# THE TALKING CURE REVISITED: CONTENT ANALYSES OF A TWO-YEAR PSYCHODYNAMIC PSYCHOTHERAPY

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A 208-session treatment (previously investigated by Jones, Ghannam, Nigg, & Dyer, 1993) was studied using two computer-assisted content analytic strategies. The first measured the patient's associative freedom by determining the Co-Occurrence Rate of commonly associated word pairs. The second measured the topics of each session by determining the proportion of topic-related words in each session. Results revealed that the patient's associative freedom: (a) increased with time (replicating the results of Spence, Dahl, & Jones, 1993), (b) was influenced by the use of psychodynamic techniques, and (c) predicted symptom change. The analyses of the topic of discussion revealed that (a) the therapist displayed a non-neutral attitude (paradoxically shown to be helpful by Jones et al., 1993) while discussing certain key topics, and (b) the patient's discussion of these topics was related to symptom improvement. Results are discussed in terms of their contribution to an understanding of the case as well as theory of psychotherapy process.

We report two linguistically oriented psychotherapy process studies of a single case. Study 1 uses specific linguistic dependencies to index free association. Study 2 uses linguistic markers to measure the discussion of key topics. Both studies were conducted to illuminate the relationship between these linguistic features of therapy process and treatment outcome.

## BACKGROUND ON THE CASE

In the late 1980s, a 35-year-old, European-American woman (whom we shall call "Ms. M") sought treatment from a therapist (whom we shall call "Dr. X") for depression. Many of their 208 sessions were devoted to clarifying the relationship between Ms. M's presenting difficulties and traumatic events from her past. Most important among these events was the accidental drowning of Ms. M's older brother when she was a child. Ms. M's brother had been a rival for her parent's attention. His death transformed Ms. M's mother from a vivacious woman into a woman devoid of

emotional life. Her father became distant and sadistic. Ms. M felt blamed and disliked by her mother and emotionally abandoned by her father. Eager to fill this void, Ms. M married young and had three children. Unfortunately, her marriage lasted only nine years. Once divorced, Ms. M resented the responsibilities of motherhood. She had two abortions at this time. The second abortion triggered a severe depression that was treated with antidepressant medication and brief therapy. Though medication alleviated her symptoms, she found the therapy unhelpful. Six years later, her recurrent depression prompted Ms. M to attempt therapy again as a participant in a study conducted by the Berkeley Psychotherapy Research Group.

Ms. M was in treatment for two-and-one-half years. This time, she found the psychotherapy to be very helpful. Not only were her depressive symptoms dramatically reduced (Jones, Ghannam, Nigg, & Dyer, 1993) but she also improved in the following ways: (a) she became more aware of her guilty feelings about achieving success when the rest of her family had not; (b) she demonstrated an increased capacity to tolerate and appreciate her achievements without feeling guilty; (c) she formed a much more positive relationship with her mother; (d) she became able to recognize and acknowledge her own good parenting skills; (e) she developed an increased awareness of her unresolved feelings of responsibility for her brother's death (Fretter, 1995).

What were the factors that contributed to the success of this treatment? There has already been some research to address this question. Jones et al.'s (1993) principal components factor analysis of 100 therapy process variables (the Psychotherapy Process Q-set) identified four coherent factors: (1) Therapist Acceptance/Neutrality,[1] (2) Therapist Interactiveness, (3) Psychodynamic Technique,[2] and (4) Patient Dysphoric Affect. When these factors were related to a diagnostic symptom measure (Symptom Checklist-90-R Global Severity Index, SCL-90-R GSI),[3] two surprising results emerged. First, as Dr. X became less Accepting/Neutral, Ms. M improved. Second, Psychodynamic Technique was unrelated to symptom change. These results raised three questions that we believe warrant further investigation. First, why did less Acceptance/Neutrality lead to symptom reduction? Conventional wisdom dictates that acceptance and/or neutrality are necessary conditions for effective therapy (Greenberg, 1986; Rogers, 1957). Yet, it seems that the reverse was true in the case of Ms. M. Second, what was the effect of Psychodynamic Technique in this treatment? Dr. X's interventions were psychodynamic in nature. Yet, the Jones et al. (1993) findings are silent as to the usefulness of psychodynamic technique. Third, how did therapy contribute to Ms. M's other improvements (e.g., increased awareness of her

