy*, *50*(7-8), 487-492. https://doi.org/10.1016/j.brat.2012.03.003

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159.

Dingemans, A. E., Danner, U. N., Donker, J. M., Aardoom, J. J., van Meer, F., Tobias, K., van Elburg, A. A., & van Furth, E. F. (2014). The effectiveness of cognitive remediation therapy in patients with a severe or enduring eating disorder: A randomized controlled trial. *Psychotherapy and Psychosomatics*, 83, 29–36. https://doi.org/10.1159/000355240

Easter, A., & Tchanturia, K. (2011). Therapists' experiences of cognitive remediation therapy for anorexia nervosa: Implications for working with adolescents. *Journal of Child Clinical Psychiatry, 16*, 233–246. https://doi.org/10.1177/1359104511401185

Fairburn, C. G. & Beglin, S. J. (2008). Eating disorder examination questionnaire (EDE-Q

6.0). In Fairburn, C. G. (2008). *Cognitive behavior therapy and eating disorders* (pp. 309-314). New York, NY: Guilford Press.

Fursland, A., Erceg-Hurn, D. M., Byrne, S. M., & McEvoy, P. M. (2018). A single session assessment and psychoeducational intervention for eating disorders: Impact on treatment waitlists and eating disorder symptoms. *International Journal of Eating Disorders, 51*(12), 1373-1377. https://doi.org/10.1002/eat.22983

Giombini, L., Nesbitt, S., Waples, L., Finazzi, E., Easter, A., & Tchanturia, K. (2018). Young people's experience of individual cognitive remediation therapy (CRT) in an inpatient eating disorder service: A qualitative study. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, *23*(4), 499-505. https://doi.org/10.1007/s40519-017-0369-x

Giombini, L., Turton, R., Turco, M., Nesbitt, S., & Lask, B. (2017). The use of cognitive remediation therapy on a child adolescent eating disorder unit: Patients and therapist perspectives. *Clinical Child Psychology and Psychiatry*, *22*(2), 288-300. https://doi.org/10.1177/1359104516657859

Hagan, K. E., Christensen, K. A., & Forbush, K. T. (2020). A preliminary systematic review and meta-analysis of randomized-controlled trials of cognitive remediation therapy for anorexia nervosa. *Eating Behaviors*, 37, 101391. https://doi.org/10.1016/j.eatbeh.2020.101391

Hedeker, D., Gibbons, R., & Waternaux, C. (1999). Sample size estimation for longitudinal design with attrition: Comparing time-related contrasts between two groups. *Journal of Educational and Behavioral Statistics, 24*, 70-93. https://doi.org/10.3102/10769986024001070

Iacobucci, G. (2021). Eating disorders: Record number of young people wait for treatment as demand soars. *BMJ: British Medical Journal (Online)*, *374*. http://dx.doi.org/10.1136/bmj.n2058

Keegan, E., Tchanturia, K., & Wade, T. D. (2021). Central coherence and set-shifting between nonunderweight eating disorders and anorexia nervosa: A systematic review and meta-analysis. *International Journal of Eating Disorders*, *54*(3), 229-243. https://doi.org/10.1002/eat.23430

Keegan, E., Waller, G., & Wade, T. D. (2022). A systematic review and meta-analysis of a 10-session cognitive behavioural therapy for non-underweight eating disorders. *Clinical Psychologist*, *26*(3), 241-254. https://doi.org/10.1080/13284207.2022.2075257

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. *Frontiers in Psychology*, *4*, 863. https://doi.org/10.3389/fpsyg.2013.00863

Linardon, J., Hindle, A., & Brennan, L. (2018). Dropout from cognitive-behavioral therapy for eating disorders: A meta-analysis of randomized, controlled trials. *International Journal of Eating Disorders, 51*(5), 381-391. https://doi.org/10.1002/eat.22850

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*(3), 335-343. https://doi.org/10.1016/0005-7967(94)00075-U

Mac Neil, B. A., Nadkarni, P., Leung, P., Stubbs, L., O'Brien, C., Singh, M., & Leduc, S. (2016). Cognitive remediation therapy, eh! An exploratory study at a Canadian Adult Eating Disorders Clinic. *Canadian Journal of Counselling and Psychotherapy*, *50*(2), 180-191.

