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Cognitive Remediation Therapy, Eh! An Exploratory Study at a Canadian Adult Eating Disorders Clinic
Thérapie de remédiation cognitive, eh ! Une étude exploratoire à une clinique pour adultes canadiens ayant des troubles de l'alimentation

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ABSTRACT

Cognitive remediation therapy (CRT) is a new pretreatment that is not routinely offered as a part of adult eating disorder programming across Canada. This pilot study examined levels of cognitive flexibility, patient satisfaction, life satisfaction, and psychological symptoms in a group of Canadian adults participating in an open ongoing weekly CRT group. Participants were 38 adults who met *DSM-5* criteria for an eating disorder. Pre- and postgroup measures of patient satisfaction, psychological flexibility, satisfaction with life, and low mood and anxiety symptoms were completed. Overall, participants were satisfied with the CRT group and experienced significant changes in their levels of psychological flexibility and satisfaction with life postgroup. Preliminary results provide support for further investigation of CRT as a novel and palatable prepsychological group treatment approach for Canadian adults struggling with an eating disorder that can be easily integrated into preexisting evidence-based programming.

RÉSUMÉ

La thérapie de remédiation cognitive (*Cognitive remediation therapy*, CRT) est un nouveau traitement préalable qui n'est pas offert systématiquement dans le cadre de la programmation pour les adultes ayant des troubles de l'alimentation partout au Canada. Cette étude pilote a examiné les niveaux de flexibilité cognitive, satisfaction des patients, et satisfaction à l'égard de la vie et les symptômes psychologiques chez un groupe d'adultes canadiens participant à un groupe CRT ouvert hebdomadaire en cours. Les participants étaient 38 adultes qui répondaient aux critères *DSM-5* pour un trouble de l'alimentation. Des mesures pré- et post-groupe de satisfaction des patients, flexibilité psychologique, satisfaction à l'égard de la vie et de symptômes de dépression et d'anxiété ont été recueil-

lies. Dans l'ensemble, les participants étaient satisfaits du groupe CRT et ont vécu des changements significatifs dans leurs niveaux post-groupe de flexibilité psychologique et de satisfaction à l'égard de la vie. Les résultats préliminaires soutiennent l'examen plus poussé de la CRT comme traitement de groupe pré-psychologique innovateur et acceptable pour les adultes canadiens aux prises avec un trouble de l'alimentation, une approche qui peut être intégrée facilement dans la programmation préexistante fondée sur la preuve.

Eating disorders are serious illnesses that have psychological and physical consequences, and are difficult to treat (Klump, Bulik, Kaye, Treasure, & Tyson, 2009; Lock & Fitzpatrick, 2009). Symptoms of the illness can be both socially and occupationally debilitating, and can affect patients' overall satisfaction with life (Agras, 2001). Engagement in the recommended evidence-based treatment is a high priority within the field of adult eating disorders. Despite the frequent use of group therapy in the treatment of adult eating disorders, a longstanding issue has been patient engagement and dropout. Dropout rates are high for individual and group therapy for eating disorders, ranging between 20% and 73% for inpatient and outpatient care (Fassino, Pierò, Tomba, & Abbate-Daga, 2009). A patient's decision to prematurely leave recommended treatment has been linked with feeling dissatisfied with the therapy received and the type of treatment being offered (Bados, Balaguer, & Saldana, 2007; Wallier et al., 2009). Although research is beginning to emerge on patient satisfaction in the treatment of eating disorders (Clinton, Björck, Sohlberg, & Norring, 2004; Krautter & Lock, 2004; Rosenvinge & Klusmeier, 2000), few studies have examined Canadian adults' satisfaction with group therapy formats or novel group-based approaches aimed at better engaging patients in the early stages of treatment of an eating disorder.

