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## Therapeutic Factors Affecting the Cognitive Behavioral Treatment of Bulimia Nervosa via Telemedicine versus Face-to-Face Delivery

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### Abstract

**Objective**—Recently, Mitchell and colleagues (2008) conducted a randomized controlled trial of an empirically supported treatment for bulimia nervosa (BN) delivered face-to-face (FTF-CBT) or via telemedicine (TV-CBT). Results suggested that the TV-CBT and FTF-CBT were generally equivalent in effectiveness. The objective of the current study was to examine ratings of therapeutic alliance factors in TV-CBT and FTF-CBT.

**Methods**—Data obtained from 116 adults who met criteria for BN or eating disorder—not otherwise specified (EDNOS) with binge eating or purging weekly and 6 doctoral-level psychologists who delivered the therapy were used in the analyses.

**Results**—Therapists generally endorsed greater differences between the treatment delivery methods than patients. Patients tended to make significantly higher ratings of therapeutic factors than therapists.

**Discussion**—TV-CBT is an acceptable method for the delivery of BN treatment compared to FTF-CBT, and TV-CBT is more easily accepted as a treatment delivery method by patients than therapists.

The treatment of psychiatric disorders with empirically supported treatments is an important advancement in mental health service delivery. As new treatments become validated, those in mental health are faced with the challenge of disseminating these new treatments. One particularly challenging issue in the dissemination of empirically supported treatments is providing treatment to people in areas with limited access to mental health professionals trained in the delivery of empirically supported treatments. In some cases, advancements in telecommunications have allowed for the availability of mental health services at remote

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locations where access was previously limited. The use of telecommunications technology to provide medical services and exchange medical information is referred to as telemedicine [1].

The delivery of mental health services via telemedicine has been described for a number of psychiatric disorders and problems. The use of telemedicine in psychiatry has been observed to have efficacy in diagnostic and management decisions [2]. Delivery of mental health services through telemedicine has been shown to be equivalent to traditional, in-person service delivery in the treatment of both children and adults with depression [3-4]; however, these studies did not use manual-based empirically supported treatments. In regard to telemedicine, relatively little information is available about the delivery of empirically supported treatments.

Recently, Mitchell and colleagues [5] demonstrated that delivering a manual-based empirically supported treatment for bulimia nervosa (BN) via telemedicine was generally as successful as delivering the treatment in person. In this study, 128 participants with either BN or eating disorder—not otherwise specified (EDNOS) who reported at least one binge eating or purging episode per week were randomized to 16 weeks of cognitive behavioral therapy (CBT) for BN delivered either face-to-face (FTF-CBT) or via telemedicine (TV-CBT). Results of this study indicated that FTF-CBT and TV-CBT were roughly comparable in regard to the primary outcome measures: binge eating and purging frequency at the end of treatment and at 3 month and 12 month follow-up points [5]. The few observed differences between the FTF-CBT and TV-CBT conditions were generally of limited clinical significance. The authors stated that the results indicated that empirically supported treatments for specific disorders can be delivered effectively via telemedicine.

An important consideration in delivering psychotherapy via telemedicine is the effect that telemedicine delivery has on the therapeutic alliance. In a recent review of the use of telemedicine across various medical disciplines, Mair and Whitten [6] observed that all reviewed studies reported that patients were generally satisfied with the delivery of healthcare services via telemedicine; however, the authors identified the lack of examination of the quality of interactions between patients and providers using telemedicine as a notable deficit in the literature. Cook and Doyle [7] examined ratings of therapeutic alliance in a sample of individuals who received the equivalent of supportive counseling or psychotherapy for a variety of difficulties through a text-based (either e-mail or chat room) online therapy. The authors reported that ratings of alliance for online therapy were equal to or exceeded ratings for face-to-face therapy; however, these results are based on a small, non-randomized sample [7].

The present study used data collected during Mitchell and colleagues' [5] randomized trial of CBT for BN delivered either face-to-face or via telemedicine. The goal of the present study was to examine the extent to which treatment delivery method, either face-to-face or via telemedicine, differentially affected ratings of therapeutic factors made by both those receiving treatment and those providing treatment.

## Method

The present study was approved by the institutional review board of the University of North Dakota.

### Participants

**Patients**—Characteristics of the individuals enrolled in this randomized trial have been described in a previous publication [5]. Please see Table 1 for a summary of sample characteristics. Randomization was stratified by ED diagnosis (either full BN or EDNOS resembling BN) and by antidepressant medication history (never/previous or current).

