

BRIEF REPORT

Psychotherapy Using Distance Technology: A Comparison of Face-to-Face, Video, and Audio Treatment

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This study compared selected process and outcome variables across 3 modes of psychotherapy: face-to-face, real-time video conference, and 2-way audio (analogous to telephone). Results from 80 randomly assigned clients suggested that differences in process and outcome among the 3 treatments were small and clinically promising in comparison with the untreated control group.

Experimental comparisons of process and outcome in distant versus face-to-face conditions may influence the future practice of psychology. Conventional wisdom insists that, for most purposes, the therapist and client must be in the same room. Overall, our training as psychologists has emphasized face-to-face contact as the ideal. It will be interesting to discover whether this is true. Moreover, what conditions are required to establish psychological contact with another person and, in fact, what constitutes psychological contact at all, are salient questions in the age of Internet discourse (e.g., Kraut et al., 1998). These research questions are significant for therapist training, choice of treatment, and application of previous research findings.

Our effort to compare face-to-face, video, and audio individual therapy addressed two aspects of substitutability. On the process side, the working alliance was examined in all three conditions. Bordin (1979) conceptualized this alliance as the emotional bond between client and therapist, the quality of client and therapist involvement in the tasks of therapy, and the amount of concordance on goals between therapist and client. Reviewing studies of the predictive validity of the alliance variable, Henry, Strupp, Schacht, and Gaston (1994) found empirical support for alliance–

outcome associations no matter how outcome was measured, who measured it, or what psychotherapeutic school of thought was represented. These reviewers entertained “the hypothesis that the alliance is a causal ingredient of change” (p. 485).

On the outcome side, several assessments were combined, following the advice of Strupp and Hadley (1977) that evaluation of outcome should include multiple sources of information (therapist and client) and multiple targets for change (symptom change, satisfaction level, problem resolution).

As implied above, our research questions were straightforward:

Does level of working alliance differ according to mode of delivery (face-to-face, audio, or video)?

Does outcome differ according to mode of delivery and in comparison to a no-treatment wait-list control group?

Method

Participants

Clients were recruited from a wide variety of sources so that the sample mirrored a community counseling center clientele. These sources included self-referrals from radio and print ads and referrals from local businesses, community colleges, and clinicians. We estimate that 75% were gathered from newspaper ads, letters to the editor, and radio ads. Clients presented a wide range of problems, from weight concerns to personality disorders. As expected, given our community sample and random assignment, the variety of problems was wide and their frequency among modes comparable. A tally revealed that the problems most frequently reported concerned body image/weight (audio = 3, video = 4, face–face = 4), family relationships (audio = 4, video = 3, face–face = 2), other relationships (audio = 9, video = 7, face–face = 10), self-esteem (audio = 3, video = 3, face–face = 4), and work/school (audio = 3, video = 5, face–face = 4). Random assignment also fostered similar pretreatment status across groups, with global assessment of functioning (GAF; 1 to 100, 100 being the highest functioning) means at 69.2 for face-to-face, 70.6 for video, and 69.3 for audio, and symptom checklist means (range = 0–212, 212 being the highest number of symptoms) at 43 for face-to-face, 45 for video, and 46 for audio. These averages reflect mild symptoms or some difficulty in social, occupational, or school functioning. The clients who completed treatment ($n = 80$) ranged in age from 19 to 75 years ($M = 39.35$,

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$SD = 15.88$), included 52 women and 28 men, and reported ethnic identities of White (66), African American (8), Asian (3), and other (3). We were successful in our efforts to avoid a sample dominated by university students.

In the face-to-face condition, 27 clients completed the five sessions; in video, 26 clients completed them; and in audio, 27 completed them. There were 11 dropouts, reporting a variety of reasons for noncompletion. Five audio clients, 4 video clients, and 2 face-to-face clients did not complete the sessions, $\chi^2(2, N = 80) = 1.13, p > .05$. No systematic effects of sex or reported ethnicity were perceptible among the dropouts. When interviewed, clinicians did not believe that treatment mode contributed to their clients' early termination.

Participants were told during the informed-consent process that the study sought to compare psychotherapy delivered face-to-face, over video, and over audio and that they would be randomly assigned to one of these modes. In debriefing, they were provided more detail about what factors we were investigating.