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[1]Though the factor label "Acceptance/Neutrality" may seem conceptually confusing, a perusal of the factor loadings (Table 1) indicates that both acceptance (Q18) and neutrality (Q93) were empirically observed to "hang together" over the course of this treatment. The label "Acceptance/Neutrality" was chosen by Jones et al. (1993) to summarize the gestalt of the seven items that make up this factor. Thus, even though nonjudgmental acceptance and neutrality are *theoretically* distinct (and perhaps conceptually orthogonal), trained clinical judges found that the extent to which Dr. X was nonjudgmental was directly related to the extent that she was neutral.

[2]In general, capitalization will be used throughout this article to distinguish theoretical constructs from the measures that operationalize them. Terms that are capitalized refer to the operationalization of the construct. For example, while "Psychodynamic Technique" refers to the mean of the specific Psychotherapy Process Q-set (PQS) items that comprise this factor (Table 1), "psychodynamic technique" refers to the general concept as it is discussed in the literature.

[3]Throughout this article, empirical findings concerning "symptoms" and "outcome" refer to this measure. We believe that, of the measures administered to Ms. M, this measure best captures the broadest scope of psychologically distressing symptoms.

guilt)? The Jones et al. (1993) study provides good evidence that aspects of the therapy process were linked to symptom reduction but is not specific about how the therapy promoted other improvements.

## THE ROLE OF FREE ASSOCIATION IN THE CASE OF MS. M

Free association (i.e., saying whatever comes to one's mind) has enjoyed the privileged alias of "the fundamental rule of psychoanalysis" because of its purported power to excavate unconscious mental contents. Despite its centrality in psychoanalytic technique, there has been very little empirical research on free association (Mahony, 1987). One of the few quantitative studies of free association (undertaken by Spence, Dahl, & Jones, 1993) measured free association using the co-occurrence of specific words pairs in the patient's speech. This measure was based upon earlier work (Spence & Owens, 1990) demonstrating that commonly associated word pairs (e.g., man-woman) are more likely to co-occur in samples of humor, romance, or fiction writing than in journalism or scientific writing. Spence et al. (1993) hypothesized that these words pairs would also co-occur more when a patient is saying what comes to mind than when he or she is merely reporting reality. They tested their hypotheses on the successful seven-year analysis of Mrs. C and found that (a) the Co-Occurrence Rate (COR) of these word pairs was a valid measure of Mrs. C's free association, (b) Mrs. C's associative freedom increased with time, and (c) specific psychoanalytic interventions predicted increases in the COR.

But what of the case of Ms. M? Though her treatment was not a psychoanalysis, it was a psychodynamic therapy. Therefore, it shared certain similarities with psychoanalysis: (a) the implicit understanding that Ms. M should speak freely, (b) an emphasis on unconscious mental processes, (c) the conviction that the path to cure depended, in part, on unconscious contents becoming conscious, and (d) the specific techniques for facilitating cure (e.g., interpreting unconscious, wishes, feelings or ideas). We thought that the two cases were similar enough to pose the following hypotheses: (1) Like Mrs. C, Ms. M's therapeutic progress would be marked by an increase in free association. (2) Dr. X's use of psychodynamic technique would promote Ms. M's free association. (3) Ms. M's capacity to free associate would promote symptom reduction.

## THE ROLE OF KEY TOPICS IN MS. M'S THERAPY

Language use in therapy also provides information about the topics of discussion in a therapy hour. We reasoned that there should be a relationship between the discussion of key topics and ultimate symptom change. Dr. X's formulation of the case provided the rationale for identifying key topics (Fretter, 1995). Dr. X's case formulation was grounded in Control-Mastery Theory (CMT), a theory of therapy process developed by Joe Weiss and empirically supported by the San Francisco Psychotherapy Research Group (Silberschatz, Curtis, Sampson, & Weiss, 1991; Weiss, 1993).