**Therapists**—Six doctoral-level psychologists provided CBT for BN in both conditions. All psychologists were experienced in the delivery of the empirically supported CBT for BN [8].

### Assessment

Eating disorder diagnosis was assessed using the Eating Disorder Examination (EDE) [8], and comorbid diagnoses were assessed using the Structured Clinical Interview for DSM-IV Patient Edition (SCID-P) [9].

Both those enrolled in the treatment and those providing the treatment completed the Working Alliance Inventory (WAI) [10-11]. The WAI is a 36-item instrument in which respondent's rate aspects of their experiences in psychotherapy or counseling. The instrument has three subscales: task, goal, and bond. The task subscale contains items related to specific therapeutic techniques used during the session and other related technical details. The goals subscale contains items that assess the extent to which the Patient and therapist agree on and work toward therapeutic goals. The bond subscale contains items relating to trust, empathy, and other constructs that contribute to the therapeutic bond. Each question is rated on 7-point Likert scale with “never” and “always” at opposing poles.

Patient ratings of suitability of treatment and likelihood for success in treatment were obtained using a questionnaire developed specifically for the present study.

### Procedure

The WAI was completed by patients and therapists at weeks 2, 8, and 16. The suitability of treatment and expectation of success measure was completed by patients at week 2.

## Results

Treatment intervention studies frequently contain large amounts of missing data [12]. For this reason, maximum likelihood (ML) imputation was used to impute missing data with the most likely ratings according to all other available data. Analyses were also conducted using data from treatment completers only and in a hierarchical linear model (HLM) in order to establish convergence of results from different statistical approaches. Data analyzed after ML imputation is presented fully here. Results from all three perspectives were generally

similar, and no conflicting results were produced. Finally, patient ratings of treatment suitability and likelihood for success in treatment were analyzed in separate analyses.

### Ratings of WAI Factors

The results in this section are analyzed separately for patients and therapists using mixed model ANOVAs. Week of treatment and treatment delivery method are the within-subjects independent variable and between-subjects independent variable, respectively. Scores for task, bond, and goal from the WAI are dependent variables.

Data from 58 FTF-CBT and 58 TV-CBT cases was used in this analysis. The Greenhouse-Geisser correction was used in the following analyses. When patients made ratings of session adherence to therapeutic task, ratings increased significantly over time  $F(1.480, 168.696) = 7.348, p = 0.003, \eta_p^2 = 0.061$ , but ratings did not differ significantly between treatment delivery methods  $F(1, 114) = 1.449, p = 0.231, \eta_p^2 = 0.013$ . When rating session adherence to therapeutic goals, patient ratings changed significantly over time,  $F(1.698, 193.564) = 17.088, p < 0.000, \eta_p^2 = 0.130$ , but patient ratings were not significantly different between treatment delivery methods,  $F(1, 114) = 1.623, p = 0.205, \eta_p^2 = 0.014$ . Ratings of therapeutic goal increased over time, which is supported by a significant linear trend,  $F(1, 114) = 26.258, p < 0.000, \eta_p^2 = 0.187$ . The same pattern was observed with patient ratings of therapeutic bond—week of treatment:  $F(1.784, 203.402) = 19.833, p < 0.000, \eta_p^2 = 0.148$ ; treatment delivery method:  $F(1, 114) = 1.987, p = 0.161, \eta_p^2 = 0.017$ . A significant linear trend,  $F(1, 114) = 31.009, p < 0.000, \eta_p^2 = 0.214$ , indicated that ratings of therapeutic bond increased significantly over time.