Mond, J. M., Hay, P. J., Rodgers, B., Owen, C., & Beumont, P. J. V. (2004). Validity of the Eating Disorder Examination Questionnaire (EDE-Q) in screening for eating disorders in community samples. *Behaviour Research and Therapy*, *42*(5), 551-567. https://doi.org/10.1016/S0005-7967(03)00161-X

National Eating Disorders Collaboration (2022). *COVID-19 Latest Information.* Retrieved
from: https://nedc.com.au/news/show/35/covid-19-information/

Nuffield Trust. (2022). *Children and young people with an eating disorder waiting times.*
Retrieved from: https://www.nuffieldtrust.org.uk/public/resource/children-and-young-people-with-an-eating-disorder-waiting-times

Paul, K. E., & van Ommeren, M. (2013). A primer on single session therapy and its potential
application in humanitarian situations. *Intervention, 11*(1), 8-23.

Raman, J., Hay, P., Tchanturia, K., & Smith, E. (2018). A randomised controlled trial of
manualized cognitive remediation therapy in adult obesity. *Appetite, 123*, 269–279.
https://doi.org/10.1016/j.appet.2017.12.023

Roberts, M. E. (2018). Feasibility of group Cognitive Remediation Therapy in an adult eating
disorder day program in New Zealand. *Eating Behaviors*, *30*, 1-4.
https://doi.org/10.1016/j.eatbeh.2018.04.004

Schleider, J. L., Mullarkey, M. C., Fox, K. R., Dobias, M. L., Shroff, A., Hart, E. A., &
Roulston, C. A. (2022). A randomized trial of online single-session interventions for
adolescent depression during COVID-19. *Nature human behaviour*, *6*(2), 258–268.
https://doi.org/10.1038/s41562-021-01235-0

Tay, J. L., & Li, Z. (2022). Brief contact interventions to reduce suicide among discharged
patients with mental health disorders – A meta-analysis of RCTs. *Suicide and Life-Threatening Behavior*. https://doi.org/10.1111/sltb.12903

Tchanturia, K. (Ed.). (2015). Cognitive Remediation Therapy (CRT) for Eating and Weight
Disorders. UK: Routledge Taylor and Francis Group.

Tchanturia, K., Davies, H., Reeder, C., & Wykes, T. (2010). *Cognitive Remediation Therapy
for Anorexia Nervosa*. King's College, London.
https://www.katetchanturia.com/clinical-work-packages--protocols

Wade, T. D. (2023). Developing the "single-session mindset" in eating disorder research:

Commentary on Schleider et al., 2023 "Realizing the untapped promise of single-session interventions for eating disorders". *International Journal of Eating Disorders*. 56(5). https://doi.org/10.1002/eat.23930

Wade, T. D., & Pellizzer, M. L. (2018). Assessment of eating disorders. In M. Selbom & J. Suhr (Eds.), *Cambridge handbook of clinical assessment and diagnosis.* Cambridge: Cambridge University Press.

Wade, T. D., Eshkevari, E., Guerin, C., Smith, J., & Hoskin, D. (2020). Examination of a day programme for eating disorders: impact on 3-month follow-up by psychiatric comorbidity. *Australasian Psychiatry, 28*(2), 148-152. https://doi.org/10.1177/1039856219871873

Waller, G., Turner, H. M., Tatham, M., Mountford, V. A., & Wade, T. D. (2019). *Brief cognitive behavioural therapy for non-underweight patients: CBT-T for eating disorders*. Routledge. https://doi.org/10.4324/9780367192280

Whitney, J., Easter, A., & Tchanturia, K. (2008). Service users' feedback on cognitive training in the treatment of anorexia nervosa: A qualitative study. *International Journal of Eating Disorders, 41*, 542–550. https://doi.org/10.1002/eat.20536

Zhou, Y., Pennesi, J. L., & Wade, T. D. (2020). Online imagery rescripting among young women at risk of developing an eating disorder: A randomized controlled trial. *International Journal of Eating Disorders, 53*(12), 1906-1917. https://doi.org/10.1002/eat.23370