Cognitive remediation therapy (CRT) represents a novel prepsychological treatment for eating disorders that can be delivered in a group format, is well liked by patients, and addresses an important gap between initial patient rapport and later engagement in evidence-based treatment (Tchanturia, Davies, & Campbell, 2007; Tchanturia, Lloyd, & Lang, 2013). CRT is well established for use with individuals with schizophrenia to help address weaknesses in the areas of attention, working memory, rigidity, and set-shifting (Harvey & Bowie, 2003; Wykes & Gaag, 2001; Wykes et al., 2007). It has also been adapted for addressing similar concerns in attention-deficit/hyperactivity disorder, learning disabilities, and obsessive compulsive disorder (Buhlmann, Etcoff, & Wilhelm, 2006; Park et al., 2006; Stevenson, Whitmont, Bornholt, Livesey, & Stevenson, 2002). CRT was initially examined as an individual prepsychological intervention for adult inpatients struggling with anorexia nervosa and was later adapted for use with children, adolescents, and adults in outpatient settings across eating disorder diagnoses (Abbate-Daga, Buzzichelli, Marzola, Amianto, & Fassino, 2012; Tchanturia, Campbell, Morris, & Treasure, 2005). More recently, research has found evidence that CRT may represent a feasible and accepted prepsychological outpatient treatment for eating disorders (Brockmeyer et al., 2013; Lock et al., 2013). However, further work is needed, given its preliminary evidence of improved cognitive flexibility and patient

acceptability, as well as the few existing studies examining its use with adults in group therapy formats (Genders & Tchanturia, 2010; Tchanturia et al., 2013).

Neuropsychological research has revealed trait-based thinking patterns in patients with eating disorders including rigid thinking, problems with set-shifting, and difficulty with zooming out for a "big picture" perspective (Lang, Stahl, Espie, Treasure, & Tchanturia, 2014; Lopez, Tchanturia, Stahl, & Treasure, 2008; Roberts, Tchanturia, Stahl, Southgate, & Treasure, 2007; Roberts, Tchanturia, & Treasure, 2010; Tchanturia et al., 2005; Tchanturia et al., 2011). On the behavioural level, this translates into difficulty with broader perspective taking, switching between rules for everyday tasks, shifting out of negative mood states associated with the eating disorder, and excessive detail focus on areas that would not otherwise be a focal point if the eating disorder were not present (Roberts et al., 2010; Tchanturia et al., 2012; Tchanturia et al., 2011). From a theoretical perspective, difficulty with set-shifting has recently been argued to represent a common underlying neurocognitive deficit for individuals struggling with an eating disorder, based on neuropsychological research showing they perform poorer on tasks tapping this area of executive functioning that may maintain engagement in eating disorder symptoms (Schmidt & Treasure, 2006; Steinglass & Walsh, 2006; Steinglass, Walsh, & Stern, 2006). Trait-based thinking styles may also act as a barrier to patient satisfaction and interfere with engagement in later evidence-based treatments such as cognitive behaviour therapy for eating disorders (Bulik, Sullivan, Joyce, Carter, & McIntosh, 1998; Tchanturia et al., 2005; Tchanturia et al., 2012). Therefore, treatments targeting these proposed neurocognitive weaknesses may help with patient engagement in later evidence-based care.

In CRT, patients learn how to reflect on their thinking process with the goal of increasing cognitive flexibility (i.e., increased awareness that alternatives are available to solve a problem, willingness to adapt to changing situations; Martin & Rubin, 1995). It was initially intended as a pretherapy intervention aimed at promoting the establishment of rapport, given that it is easily administered and has been initially well received by both patients and therapists (Pretorius et al., 2012; Whitney, Easter, & Tchanturia, 2008). Individuals learn how to reflect on the process rather than the content of their thoughts as part of CRT (Wood, Al-Khairulla, & Lask, 2011). Treatment sessions comprise fun and engaging tasks that elicit discussion around trait-based thinking processes and how they relate broadly to tasks in everyday life and to the eating disorder. Initial work using CRT with adults struggling with anorexia nervosa shows that participation in this treatment results in better cognitive flexibility through improved set-shifting, perspective taking, and "bigger picture" thinking (Davies & Tchanturia, 2005; Tchanturia et al., 2007; Tchanturia et al., 2008; Tchanturia & Hambrook, 2010). Similar results have been found with adolescents, who also describe the treatment as enjoyable (Pretorius & Tchanturia, 2007). Preliminary research also indicates that patients report CRT is a refreshing treatment modality because it is neutral in eating disorder content (e.g., no discussion of nutrition, weight, or shape) and emotional content (e.g., no discussion of negative emotional experiences or

feelings associated with the illness), making it less overwhelming from a patient perspective during the early phases of engagement in treatment (Tchanturia et al., 2007). Initial therapist reports note that patients make achievements and progress in CRT through gaining insight into areas of cognitive and behavioural weakness, and adapting new skills from CRT into their everyday life (Whitney et al., 2008).