Instruments

Process measurement. Observer ratings on three subscales of the Vanderbilt Psychotherapy Process Scale (VPPS; Strupp, Hartley, & Blackwood, 1974) represented the working alliance. The subscales were Client Participation, Client Hostility (reverse scored), and Therapist Exploration as demonstrated on videotapes of Session 4, by which time the alliance is stably established (Sexton, Hembre, & Kvarme, 1996). The three Vanderbilt subscales have reported reliabilities (Cronbach's alphas) of .93 for Client Participation, .83 for Client Hostility, and .96 for Therapist Exploration (O'Malley, Suh, & Strupp, 1983). The scales have demonstrated concurrent validity ($p < .001$) with scales from the Penn Helping Alliance Method and the Therapeutic Alliance Rating System (Bachelor, 1991). The scales were chosen for this type of conceptual reflection of accepted positive and negative elements of the working alliance. Five other subscales of the VPPS were not used in order to avoid redundant or irrelevant variables.

Raters were three professional psychotherapists not associated with clinic operations. They were master's-level clinicians who had worked full-time as psychotherapists at community mental health agencies for at least 7 years. They were provided with item-level guidelines developed by the scale creators and designed to lower the amount of inference needed to interpret each item (Strupp et al., 1974). In a 1-day training session, raters watched sample segments of videotape, rated them, discussed their ratings and revised them if necessary, and continued this process until they reached an acceptable level of agreement consistently on the first rating attempt (as a guideline, a range of 2 or less, 90% of the time). The raters met every 2-3 weeks to rate sample segments together and recalibrate in an effort to prevent rater drift. Raters were paid by the hour for their work.

Raters watched three 5-min segments of each videotape (samples from beginning, middle, and end). The visual element made it impossible for them to be blind to the condition they were rating; however, the raters reported that they usually forgot what mode they were watching as they rated.

Outcome measurement. Several outcome measures assessed results from both clients' and clinicians' points of view and from various definitions of outcome. The Brief Symptom Inventory (BSI; Derogatis, 1993) provided a standardized symptom checklist from the client. The BSI contains 53 items scored on a scale of 0 (*not at all*) to 4 (*extremely*) for how much each symptom has bothered the client in the past week. Test-retest reliability among 60 outpatients over 2-week intervals was .90 (Derogatis & Melisaratos, 1983).

The GAF (American Psychiatric Association, 1994) assessed overall functioning from the therapist's perspective. The GAF is a slightly modified version of the Global Assessment Scale (GAS; Endicott, Spitzer, Fleiss, & Cohen, 1976), which has shown relatively high and consistent interrater reliability. The scale also demonstrated good reliability for use

over a wide range of severity levels, with an intraclass correlation coefficient of .69 to .91 over five studies, and acceptable concurrent, predictive, and discriminant validity. The scale yielded the greatest sensitivity to change when compared with other measures of overall change. Sensitivity to change was of particular importance, given the brevity of our intervention.

The Target Complaints method (TC; Battle et al., 1966; Mintz & Kiesler, 1982) is an individualized self-report of one to three presenting problems and their severity level. The measure asks the clients to list three problems for which they are seeking help and rate the severity of the problem on a scale from 10 (*couldn't be worse*) to 1 (*not at all*). The therapist also filled out TCs for each client. The TC is highly correlated with other treatment outcome measures (Mintz & Kiesler, 1982).

Both client and therapist completed measures of satisfaction, modified from Tracey and Dundon's 7-item Client and Therapist Satisfaction Scales (CSS and TSS, respectively; Tracey & Dundon, 1988), which reflected each party's opinion of the worth of the therapeutic experience. The measure has produced an internal consistency of .94 (Tracey & Dundon, 1988). In the current study, the modified CSS produced an internal consistency of .88. The TSS, filled out by the therapist, is a similar measure adapted for the clinician's point of view. In this study, it was found to have an internal consistency of .84.

The BSI, the GAF, and the TCs were completed at the beginning and end of the five-session sequence. Each client's therapist gave the GAF ratings. These clinicians were trained in diagnoses of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV*; American Psychiatric Association, 1994), including GAF rating, in their doctoral programs. The CSS and TSS were completed at the end of treatment. Predicting 30 clients in each group, an a priori estimate gave the multivariate analysis of variance (MANOVA) a .70 power to detect a moderate effect size of .375 (Lauter, 1978).