Zwickert, K., Rieger, E., Swinbourne, J., Manns, C., McAulay, C., Gibson, A. A., ... & Caterson, I. D. (2016). High or low intensity text-messaging combined with group treatment equally promote weight loss maintenance in obese adults. *Obesity Research & Clinical Practice, 10*(6), 680-691. https://doi.org/10.1016/j.orcp.2016.01.001
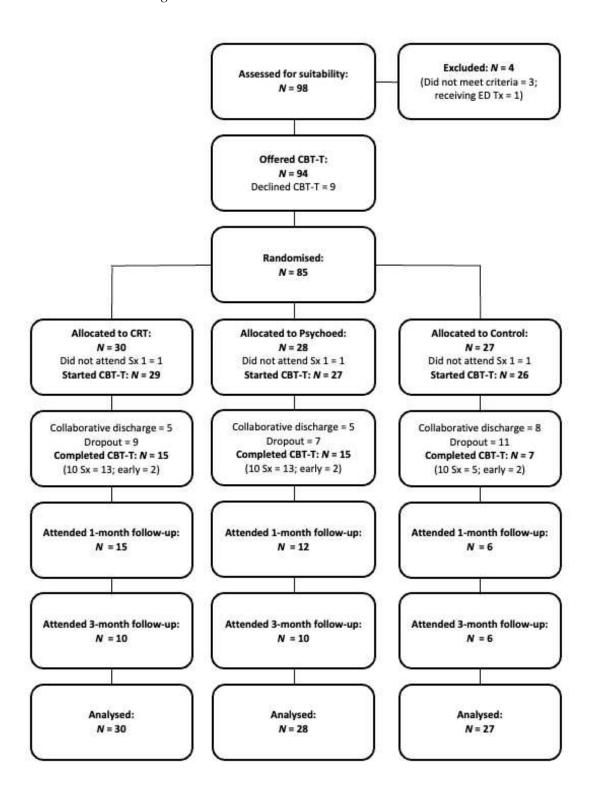
Figure 1

CONSORT Flow Diagram

Table 1

Baseline Demographic and Clinical Characteristics

Characteristic Mean (*SD*)	Whole sample (*n* = 85)	CRT-Brief (*n* = 30)	Brief contact (*n* = 28)	Control (*n* = 27)	F (df), p
Age (years)	24.57 (8.52)	22.95 (6.83)	23.81 (7.34)	27.13 (10.14)	1.91 (2, 84), .15
Sex (Female)	81 (95.3)	28 (93.3)	26 (92.9)	27 (100)	3.92 (4), .42
Ethnicity (Caucasian)	72 (84.7)	26 (86.7)	22 (78.6)	24 (88.9)	4.95 (8), .76
Duration (years)	8.52 (8.67)	7.82 (8.04)	7.24 (6.57)	10.62 (10.88)	1.15 (2, 79), .32
Global EDE-Q	4.31 (1.11)	4.24 (1.15)	4.53 (0.93)	4.17 (1.23)	0.84 (2, 82), .43
Objective binge episodes	7.99 (9.36)	10.23 (9.44)	6.37 (8.94)	7.11 (9.53)	1.24 (2, 81), .25
Vomiting episodes	7.88 (11.99)	9.80 (13.83)	7.43 (11.39)	6.22 (10.43)	0.66 (2, 82), .52
Laxatives	2.11 (6.39)	2.17 (5.50)	2.07 (6.82)	2.07 (7.08)	0.00 (2, 82), .99
Driven exercise	5.71 (7.77)	5.83 (7.29)	5.79 (8.25)	5.52 (8.05)	0.01 (2, 81), .99
BMI	26.42 (8.28)	25.46 (7.72)	27.99 (9.46)	25.88 (7.60)	0.76 (2, 82), .47
Global CIA	33.61 (7.51)	33.57 (7.85)	34.79 (7.63)	32.44 (7.07)	0.66 (2, 82), .52
DASS-21 total	69.62 (26.08)	70.33 (23.59)	72.43 (26.16)	65.93 (29.02)	0.44 (2, 82), .65
Diagnosis					8.82 (10), .55
AN	4 (4.7)	1 (3.3)	1 (3.6)	2 (7.4)	
BN	34 (40)	17 (56.7)	9 (32.1)	8 (29.6)	
OSFED	43 (50.59)	12 (40)	15 (53.57)	16 (59.26)	
UFED	4 (4.7)	0 (0)	3 (10.7)	1 (3.7)	
Self-harm	12 (14.1)	4 (13.3)	4 (14.3)	4 (14.8)	0.03 (2), .99
Suicidality	24 (28.2)	7 (23.3)	6 (21.4)	11 (40.7)	3.08 (2), .21

Notes. AN = anorexia nervosa; BN = bulimia nervosa; OSFED = other specified feeding or eating disorder; UFED = unspecified feeding or eating disorder. Differences between waitlist conditions were tested for using one-way ANOVAs for continuous variables and Chi-square analyses for categorical variables. For categorical variables, descriptive statistics are presented as *n* (%) and inferential statistics as X^2 (df), *p*.