PRESENT STUDY

CRT is a relatively new pretreatment for adult eating disorders that is not routinely offered as part of adult eating disorder treatment programs in Canada. Therefore, exploratory work examining CRT administration in an ongoing open group format with Canadian adults is warranted. The purpose of this pilot study was to examine patient satisfaction and preliminary outcomes from a CRT group offered through a hospital-based outpatient adult eating disorders clinic.

METHOD

Participants

Participants in this study were 38 Caucasian adults (1 male, 37 females; mean age = 26.2; range = 18–55 years) who met *Diagnostic and Statistical Manual of Mental Disorders, 5th edition* (*DSM-5*; American Psychiatric Association, 2013) criteria for an eating disorder and consented to participate in the study. Individuals who did not consent to participate in the present study were still able to participate in the CRT group as part of their care. Diagnoses were provided at intake assessment by psychiatrists specializing in eating disorders through a clinical interview. Overall, 24% of the sample met *DSM-5* criteria for anorexia nervosa, 6% for bulimia nervosa, and 70% for other specified feeding and eating disorder. The majority of participants (68.4%) had a comorbid mood or anxiety disorder. CRT was provided as 16 ongoing open weekly group therapy sessions over three distinct cycles between 2013 and 2015. The mean number of CRT group sessions attended by participants was 4.4 (range = 1–16 sessions). Approximately 79% of participants who attended CRT group attended later evidence-based group programming in the clinic, while 21% dropped out of treatment programming. This study has received ethics clearance through the Queens University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board as part of the clinic's ongoing program evaluation research.

Procedure

CRT was provided in an ongoing 60-minute open group therapy format over 16 sessions using the *Cognitive Remediation Programme for Anorexia Nervosa: A Manual for Practitioners* (Tchanturia, Davies, Reeder, & Wykes, 2010). Selected CRT activities were also used from *Cognitive Remediation Therapy (CRT) for Children and Adolescents with Anorexia Nervosa: The CRT Resource Pack* (Lind-

vall, Owen, & Lask, 2011). Group therapists were registered clinicians with seven or more years of treatment experience in the field, and who had attended formal workshop training in the theoretical background and administration of CRT. To ensure treatment fidelity, group therapists met for individual consultation outside of sessions. Each session began with an overview of the treatment model and a discussion of trait-based thinking styles specific to eating disorders (e.g., rigidity and poor set-shifting, hyper detail focus). Next, participants engaged in the CRT task, which was followed by a group discussion using prompting questions taken from the protocol including, "Did you enjoy the task? What was hard and easy about the task? Were you aware of your thinking styles during the task? Can you think of some examples in your life where this thinking style occurs? How does this thinking pattern relate to the eating disorder?" Sessions finished with assignment of homework in which participants were asked to practice a task at home (e.g., take a different route to work or class, listen to different music, brush their hair or teeth with their nondominant hand). Participants completed psychometric measures at intake assessment, and postgroup measures were administered to those participants who had completed eight or more of the CRT group treatment sessions.

Physical Assessment

Weight in kilograms (kg) was measured by a registered dietitian at intake assessment using a calibrated digital scale. Participants were weighed in their clothing with shoes off.

Measures

Psychological flexibility. Participants completed the Difficulty in Flexibility in Everyday Life (items measuring rigidity and set-shifting) and the Impact of Attention to Detail on Everyday Life (items measuring detail focus and perspective taking) self-report scales provided with the treatment manual (Harrison, Sullivan, Tchanturia, & Treasure, 2010; Tchanturia et al., 2010). Participants were asked to score each item on a scale of 1 to 10 (1 = *not at all*, 10 = *very much*). Higher scores indicate a higher level of the variable. Internal consistencies for the scales were .76 and .88, respectively.

Life satisfaction. Satisfaction with life was measured using the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Scores and their descriptors include the following: 30–35 *highly satisfied*, 25–29 *high score*, 20–24 *average*, 15–19 *slightly below average*, 10–14 *dissatisfied*, and 5–9 *extremely dissatisfied* (Diener et al., 1985). Diener and colleagues (1985) found a Cronbach's alpha of .87 for the SWLS.