Procedure

Clients received five free sessions of cognitive-behavioral therapy (CBT) delivered by experienced doctoral students at a large midwestern university.¹ These therapists attended a 1-day training program in which they were provided a session-by-session treatment plan. This plan relied on standard CBT psychoeducational dialogues and use of traditional materials such as daily graphs, ABCD charts for negative events (Activation, Belief, Consequence, and Disputation), and goaling ladders. However, this was not the only CBT training they had received because all of them attended doctoral programs that valued and taught this approach, and several worked in clinics with this orientation. All therapists worked in all three modes (face-to-face, video, and audio), were aware that the study involved comparing these modes, and knew that they were expected to provide equivalent treatment in each mode. Clinicians ranged in age from 22 to 45. Self-reported ethnic backgrounds included White (11), Asian American (1), African American (2), and Latina (2). Our clinicians also represented lesbian and physically handicapped groups.

On calling the clinic for appointments, clients were assigned to one of the three conditions according to a randomized list; one quarter were also

¹ Therapists were given training in CBT as well as having studied it in coursework. However, they were allowed flexibility in treatment in order to reproduce the conditions of real-world therapy. Therapists gave self-reports of adherence to the CBT model after each treatment. Mean therapy adherence scores, on a scale of 1 to 10 for each of the three treatment groups (1 = *I did not use CBT*, 10 = *I used CBT completely*), were 7.04 for face-to-face ($SD = 2.08$), 7.12 for video ($SD = 2.05$), and 6.56 for audio ($SD = 2.06$). Analysis of variance revealed no significant differences in therapy adherence across groups. The secondary approach most used was emotional support. Self-rating was considered the best available measure because tape observers saw only parts of the therapy sequence.

assigned to a 4- or 5-week wait-list to serve as outcome control participants, after which they joined their appointed group for therapy. All sessions were videotaped, even when the dyad members never saw each other (in the audio condition), for purposes of rating the alliance. In the face-to-face condition, the pair occupied the same room in the ordinary manner. In the video condition, each member of the pair sat in a separate room and viewed the other person over a closed-circuit 20-inch television monitor. In the audio condition, each client used a hands-free audio-only system to connect and speak with the therapist, again from a separate room. In both experimental conditions, the client never saw the therapist in person and was not aware that the therapist's room was nearby. Thus, although the centralization of locale did not replicate the conditions of real-world distance technology, it did provide similarity while maintaining control of the physical setting, which might have otherwise introduced unmeasured variability among clients (e.g., faulty technology, lack of privacy, and problems of access).

A site coordinator managed the clinic operations and received the clients at each session. At Session 1, clients were excluded from the study (a) if their scores on the General Severity Index of the BSI (Derogatis, 1993) were above the 50th percentile of adult nonpatient norms and they could not name a specific problem to work on ($n = 2$); (b) if they indicated that they would be unable to complete five sessions; or (c) if they were assessed to be a danger to self or others or actively psychotic, for which contingency we planned a referral system. It was never necessary to invoke the last two exclusion criteria.

Results

Process

Raters demonstrated excellent interrater agreement on the Vanderbilt subscales, with intraclass correlations of .75 for Participation, .72 for Hostility, and .82 for Exploration (all $ps < .0001$). Scale reliabilities (Cronbach's alphas) were .87 for Participation, .72 for Hostility, and .89 for Exploration.

Table 1 profiles the sample sizes, means, standard deviations, and ranges of item scores for all participants. A MANOVA on the sample ($N = 80$) revealed a statistically significant, $F(6, 150) = 2.51, p < .05$, difference among the groups on the set of alliance variables. Follow-up analyses (pairwise comparisons with Bonferroni adjustment) showed that the meaningful difference lay in the Client Participation dimension—but not in the expected

direction. Clients participated *less* in the face-to-face mode than in either of the technologically mediated treatments, with effect sizes of .62 for face-to-face versus video and .57 for face-to-face versus audio.