Table 2

Missing Data Analyses

Baseline variable	Complete Data *M* (*SD*)	Missing Data *M* (*SD*)	OR (95% CI)
Age	24.50 (5.18)	27.13 (9.34)	1.04 (0.92, 1.19)
BMI	25.20 (7.98)	26.69 (8.37)	1.03 (0.95, 1.12)
Duration (years)	6.96 (6.90)	8.84 (9.00)	1.03 (0.95, 1.12)
Global EDE-Q	4.32 (0.96)	4.31 (1.14)	0.99 (0.59, 1.64)
Objective binges	4.47 (5.90)	8.75 (9.82)	1.07 (0.98, 1.16)
Vomits	4.40 (10.43)	8.63 (12.23)	1.04 (0.98, 1.11)
Laxative misuse	0.60 (1.60)	2.43 (6.98)	1.09 (0.90, 1.33)
Driven exercise	4.27 (5.23)	6.03 (8.22)	1.04 (0.95, 1.13)
Global CIA	34.33 (6.97)	33.46 (7.66)	0.98 (0.91, 1.06)
DASS-21 total	64.27 (18.17)	70.77 (27.44)	1.01 (0.99, 1.03)
Days on waitlist	54.00 (38.10)	62.33 (62.17)	1.00 (0.99, 1.02)

Table 3

Outcomes from LMM Analyses

Outcome	Main effects F(df) p		Interaction F(df) p
	Time	Waitlist condition	Time x waitlist condition
Completer (*n* = 37)			
EDE-Q	22.38 (4, 23.88) <.001	1.94 (2, 28.46) .83	0.19 (8, 23.64) .99
CIA	20.84 (4, 26.02) <.001	1.64 (2, 30.45) .21	0.39 (8, 25.92) .92
DASS	7.38 (4, 25.85) <.001	1.94 (2, 30.29) .16	1.78 (8, 25.54) .13
Intent-to-treat (*n* = 85)			
EDE-Q	34.09 (4, 29.52) <.001	0.25 (2, 48.18) .78	0.39 (8, 28.77) .92
CIA	28.04 (4, 32.87) <.001	1.82 (2, 46.50) .17	0.81 (8, 32.97) .60
DASS	11.05 (4, 27.59) <.001	1.89 (2, 47.03) .16	1.13 (8, 28.15) .37

Table 4

Change Over Time in Treatment Outcomes and Within-Group Effect Sizes

Outcome	Covariates		Assessment Point M (SE)					Cohen's d (95% CI)		
	Baseline value	Days on waitlist	Pre-Tx	Mid-Tx	Post-Tx	FU1	FU3	Pre- to post-Tx	Pre-Tx to FU1	Pre-Tx to FU3
Completer (n = 37)										
EDE-Q	4.14	47.94	3.66 (0.14)	2.21 (0.19)	1.42 (0.24)	1.49 (0.24)	1.62 (0.36)	-1.52 (-2.12, -0.92)	-1.62 (-2.23, -1.02)	-0.66 (-1.20, -0.13)
CIA	33.65	47.94	28.10 (1.50)	19.95 (1.78)	11.23 (1.94)	12.45 (2.26)	9.87 (3.10)	-0.94 (-1.48, -0.40)	-0.85 (-1.36, -0.34)	-0.64 (-1.15, -0.13)
DASS	64.60	47.94	59.71 (2.30)	42.75 (3.36)	32.48 (4.83)	33.90 (5.57)	27.69 (6.88)	-1.07 (-1.62, -0.52)	-0.61 (-1.12, -0.09)	-0.57 (-1.11, -0.04)
Intent-to-treat (n = 85)										
EDE-Q	4.25	54.67	3.97 (0.07)	2.50 (0.16)	1.75 (0.21)	2.79 (0.21)	1.94 (0.32)	-1.15 (-1.60, -0.70)	-0.66 (-1.02, -0.31)	-0.51 (-0.87, -0.12)
CIA	33.58	54.67	31.11 (0.82)	21.24 (1.36)	13.10 (1.75)	13.67 (2.14)	13.52 (3.00)	-1.17 (-1.56, -0.79)	-0.72 (-1.08, -0.36)	-0.66 (-1.04, -0.28)
DASS	67.29	54.67	65.33 (1.62)	48.66 (2.69)	39.00 (4.38)	39.41 (5.09)	36.24 (6.75)	-0.75 (-1.10, -0.39)	-0.45 (-0.78, -0.11)	-0.35 (-0.69, -0.02)

Notes. Days on waitlist = days on initial waitlist prior to the first appointment; Tx = treatment; FU1 = 1-month follow-up; FU3 = 3-month follow-up. As there were no significant interactions between time and group, descriptive statistics are presented for the whole sample.