Data used in the following analyses included 60 FTF-CBT cases and 57 TV-CBT cases. The Greenhouse-Geisser correction was used on the following analyses. When therapists made ratings of session adherence to therapeutic tasks, ratings did not differ significantly over time  $F(1.809, 208.080) = 1.725, p = 0.184, \eta_p^2 = 0.015$ ; however, ratings of adherence to therapeutic tasks was significantly higher for FTF-CBT cases than for TV-CBT cases,  $F(1, 115) = 7.230, p = 0.008, \eta_p^2 = 0.059$ . In rating session adherence to therapeutic goals, ratings changed significantly over time.  $F(1.797, 206.674) = 3.731, p = 0.025, \eta_p^2 = 0.031$ , and ratings were significantly higher in the FTF-CBT condition than in the TV-CBT condition,  $F(1, 115) = 5.611, p = 0.020, \eta_p^2 = 0.047$ . A significant linear trend,  $F(1, 115) = 5.636, p = 0.019, \eta_p^2 = 0.047$ , indicated that ratings of therapeutic goal increased over time. When rating therapeutic bond, therapists ratings changed significantly over time  $F(1.824, 209.278) = 49.067, p < 0.000, \eta_p^2 = 0.299$ , and ratings were significantly higher in the FTF-CBT condition than in the TV-CBT condition,  $F(1, 115) = 7.846, p = 0.006, \eta_p^2 = 0.064$ . Ratings of therapeutic bond increased significantly over time, which is supported by a significant linear trend,  $F(1, 115) = 75.988, p < 0.000, \eta_p^2 = 0.398$ . A significant interaction between week of treatment and treatment delivery method was observed when therapists made ratings of therapeutic bond,  $F(1.824, 209.728) = 3.921, p = 0.025, \eta_p^2 = 0.033$ . A significant quadratic trend was observed for the interaction,  $F(1, 115) = 9.368, p = 0.003, \eta_p^2 = 0.075$ , suggesting a greater increase in ratings of bond over time in the TV-CBT condition than in the FTF-CBT condition.

## Ratings of Suitability and Likelihood of Success

Analyses of Patient ratings of their likelihood of success in treatment and treatment suitability were conducted using independent samples t-tests. Significant differences between those in the FTF-CBT condition and those in the TV-CBT condition were not observed on either measure.

## Discussion

The goal of the present study was to examine the extent to which treatment delivery method, either face-to-face or via telemedicine, differentially affected ratings of therapeutic factors made by both those receiving treatment and those providing treatment. To that end, data collected from participants, both patients and therapists, at 2, 8, and 16 weeks of treatment was subjected to analysis in order to assess the effects of treatment delivery method on factors associated with the therapeutic alliance.

The task subscale of the WAI contains items related to the technical details of therapy sessions including the therapeutic technique being used. Patients did not identify significant differences between FTF-CBT and TV-CBT; however, therapists identified significant differences between FTF-CBT and TV-CBT. Generally speaking, the results indicate that therapists made higher ratings (i.e., more positive ratings) of the technical details of their therapy sessions in FTF-CBT. Additional examination of ratings on the task subscale indicated that patients made higher ratings of the technical details of therapy as treatment progressed.

The goal subscale of the WAI contains items related to patient-therapist agreement of therapeutic goals and the extent to which they work toward these goals in therapy. Patients did not make significantly different ratings on the goal subscale between FTF-CBT and TV-CBT. Therapists, however, made significantly different ratings on the goal subscale between FTF-CBT and TV-CBT. As with ratings on the task subscale, therapist ratings on the goal subscale were higher, thus more positive, for FTF-CBT. Patients and therapists made significantly higher ratings on the goal subscale over time. Broadly, this indicates that both patients and therapists felt their agreement about therapeutic goals and working toward these goals increased significantly through treatment.

The bond subscale of the WAI contains items concerning empathy, trust, and other aspects of the therapeutic bond. For patients, ratings of bond were not significantly different between treatment delivery methods, and ratings of bond increased throughout treatment. For therapists, ratings on the bond subscale were significantly different between treatment delivery methods. Therapist ratings of bond favored FTF-CBT. For both therapists, ratings on the bond subscale increased significantly over time.

Taken together, this indicates that therapists tended to favor FTF-CBT over TV-CBT; however, patients did not seem to have a strong preference for either delivery method insofar as ratings of factors associated with the therapeutic alliance were concerned. This might suggest that patients were placing greater emphasis on the “what” of treatment delivery (i.e., the treatment itself) rather than the “how” (i.e., treatment delivery method).

Additionally, patients did not make significantly different ratings on suitability of treatment or likelihood of success in treatment. This demonstrates that patients were equally comfortable with FTF-CBT and TV-CBT conditions and believed they could be equally successful between the conditions.

An important strength of the present study is the inclusion of individuals in the EDNOS category with weekly binge eating or purging episodes. The inclusion of these individuals contributes to the generalizability of the results to clinical practice as those in clinical practice are more likely to encounter the EDNOS variants of BN than full-threshold BN. Additionally, this study used a relatively large sample—an important strength in any study of treatment outcome. A final notable strength is that the treatment in this study was provided by doctoral-level psychologists experienced in providing CBT for BN and highly trained assessors conducted initial assessments.