Outcome

Table 2 profiles the sample sizes, means, and standard deviations for all participants on outcome measures. A MANOVA comparing treatment groups with the control group on outcome measures discovered a significant superiority of treatment to no treatment, as expected, $F(12, 265) = 1.82, p = .01$. This superiority was particularly reflected in Target Complaints severity levels, which makes sense given that the brief cognitive-behavioral model focuses on specific problem areas. From clients' TC ratings, effect sizes were 1.04 for face-to-face over control, 1.16 for video over control, and .73 for audio over control. (Among treatment groups, these effect sizes were .18 for audio over face-to-face, .07 for face-to-face over video, and .06 for audio over video.) From therapists' TC ratings, effect sizes were 1.05 for face-to-face over control, 1.26 for video over control, and 1.43 for audio over control. (Among treatment groups, these effect sizes were .19 for face-to-face over audio, .13 for face-to-face over video, and .09 for video over audio.) In the Global Assessment of Functioning, effect sizes were .69, .72, and .56 for face-to-face, video, and audio treatments, respectively, over control group levels. As Table 2 makes plain, effect sizes for symptom inventory (BSI) means were negligible, perhaps because of raised awareness or arousal of symptoms after five sessions of treatment. We speculate that this might arise from intensified introspection among already troubled people.

To examine possible differences among face-to-face, video, and audio groups in therapy outcome, the three groups were compared by MANOVA on the set of outcome variables. Although the researcher set the significance level at .15 to enhance the procedure's power to perceive differences when they existed (Stevens, 1996), no significant differences among the groups were found, $F(12, 144) = .67, p > .15$. This means that the closing symptom checklists, assessments of functioning, levels of target complaints, and satisfaction measures, taken as a composite variable that maximized the differences among groups, did not distinguish in which mode the client was treated. Raw outcome scores were used because randomization equalized pretreatment conditions across groups, making unnecessary any further operations to adjust for pretest scores.

As research and theory predicted, the working alliance was significantly and positively correlated with overall outcome in this study ($r = .22, p = .05$), using the mean of standardized scores for all outcome measures. In each separate condition, the alliance–outcome correlation did not reach significance because of the number of participants.

Discussion

Our overall conclusions support the continued exploration of distance psychotherapy for individuals. The similarities among the three treatment groups—face-to-face, video teleconference, and audio conference—came through more strongly than any differences. The major difference we found could be construed as

Table 1
Descriptive Statistics for Working Alliance Variables (Vanderbilt Psychotherapy Process Scale)

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Item score range
Client Participation				1.5–5
Face-to-face	27	3.99	0.31	
Video	26	4.19	0.34	
Audio	27	4.15	0.23	
Client Hostility				1–4
Face-to-face	27	1.09	0.12	
Video	26	1.12	0.11	
Audio	27	1.17	0.24	
Therapist Exploration				1–5
Face-to-face	27	3.33	0.41	
Video	26	3.10	0.43	
Audio	27	3.29	0.41	

Table 2
Descriptive Statistics for Outcome Measures

Measure	<i>n</i>	<i>M</i>	<i>SD</i>
BSI (GSI)			
Face-to-face	27	35.73	30.56
Video	26	32.84	21.44
Audio	27	32.36	24.83
Control	27	35.37	25.64
GAF			
Face-to-face	27	77.60	10.60
Video	26	77.85	10.03
Audio	27	76.30	12.39
Control	27	71.00	9.51
TC—Client			
Face-to-face	27	5.99	3.17
Video	26	5.78	2.88
Audio	27	6.56	3.04
Control	27	7.90	1.83
TC—Therapist			
Face-to-face	27	5.81	3.14
Video	26	5.47	2.11
Audio	27	5.22	3.16
Control	27	7.46	1.57
CSS			
Face-to-face	27	6.19	1.17
Video	26	5.97	0.92
Audio	27	5.77	1.07
TSS			
Face-to-face	27	5.90	0.90
Video	26	5.73	0.89
Audio	27	5.38	1.32

Note. BSI (GSI) = Brief Symptom Inventory (Global Severity Index); GAF = Global Assessment of Functioning; TC = Target Complaints; CSS = Client Satisfaction Scale; TSS = Therapist Satisfaction Scale.

favorable to the distance modes: Statistics indicate that Client Participation scores were higher when clients were not face to face with their therapists. This dimension included ratings on such features as clients' activity level, initiative, trust, spontaneity, and disinhibition—aspects that we would expect to be dampened by the introduction of a strange therapeutic situation. Evidently, they were not. Two speculations about the cause of this unusual result are that clients in the distance modes made more of an effort to communicate, taking more responsibility for the interaction than they did in face-to-face traditional therapy, or that distance made openness seem safer. The pattern of the clients becoming more active in the distance modes is certainly an intriguing one. It may be that clients tried harder to get their voices heard when technology came between them and their therapists.