Psychological symptoms. Participants completed the Beck Depression Inventory, 2nd edition (BDI-II), which is a 21-item standardized measure used to assess severity of depressive symptoms (Beck, Steer, & Brown, 1996). Each item is rated on a 4-point scale (range 0–3). An overall score for depression ranging between 0 and 63 is provided. Scores and their descriptors include the follow-

ing: 0–13 *minimal*, 14–19 *mild*, 20–28 *moderate*, and 29–63 *severe* (Muller & Erford, 2012). Reliability for the BDI-II with outpatients is .92 (Beck et al., 1996). Participants also completed the Beck Anxiety Inventory (BAI), which is a standardized measure of anxiety symptoms (Beck & Steer, 1990). Each item is rated on a 4-point scale (range 0–3). An overall score for anxiety ranging between 0 and 63 is provided. Scores and their descriptors include the following: 0–9 *minimal*, 10–16 *mild*, 17–29 *moderate*, and 30–63 *severe*. The BAI has well-documented high internal reliability, Cronbach's alpha = .94 (Fydrich, Dowdall, & Chambless, 1992).

Patient satisfaction with CRT group. Participants rated their overall satisfaction with CRT on a 5-point Likert scale (1 = *not satisfied*; 5 = *very satisfied*), reported whether the group was "helpful" and if the group atmosphere was "supportive," and then had the option of recording a qualitative statement about what they liked or disliked about the CRT group.

Data Analysis

The data were analyzed using SPSS Version (16.0). Means and standard deviations were calculated for descriptive statistics, as well as pre- and postgroup mean difference scores for the main study variables. Paired samples *t*-tests were used to test for significant differences between pre- and postgroup treatment scores on the main study variables.

RESULTS

There was no significant difference between participants' average weight at intake, which was M = 61.7 kg, SD = 21.7 (range 39.3–129.2 kg), and their postgroup weight, which was M = 62.7 kg, SD = 21.7 (range 39.0–129.2 kg) (see Table 1). There was a significant difference in participants' Difficulty in Flexibility in Everyday Life scores from pre- to postgroup treatment, $t(8) = 4.6$, $p < .01$. As predicted, participants decreased in the Difficulty in Flexibility in Everyday Life measures, with M = 7.1, SD = 1.1 at pregroup and M = 5.0, SD = 1.5 at postgroup. A significant difference was also found in participants' Detail Focus in Everyday Life scores from pre- to postgroup treatment, $t(8) = 3.8$, $p < .01$, such that participants' scores decreased in their Detail Focus in Everyday Life scale from pregroup M = 7.2, SD = 1.4 to postgroup M = 4.9, SD = 2.1 (Table 1). There was a significant difference for participants' overall satisfaction with life, $t(9) = -2.9$, $p < .05$. Participants scored M = 11.1, SD = 4.2 at pregroup and M = 16.5, SD = 6.2 at postgroup. There was no significant difference between depressive symptoms or anxiety symptoms from pre- to post-CRT group (Table 1).

Participants rated their overall satisfaction with the CRT group as M = 4.36, SD = 0.76 or *somewhat satisfied* to *very satisfied*. All participants endorsed that the CRT group was helpful and that the group atmosphere was supportive. Participants' qualitative statements about the CRT group are listed in Table 2.

Table 1
Pre- and Postgroup Mean Scores, Standard Deviations, and Tests of Significance for the Main Study Variables

	Pregroup	Postgroup	Change score	
	M(*SD*)	*M*(*SD*)	*M*	*t*
Weight (kg)	61.7(21.7)	62.7(21.7)	-1.0	-1.2
Difficulty in Flexibility in Every Day Life	7.1(1.1)	5.0(1.5)	2.1	4.65**
Impact of Attention to Detail in Daily Life	7.2(1.4)	4.9(2.1)	2.3	3.81**
Satisfaction with Life	11.1(4.2)	16.5(6.2)	-5.4	-2.9*
Low mood symptoms	29.3 (17.8)	17.6(10.3)	11.7	1.6
Anxiety symptoms	24.2 (15.1)	14.1(8.7)	10.1	2.0

*$p < .05$, **$p < .01$

Table 2
Participant's Qualitative Statements About What They Liked or Disliked About the CRT Group

What I liked about the CRT group	What I disliked about the CRT group
I really enjoyed CRT and the more I practiced it in between, the more benefit I got.	I'd like it to be more related to the eating disorder as well as real life at the end of groups.
CRT challenges me to think about how rigid my thinking is.	
I learned not to do the same thing over and over again and expect a different result.	
CRT is helpful. My friends have noticed a huge difference in my attitude and thinking style. I've already made progress in my flexibility in eating and exercise.	