An important limitation of the present study is the observed attrition rate. Participants left the study throughout the treatment delivery period (further information about study flow and participant attrition are available elsewhere [5]). Statistically, the attrition rate was addressed by using the ML imputation. Although the attrition rate was higher than would be preferred, it is consistent with the attrition rate observed in other large randomized trials. Unfortunately, reasons for attrition were not assessed.

The findings of the present study provide further support for the delivery of an empirically supported treatment via telemedicine to the extent that patients do not rate therapeutic alliance factors significantly differently between the treatment delivery methods. The present study broadly demonstrated that those receiving the treatment did not tend to favor face-to-face delivery over delivery via telemedicine where therapeutic factors were concerned. Perhaps most importantly, therapists seemed to favor face-to-face delivery over telemedicine delivery, at least in ratings of factors associated with the therapeutic alliance. This might suggest that additional therapist training may be needed in order to improve comfort with telemedicine delivery. Bakke, Mitchell, Wonderlich, and Erickson [13] provided suggestions for the successful provision of empirically supported treatment via telemedicine. Therapist education about the effectiveness of telemedicine delivery of empirically supported treatments as well as information on patient perceptions of therapeutic alliance might also help to alleviate concerns over the delivery of psychotherapy or counseling via telemedicine.

## Conclusion

From the perspective of those receiving the treatment, there are generally not significant differences between treatment delivery methods on ratings of adherence to therapeutic tasks, adherence to therapeutic goals, and therapeutic bond. Therapists identified greater differences between FTF-CBT and TV-CBT, possibly demonstrating some discomfort with or possible disbelief in treatment delivery via telemedicine compared to in person treatment delivery. Future study in this area should include the delivery of empirically supported treatments for other psychiatric disorders via telemedicine and traditional, face-to-face delivery in order to establish converging evidence supporting the use of telemedicine

delivery for empirically supported treatments and the acceptability of telemedicine delivery to patients.

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**Table 1**

## Sample Characteristics

	<b>Treatment Groups</b>			
	<b>FTF-CBT-CBT (n=58)</b>		<b>TV-CBT (n=58)</b>	
	<i>n</i>	%	<i>n</i>	%
Current Diagnosis				
BN	33	56.9	29	50.0
EDNOS	25	43.1	29	50.0
Female	56	96.6	59	100.0
Caucasian	57	98.3	53	91.4
	Mean	SD	Mean	SD
Age	29.8	11.2	28.8	10.7
BMI (kg/m <sup>2</sup> )	22.9	4.9	23.6	5.6

BN = bulimia nervosa, EDNOS = eating disorder not otherwise specified, BMI = body mass index



**Table 2**

Means and Standard Errors for WAI Scales as a Function of Week in Treatment and Treatment Group

WAI Scale	Week 2		Week 8		Week 16	
	TV M (SE)	FTF-CBT M (SE)	TV M (SE)	FTF-CBT M (SE)	TV M (SE)	FTF-CBT M (SE)
Task	73.30 (1.05)	74.02 (1.05)	72.74 (1.02)	74.32 (1.02)	74.53 (0.94)	76.69 (0.94)
Bond	72.34 (1.03)	73.62 (1.03)	72.64 (0.89)	75.24 (0.89)	75.37 (0.83)	76.47 (0.83)
Goal	71.48 (1.08)	72.59 (1.08)	73.34 (0.95)	74.17 (0.95)	74.11 (0.88)	76.76 (0.88)

WAI = Working Alliance Inventory, TV = telemedicine delivery, FTF-CBT = face-to-face delivery, M = mean, SE = standard error

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**Table 3**

Summary of Significant and Non-Significant Findings for Ratings on the WAI Scales

WAI Scale	Week	Therapists		Patients		
		Delivery Method	Interaction	Week	Delivery Method	Interaction
Task	ns	$p = .008$	ns	$p = .003$	ns	ns
Bond	$p < .001$	$p = .006$	$p = .025$	$p < .001$	ns	ns
Goal	$p = .025$	$p = .020$	ns	$p < .001$	ns	ns

WAI = Working Alliance Inventory, ns = non-significant

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