Control-Mastery Theory (CMT) is a cognitive-psychodynamic theory that emphasizes the role of unconscious guilt in adult psychopathology. Control-Mastery theorists begin with the premise that all children need parental love. They suggest that children are motivated to learn contingencies which predict loss of parental love. Psychopathology begins when the child observes an association between their strivings toward normal developmental goals (e.g., achieving independence) and the loss of

parental love. The child confuses correlation and causation and develops an unconscious *pathogenic* belief that her pursuit of the normal goal has caused the disruption in her relationship with her parent. The child concludes that the parent was somehow harmed or threatened by the pursuit of the goal, for which she grows to feel *unconsciously guilty*. Over time, the pathogenic belief becomes overgeneralized and inflexible and deters the child from pursuing normal goals (Weiss, 1993).

Within the framework of CMT, both the death of Ms. M's brother and her parents' emotional illnesses disrupted the parent-child bond. Dr. X assumed that Ms. M paired these experiences with her own healthy desires (e.g., wanting attention from her parents). Ms. M may have concluded that "her achieving recognition and attention seriously harmed, and sometimes destroyed, the people she loved" (p. 10). Furthermore, Dr. X theorized that this belief "fostered in [Ms. M] a deep *unconscious guilt* [italics added] toward the people she believed she was harming" (p. 10). In addition, Dr. X speculated that Ms. M's failed marriage, subsequent abortions, and consequent depressions were all methods of atonement. Specifically, these three misfortunes allowed Ms. M to suffer in the same way that she unconsciously believed that she caused her mother to suffer (Fretter, 1995).

From this account, we arbitrarily designated four key topics (mother, father, brother, and guilt). According to the case formulation, Ms. M held *pathogenic beliefs* about all of these topics. A major objective of the therapy was to allow Ms. M to free herself of these beliefs. CMT holds that freedom from these beliefs is the prerequisite for her cure. One common route to the disconfirmation of beliefs is for the therapist to assist the patient in making the beliefs conscious. Once conscious, they can be actively challenged and disconfirmed by both the therapist and patient (Weiss, 1993).

The following hypotheses about the key topics were tested: (1) Ms. M would become conscious of her guilt over the course of this treatment. (2) Since free association is a technique for bringing unconscious mental contents into consciousness, we thought that Ms. M's associative freedom would precede the emergence of guilty thoughts and feelings. (3) The paradoxical effectiveness of Dr. X's decreased Acceptance/Neutrality would be explained by specific departures from neutrality and acceptance when addressing the key topics. In her formulation, Dr. X describes her interventions around these issues as "active" and decidedly non-neutral (Fretter, 1995). (4) Dr. X's use of psychodynamic technique will lead Ms. M to become more aware of her guilt. (5) Ms. M's discussion of each of the four key topics will be directly related to her symptom improvement. This hypothesis tests the idea that the discussion of important topics may have a direct influence on outcome.

## METHOD

Two studies were conducted. Study 1 measured free association using Spence et al.'s (1993) procedure. Study 2 investigated verbal references to key topics (mother, father, brother, guilt). Both studies coded transcribed sessions using computerized content analysis, a procedure that assigns words to theoretically determined categories. Once the words were assigned to categories, statistical techniques were employed to summarize the data and determine their significance. An underlying assumption of content analysis is that there is a lawful relationship between the use of language and the psychological state of the user (Gottschalk, Lolas, & Viney, 1986; Russell & Stiles, 1979). The validity of this claim has been substantiated by numerous studies linking parts of speech to diagnostic category, discriminating successful

from unsuccessful treatments, and differentiating type of therapy (Mergenthaler & Kachele, 1988; Zimmer & Cowels, 1972).