DISCUSSION

This was the first pilot study to examine patient satisfaction and preliminary outcomes for the use of CRT in an ongoing open group therapy format with a sample of Canadian adults who met *DSM-5* criteria for an eating disorder. Similar to previous work conducted in the United Kingdom, results showed that the group was well liked and viewed as being helpful by group participants (Tchanturia et al., 2007; Tchanturia & Lock, 2011). A large proportion (79%) of participants in the CRT group also went on to later attend evidence-based care in the clinic. Given that patient engagement is a high priority in the treatment of adult eating disorders, having patients participate in prepsychological interventions that they view as being satisfying and helpful is important. CRT may represent an innovative approach for engaging patients early in their treatment and recovery from an eating disorder, and may have the potential to increase the likelihood that they will engage in later evidence-based interventions.

Preliminary results showed that participants experienced self-reported increases in psychological flexibility postgroup treatment (e.g., participants experienced a decrease in difficulty with set-shifting and being overly detail-focused postgroup). These results are consistent with other work that has established moderate to large effect sizes for changes in set-shifting in patients with eating disorders following engagement in CRT (Davies & Tchanturia, 2005; Tchanturia et al., 2007; Tchanturia et al., 2008; Tchanturia et al., 2010; Tchanturia & Hambrook, 2010). Results from this study also replicate the finding of positive feedback from patients themselves on changes in their cognitive flexibility and positive perceptions of this prepsychological intervention in a sample of Canadian adults struggling with an eating disorder (Davies & Tchanturia, 2005; Tchanturia et al., 2007; Tchanturia et al., 2008; Tchanturia et al., 2010; Tchanturia & Hambrook, 2010).

Participants' weights remained constant over the course of their involvement in CRT, and they experienced an overall increase satisfaction with life postgroup. These findings are encouraging, given that no weight decline was noted and that CRT is a relatively easy manualized treatment to integrate in group format into pre-existing programs. Given that eating disorders are serious illnesses that come at an overall cost to an individual's physical, social, occupational, and psychological functioning (Agras, 2001; Lock & Fitzpatrick, 2009), pilot results showing that participants improved in their overall life satisfaction postgroup are encouraging. Results from this study also highlight the use of CRT with individuals with a diagnosis of bulimia nervosa and other specified feeding and eating disorder. This was consistent with work indicating that individuals with diagnoses other than just anorexia nervosa benefit from CRT and view it as a helpful approach (Tchanturia, Lounes, & Holttum, 2014). However, more work is needed to evaluate the presence of a unique cognitive signature for individuals with bulimia nervosa and other specified feeding and eating disorder .

Although results from this pilot work add to a growing body of literature on the application of CRT with patients with eating disorders, there were some limitations to the current study. A main limitation of this exploratory work was the lack of a comparison group, which makes it difficult to draw any firm conclusions about the changes noted from pre-to postgroup treatment being the result of engagement in CRT. Also, the small sample size, cross-sectional design, and preliminary nature of the study make it difficult to generalize the results. Future work would benefit from replication with a larger sample size, experimental design with control group, use of specific eating disorder symptom measures (e.g., Eating Disorders Inventory - 3, Eating Disorders Examination Questionnaire), and other additional outcome measures (e.g., Wisconsin Card Sorting Task, selected subtests of the Delis Kaplan Executive Functioning System) in a sample of Canadian adults.

CONCLUSIONS

Our preliminary results provide support for further investigation of the application of CRT with Canadian adults struggling with an eating disorder. Partici-

pants' engagement in the CRT group resulted in improved self-reported ability to shift set (e.g., switch between rules for everyday tasks, shift out of negative mood states), adopt "bigger picture" thinking in their approach to daily tasks, and feel increased satisfaction with life. Results are consistent with arguments for proposed common underlying neurocognitive deficits for individuals struggling with eating disorders and the importance of treatment aimed at addressing these weaknesses (Schmidt & Treasure, 2006; Steinglass & Walsh, 2006; Steinglass et al., 2006). Although these are pilot results, CRT provided in an ongoing open group format may represent a novel and engaging approach for Canadian adults struggling with eating disorders that is both palatable to patients and represents a viable option for integration as a pretherapy or waitlist control into a clinic's pre-existing evidence-based programming.

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