Supplementary Figure 1

Psychoeducation Provided in the Brief Contact Intervention

Eating Disorders & Neurobiology

Science and Eating Disorders

Eating disorders are severe mental illnesses with the potential for serious medical consequences. Our current knowledge, thanks to a growing body of scientific evidence, is helping us to better understand the neurobiology of these disorders: how they develop and how we can best support people to recover.

People with eating disorders and their loved ones may wonder how the disorder developed or blame themselves. Science can help dispel harmful myths and improve our understanding of the complexity of eating disorders. Through research we have come to understand that there is no single cause of eating disorders—for example, you don't have to have other psychological problems or trauma. However, it is common for eating disorders to develop after a period of caloric restriction or inadequate nutritional intake (intentionally or through stress/illness).

The Role of Genetics in Eating Disorders

Mood, personality, anxiety and impulse regulation, as well as appetite, body weight and metabolism have a strong genetic basis (i.e., are heritable). On average, about half the risk of developing an eating disorder comes from genetic influence, but this risk differs from person to person. People with higher heritability need only a slightly toxic environment for an eating disorder to manifest itself, while in a protected environment, may not go on to develop an eating disorder.

Consider an orchid and a dandelion - an orchid needs an optimal environment to flourish, whereas a dandelion survives in spite of environmental challenges. Similarly, people with a genetic vulnerability to developing an eating disorders can thrive in positive environments but are more vulnerable to harmful environments, such as those that might trigger weight loss or stress.

"Epigenetics" is the study of biological mechanisms that cause our underlying genetic predispositions to be "switched on" or "switched off". In certain environments, especially where there is a lot of stress and/or inadequate nutrition, the risk is higher — the genes might get "switched on". As international eating disorders expert Professor Cynthia Bulik explains: "Genes load the gun, environment pulls the trigger".

The Gene-Environment Interaction

Western culture places a high value on thinness and muscularity and many people engage in dieting or excessive exercise to become thinner or more muscular. For some, these behaviours are only minimally harmful, For those who carry the genetic risk, these environmental influences can trigger their genes to "switch on" and result in an eating disorder. In another scenario, two individuals might get ill with a stomach bug resulting in modest weight loss. One person may naturally regain the lost weight with no long-term consequences, while in the other, the development of an eating disorder may be triggered. Thus, inadequate nutrition serves as the catalyst for the expression of an underlying genetic vulnerability.

How Eating Disorders Affect the Brain

Some people worry that eating disorders are caused by a chemical imbalance in the brain, but there is no evidence for this. However, research has shown that brain activity can be affected by even modest dieting, and a young person's developing brain is particularly vulnerable. When a person is malnourished, their brain is not adequately fueled, and this may mean they struggle to make decisions, solve problems and regulate their emotions. (See our handout on *Starvation Syndrome*). They may also experience perceptual disturbances in the way they see themselves; for example, looking in the mirror and see themselves as much larger than they actually are. Also, although eating disorders aren't *caused* by a chemical imbalance in the brain, restricted eating, malnourishment, and excessive weight loss can result in problematic changes to our brain chemistry. For example, the brain produces less serotonin, which results in increased symptoms of depression.

What Does All This Mean For Recovery?

The good news is that the effects of starvation can be reversed with adequate re-nourishment. Brain-imaging studies show that brain activity in people with eating disorders can change. The brain, like a muscle, is constantly changing and adapting as a result of our environment and how it is used, or "exercised". It can be "exercised" through learning and practicing new ways of thinking and interacting with others. With practice, people with improved eating disorders. show brain activity that looks more like that of people who had never had an eating disorder.

However the brain needs to be adequately nourished in order to make these challenging changes. A starved brain won't function optimally so the first priority in treatment is nutritional rehabilitation. This can be challenging, as increasing food intake can be scary for someone with an eating disorder. Also the brain tends to "lag behind" the body in terms of recovery and it can take time for people recovering from an eating disorder for their brain to "catch up", when they regain their capacity for abstract reasoning and rational thinking.

A particular challenge we face is that our society remains a potentially triggering environment, with images of unachievable bodies and inaccurate and conflicting messages about diets and exercise ever present. Therapy not only needs to address the person's genetic vulnerabilities, but also to help them develop skills to manage environmental influences (e.g., managing stress and avoiding dieting).

Recovery from an eating disorder *is* possible. With adequate re-nourishment and learning, the brain and body can return to healthy functioning. Adequate nutritional intake and supportive environments will promote thriving across all life domains.

C Centre for
Clinical Interventions
•Psychotherapy•Research•Training