## PARTICIPANTS

*Client*.    At the beginning of treatment, Ms. M met Research Diagnostic Criteria (RDC) (Spitzer, Endicot, & Robins, 1979) for Major Depressive Disorder. By current DSM-IV diagnostic criteria, she would have received an Axis I diagnosis of Major Depressive Disorder, Recurrent, Moderate (296.32) and no Axis II diagnosis (V71.09). Her GAS score at intake was 51. She also scored in the distressed range on a number of self-report measures: (a) Beck Depression Inventory (BDI) = 24, (b) Symptom Checklist 90–R Global Severity Index (SCL-90-R GSI) = 70, and (c) Minnesota Multiphasic Personality Index Depression subscale (MMPI De) = 75.

*Therapist*.    Dr. X was a clinical psychologist in full-time private practice with over ten years of clinical and research experience. Her interventions were guided by Control-Mastery Theory (CMT). While treating Ms. M, she received ongoing consultation from a recognized expert on CMT.

*Clinical judges*.    Ratings of therapy process in this study were provided by trained clinical psychology graduate students and research-oriented clinicians. Although the judges were psychodynamically trained, none identified themselves as Control Mastery oriented.

## THERAPY

This treatment was conducted over a period of 2.5 years for a total of 208 sessions. Dr. X and Ms. M met twice a week for fifty minutes per session. All sessions were videotaped and audiotaped. Both Ms. M and Dr. X completed an assessment battery every 16 sessions. By the end of treatment, Ms. M was no longer diagnosably depressed and her GAS rating was 91. She also evidenced clinically significant change (Jacobson & Truax, 1991) on all of the previously mentioned self-report measures (i.e., her post-therapy scores were BDI = 1, SCL-90-R GSI = 32, MMPI De = 46).[4] The case has been previously discussed in the literature (Fretter, 1995; Jones et al., 1993; Jones, in press).

## MEASURES

*Symptom Checklist 90-R* (*SCL 90-R*).    The SCL 90-R (Derogatis et al., 1974) is a 90-item self-report scale that measures a wide range of common symptoms. The time series analyses (conducted in Jones et al., 1993, and the present article) require multiple, evenly spaced assessments. The SCL-90-R was one of three instruments administered every 16 sessions during the treatment (the others were the BDI and the Automatic Thoughts Questionnaire (ATQ)). Jones et al. (1993) used The Global Severity Index (GSI), an overall summary scale of the SCL-90-R, rather than the BDI or ATQ because (a) the GSI evidenced change throughout the treatment and (b) it captured a broader range of symptomatology than either the BDI or ATQ. In order

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[4]Ms. M was also assessed on a number of measures of interpersonal functioning (e.g., Inventory of Interpersonal Problems, Social Adjustment Scale). These measures are not being used in the present study because she was assessed too infrequently for the data to be modeled adequately with the bivariate time series analysis.

to generate sufficient data points for a time series analysis, several GSI data points were interpolated using a moving average procedure. See Jones et al. (1993) for an explanation and justification of this procedure.

*Client Session Report* (*CSR*)/ *Therapist Session Report* (*TSR*).    The CSR and TSR (Orlinsky & Howard, 1965) measure the process of a single therapy session from the perspective of the client and therapist respectively. They each complete these measures individually. Each questionnaire contains a checklist of potential client feelings. Ms. M was asked, "How did you feel during this session? (Check as many as apply)." Dr. X was asked, "How did your patient seem to feel during this session? (Check those feelings which seemed distinctly present, not excluding those the patient experienced without being directly aware or conscious of)." The CSR and TSR were administered every 16 sessions ($N = 14$).