The results of the outcome analysis found no significant differences among treatment groups, thus failing to reject the null hypothesis of no treatment differences. It would appear that in a brief therapy situation, the outcome of delivery over two-way audio or video is comparable to face-to-face treatment. The observed power in the outcome analysis (.60) would have allowed us to detect large differences in results between the modes, but medium effects could be missed and small ones certainly would be. In sum, initial evaluations indicate that two-way audio, video, and face-to-face treatment delivery modes can be used to provide similarly effective treatment; however, several features must still be examined before we can declare equivalent effectiveness across the board.

Limitations of the Study

Despite attempts to achieve generalizable results, this project remains an analogue study. Clients were deprived of the obvious benefits of telemedicine—that is, they were not able to receive their therapy from a location more convenient than their local clinic because they were required to come to our clinic for video-taping and control purposes. All treatment was limited to five sessions, with clients referred elsewhere for continuing therapy. The fact that we drew from the nearby and mobile population meant that the sample did not include rural residents or the home-bound, who are main beneficiaries of telemedicine. From one point of view, these facts only strengthen the indicators of our study because one might expect even better results from clients relieved from travel, inconvenience, or plain absence of services.

As usual, generalization to a larger population may be limited by our research design. First, standard deviations on process variables (Table 1) are less than half a point on a 5-point scale. The small variability in Therapist Exploration scores is understandable because the therapists and techniques were so homogenous. The small standard deviations for client process variables were surprising, considering a varied group of ages, problem types, and severity among clients. Raters did not appear to be avoiding extremes on the scale (see Table 1). We must conclude that there was a good deal of similarity among therapy sessions overall in this study. Second, our master's-level therapists may have performed differently from PhD-level therapists; however, it must be acknowledged that most front-line therapists *are* at the master's level. Third, findings from cognitive-behavioral techniques may not represent what would happen if other approaches were emphasized. Fourth, our decision to include a wide variety of presenting problems improved generalizability in one way while precluding insight into the preferred treatment for a specific problem, and the average mild level of distress among our participants precludes judgments about treatment of more severe disorders. Finally, because we did not do a follow-up study, we do not know whether one mode of treatment had longer-lasting effects than any other.

Future Directions

The next step on a larger scale is to collect data and analyze it in naturalistic settings in which communications technology is used to achieve access to clients in remote sites. Extensions of teletherapy to people in restricted conditions such as prisons, hospices, and nursing homes need to be studied.

Because it appears that the alliance can be built regardless of treatment mode (face-to-face, video, or audio), investigations into using features of distance communication to treat specific problems will be interesting clinically. Mode-by-problem matching is an area ripe for study. For example, like the alcohol abusers in Kobak et al.'s (1997) study, anorexic women reported admitting to more pathological behavior in a voice-only communication than they ever had in face-to-face counseling.

Along the same lines, several psychological disorders result in extreme discomfort with human contact. Agoraphobics, socially anxious, and avoidant personalities often find close proximity with unfamiliar others intolerable. One possible tactic involves using telephone, video, and face-to-face communication with the psychotherapist as such a client gains trust and comfort. Because

keeping these clients in continuous treatment is a challenge, this flexibility could prove extremely valuable in their course of therapy by maintaining the relationship under adverse conditions.

An extension of this study to another widely used but unstudied phenomenon—the use of on-line systems to conduct psychotherapy—is a tempting line of future endeavors. Because the nature of relationships formed over the Internet has recently been found lacking (e.g., in failing to ameliorate loneliness; Kraut et al., 1998), it would be interesting to discover whether the therapeutic alliance established by electronic keyboard shares the healing qualities of the relationship established in other technologically mediated ways.

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