*The Psychotherapy Process Q-set* (*PQS*).    The PQS (Jones, Hall, & Parke, 1991) is composed of 100 descriptors summarizing the therapeutic process of a single psychotherapy session. It assessed the therapy process from the perspective of a pair of trained clinical judges. Each descriptor is printed on its own card. The cards collectively describe therapist behaviors, patient behaviors, therapist-patient relationship, and therapeutic events. Videotapes of every fourth session ($N = 53$) were retrospectively presented to judges in a random order. After viewing a session, judges were required to independently sort the PQS items into a nine category normal distribution such that relatively few items were placed at either end of the normal curve. The category at the extreme left (#1) contained descriptors that were extremely uncharacteristic of the session. The category at the extreme right (#9) contained descriptors that were extremely characteristic of the session. The category number was the rating for that item for the session. Interrater reliability was calculated by correlating judges' ratings. When reliability was below .50 a third judge was added. Average PQS interrater reliability for this case was r = .81 (Jones et al., 1993). Q-ratings of all judges were averaged into a composite score for each therapy session which was used in all further analyses.

*Dimensions of process factor scores.*    The process factors discussed in the introduction were derived from a principal component factor analysis of the PQS composite scores (Jones et al., 1993). Two of the four emergent factors were studied in the present investigation: Therapist Acceptance/ Neutrality and Psychodynamic Technique. Table 1 gives specific PQS items and factor loadings for these two factors. The process factor scores used in this study were derived by obtaining an average of the PQS ratings for all of the items within each factor. A factor score was calculated for every fourth session of this treatment ($N = 53$).

*Co-Occurrence Rate* (*COR*).    The COR (Spence et al., 1993) is a measure of the extent to which 14 word pairs (you/me, me/you, you/I, I/you, us/we, us/them, my/ yours, I/me, me/I, him/her, his/hers, they/them, and who/is) co-occur in the client's speech within a span of 200 words.[5] These specific word pairs were selected be-

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[5]Previous research using this measure counted the co-occurrence of these words within a 1,000 character search space. According to Spence et al. (1993), "The size of the search space was determined by earlier work . . . which showed that significant differences between target and control pairs abruptly disappear beyond this distance." We have used a 200 word search space because our software counts words rather than characters.

**TABLE 1. Some Consistent Process Factors in Ms. M's Therapy***

| Psychotherapy Process Q-set (PQS) Item | Mean Rating | Minimum Rating | Maximum Rating | Factor Loading |
|---|---|---|---|---|
| *Therapist Acceptance/Neutrality Factor* | | | | |
| Q18 Therapist conveys a sense of nonjudgmental acceptance. | 6.1 | 2.5 | 9.0 | .85 |
| Q3 Therapist's remarks are aimed at facilitating patient speech. | 4.8 | 2.0 | 8.5 | .84 |
| Q28 Therapist accurately perceives the therapeutic process. | 5.2 | 2.0 | 8.0 | .80 |
| Q6 Therapist is sensitive to the patient's feelings, is attuned to the patient, and is empathic. | 6.5 | 3.3 | 8.5 | .76 |
| Q93 Therapist is neutral. | 3.1 | 1.0 | 7.5 | .72 |
| Q31 Therapist asks for more information or elaboration. | 6.2 | 4.0 | 9.0 | .68 |
| Q46 Therapist communicates with the patient in a clear, coherent style. | 5.7 | 3.5 | 8.5 | .65 |
| *Psychodynamic Technique Factor* | | | | |
| Q67 Therapist interprets warded-off unconscious wishes, feelings, or ideas. | 4.8 | 2.0 | 9.0 | .65 |
| Q68 Real versus fantasized meanings of experiences are actively differentiated. | 4.8 | 1.0 | 9.0 | .59 |
| Q50 Therapist draws attention to feelings regarded by the patient as unacceptable. | 4.3 | 1.0 | 8.5 | .55 |
| Q22 Therapist focuses on patient's feelings of guilt. | 6.4 | 4.0 | 9.0 | .55 |
| Q36 Therapist points out defensive maneuvers (e.g., undoing, denial). | 4.3 | 1.0 | 7.5 | .54 |
| Q47 When interaction with the patient is difficult, Therapist accommodates. | 5.2 | 4.0 | 7.5 | −.53 |
| Q89 Therapist acts to strengthen defenses. | 5.2 | 2.0 | 8.0 | −.50 |

*Note. Values under Mean, Minimum, and Maximum Ratings are PQS item ratings averaged across two or three judges for each of 53 sessions sampled from this treatment. Each PQS item is rated on a scale from 1 to 9 (1 = "extremely uncharacteristic or negatively salient", 2 = "quite uncharacteristic or negatively salient", 3 = "fairly uncharacteristic or negatively salient", 4 = "somewhat uncharacteristic or negatively salient", 5 = "relatively neutral or unimportant", 6 = "somewhat characteristic or salient", 7 = "fairly characteristic or salient", 8 = "quite characteristic or salient", 9 = "extremely characteristic or salient"). Modified from "A Paradigm for Single-Case Research: The Time Series Study of a Long-Term Psychotherapy for Depression," by E. E. Jones, J. Ghannam, J. T. Nigg, & J. F. P. Dyer, 1993, *Journal of Consulting and Clinical Psychology, 61(3)*, p. 386. Copyright 1993 by The American Psychological Association. Reprinted with permission of the author and JCCP.

cause they frequently occur in psychotherapeutic discourse under conditions of unrestricted linguistic expression. That is, as focus shifts from external, reality-constrained discourse to internal, freely associated discourse these word pairs appear with increasing probability. Thus, the COR has been used as an index of free association. The total frequency of co-occurrence was divided by the total number of words spoken by the patient within each hour to derive the Co-Occurrence Rate. CORs were calculated for every fourth session of this treatment ($N = 53$).

*Topic Focus Ratios* (*TFRs*).   TFRs are a group of content measures that index the proportion of patient or therapist speech devoted to key topics. Four topics from Fretter's (1995) case formulation were selected (mother, father, brother, and guilt). The specific words comprising each category were chosen both by using a thesaurus and by obtaining a random sample of case transcripts ($n = 10$) and noting the language used to refer to these four topics. The four content categories comprised the following words: MOTHER (mom, mom's, mommy, mommy's, mama, mama's, mother, mother's), FATHER (dad, dad's, daddy, daddy's, papa, papa's, father, father's), BROTHER (brother, brother's, [Brother's name]), and GUILT (badness, blameworthy, censurable, chargeability, crime, criminal, criminality, culpability, culpable, fault, felony, guilt, guilty, guiltily, guiltiness, improbity, misdemeanor, prosecute, prosecutor, sin, sinful, sinfulness, transgression, trial). The TFR for each category was calculated by dividing the frequency of occurrence of all words in the category by the total number of words spoken by the patient or therapist in each session. TFRs were calculated for every fourth session of this treatment ($N = 53$).

## SOFTWARE

*Text Analysis System*.   The present study used the Text Analysis System (TAS/C), a software package designed to collect and analyze written language for research purposes. TAS/C requires a UNIX operating system. Versions exist for both IBM-PC and Apple MacIntosh users (Heffels & Stinson, 1991). In the present studies, TAS/C was used to code the verbal behavior of psychotherapy into predefined content categories (i.e., COR or TFRs).

## PROCEDURE

The 53 sessions studied by Jones et al. (1993) were transcribed verbatim from audiotape according to the *Psychotherapy Transcription Standards* (Mergenthaler & Stinson, 1992). Each transcript was edited for accuracy from videotape by a second trained transcriptionist. Co-Occurrence Rates (CORs) and Topic Focus Ratios (TFRs) were calculated using TAS/C. Prior to testing the formal hypotheses, validity studies were conducted on these content analytic measures.

## RESULTS

*STUDY I:* THE ROLE OF FREE ASSOCIATION IN THE CASE OF MS. M.

*Validity study.*   Following Spence et al's (1993) procedure, we identified the sessions with the highest and lowest Co-Occurrence Rates and determined whether associative freedom could be observed directly. Spence et al. reported that the hour

with the highest COR was one in which the client focused on her intrapsychic life. On the other hand, the hour with the lowest COR was characterized by focus on the external world. In the case of Ms. M, the hour with the highest COR was hour 96 and the hour with the lowest COR was hour 80. In hour 96, Ms. M reported a disturbing memory of attempting to drown herself as a child. Ms. M saw the memory of her suicide attempt as evidence of her unconscious guilt. Hour 80, on the other hand, took place one day after a major earthquake struck Ms. M's home town. Ms. M devoted much of the hour to discussing the triviality of her problems when compared to the misfortunes of others. These two accounts duplicate Spence et al.'s (1993) finding of differences in intrapsychic depth of the two sessions. We therefore concluded, like Spence et al. (1993), that COR reasonably measured free association.

*Relationship between free association and treatment length.* We hypothesized that Ms. M's associative freedom increased with time. Spence et al. (1993) demonstrated that the Co-Occurrence Rate (COR) was positively correlated with session number ($r = .25$, $p < .05$) in the Mrs. C case. This finding was closely replicated in Ms. M's treatment ($r = .23$, $p < .05$).

## TIME SERIES ANALYSIS

We hypothesized that Dr. X's use of psychodynamic techniques promoted Ms. M's associative freedom. Our single case design obviously lacks the power of causal inference afforded by random assignment to carefully controlled groups. However, it has the advantage of having multiple observations of the same variables taken at regular time intervals (i.e., *time series* data). In addition to knowing the magnitude of change in a variable, we also know *when* that change occurred relative to changes in other variables. We can, therefore, infer causality inductively using *time series analysis*. The basic logic is as follows: If Psychodynamic Technique (PT) influenced Co-Occurrence Rate (COR) then COR at a given time should be predictable from past levels of PT above and beyond what is predictable from knowing past COR alone. Furthermore, the influence should be unidirectional. That is, we should find that COR does not predict future PT above and beyond what could be predicted from past PT (Gottman & Ringland, 1981).

Gottman and Ringland (1981) have developed a statistical approach that formally tests this logic. Their bivariate time series analysis is designed to determine whether one time series (e.g., COR) may be predicted from the history of another series (e.g., PT) controlling for autocorrelation within the first series. Predicting one series from the history of the other is called crossregression, while predicting a series from its own history is called autoregression. Four regression equations (models) are built for each series. The models differ with respect to the number of autoregressive and crossregressive *terms* that they contain. The number of terms in a model corresponds to the number of *lags* (i.e., the number of steps into the future that are used in the regression equation). Likelihood-ratio tests are then employed to discover which model best describes the series with the minimum number of terms. The unidirectionality of influence is then tested by transposing the predicted and predicting series and repeating the procedure.

The upper half of Table 2 illustrates the Gottman & Ringland procedure applied to the question at hand (i.e., Does PT influence COR?). The procedure first constructs four regression models (equations) for each variable. Models listed under Psychodynamic Technique attempt to predict Psychodynamic Technique. Models listed under Co-Occurrence Rate attempt to predict Co-Occurrence Rate. The number of auto-

regressive terms in each model is given under columns A and C. The number of crossregressive terms in each model is given under columns B and D. In our analyses, the first model is always given 10 autoregressive terms and 10 crossregressive terms. There are complex reasons for doing so that are beyond the scope of this paper (see Gottman, 1981, for details) but suffice it to say that Model i is designed to be an oversized model that uses an arbitrarily large number of terms to predict a given time series. The column marked SSE gives the sum of squared error which is an index of variability left unexplained. The objective of the time series analysis is to minimize SSE while also minimizing the number of terms in the equation. This goal reflects a familiar dilemma in model fitting analyses. The researcher is interested in explaining the most variance with the simplest model. Model ii is the model that contains the minimum number of autoregressive terms and the minimum number of crossregressive terms. This is the simplest model that controls for autocorrelation and also uses information from the other series. For example, Model ii under the heading "Psychodynamic Technique" predicts PT factor scores using four autoregressive terms and five crossregressive terms but leaves a larger residual (SSE) than Model i. Model iii predicts PT with minimal autoregressive terms and no crossregressive terms. It is thus the simplest, purely autoregressive model. Model iv predicts PT with maximal autoregressive terms and no crossregressive terms. It is thus the oversized, purely autoregressive model. The next step is to test which model best fits the data given the goals of minimizing both the number of terms and the residual error. This is accomplished through a likelihood-ratio comparison of the models. The model comparison is evaluated using a Q statistic which has approximately a chi-square distribution. This process is probably best illustrated by examining the results given under the heading "Co-Occurrence Rate." A comparison of Model i with Model ii revealed that the two were not significantly different in their ability to explain variability ($Q = 12.98$, $p > .05$). In this case, Model ii is the better model because it has fewer terms. A comparison between Model ii and Model iii revealed a significant difference in their ability to explain variability ($Q(4) = 26.72$, $p < .001$). Model ii was better because it left a smaller residual. Finally, the comparison between Model iii and Model iv also revealed no significant differences ($Q(8) = 14.37$, $p > .05$) suggesting that Model iii is the better model (because it has fewer terms). However, as we have seen, Model ii is superior to Model iii. Thus, Model ii is the best explanatory model for predicting COR. COR may be best predicted by a lag 2 autoregression and a lag 4 crossregression. Note that the comparison of the models under "Psychodynamic Technique" revealed no significant differences between the residuals left by any of the models. Thus, we would conclude that the model with the smallest number of terms is the best model (in this case, Model iii). In other words, the best predictor of Dr. X's Psychodynamic Technique at a given time was her own Psychodynamic Technique 4 lags prior. Thus, the bivariate time series analysis (Table 2) supported this hypothesis that psychodynamic technique influenced Ms. M's associative freedom.

We also hypothesized that Ms. M's associative freedom influenced symptom change. Again, Gottman and Ringland's (1981) procedure was applied to test this hypothesis. The models and results are given in the lower half of Table 2. The comparison of the four models predicting COR revealed that the best model was Model iii. Thus, the SCL-90-GSI did not improve prediction above and beyond what could be predicted from COR's own history. On the other hand, the comparison of models predicting SCL-90-GSI scores indicate that Model ii (the model that includes the COR) is the superior model. Thus, associative freedom had an influence on symptoms above and beyond what could be predicted from past symptoms alone.

**TABLE 2.  Bivariate Time Series Analysis: Psychodynamic Technique, Free Association, and Symptom Change**

| Model | Psychodynamic Technique (PT) | | | Co-Occurrence Rate (COR) | | |
|---|---|---|---|---|---|---|
|  | A | B | SSE | C | D | SSE |
| i | 10 | 10 | 21.61 | 10 | 10 | .01 |
| ii | 4 | 5 | 25.00 | 2 | 4 | .01 |
| iii | 4 | 0 | 27.45 | 2 | 0 | .02 |
| iv | 10 | 0 | 27.10 | 10 | 0 | .02 |
| i vs. ii | Q(11) = 6.26 n.s. | | | Q(14) = 12.98 n.s. | | |
| ii vs. iii | Q(5)  = 4.03 n.s. | | | Q(4)  = 26.72 p < .001 | | |
| iii vs. iv. | Q(6)  = 0.56 n.s. | | | Q(8)  = 14.37 n.s. | | |
| Conclusions: | COR Ø PT | | | PT ➡ COR | | |

| Model | Co-Occurrence Rate (COR) | | | SCL-90 Global Severity Index (GSI) | | |
|---|---|---|---|---|---|---|
|  | A | B | SSE | C | D | SSE |
| i | 10 | 10 | .01 | 10 | 10 | .08 |
| ii | 6 | 8 | .01 | 6 | 1 | .10 |
| iii | 6 | 0 | .02 | 6 | 0 | .12 |
| iv | 10 | 0 | .02 | 10 | 0 | .10 |
| i vs. ii | Q(6)  = 6.86 n.s. | | | Q(13) = 9.08 n.s. | | |
| ii vs. iii | Q(8)  = 12.42 n.s. | | | Q(1)  = 4.56 p < .05 | | |
| iii vs. iv. | Q(4)  = 4.44 n.s. | | | Q(4)  = 7.90 n.s. | | |
| Conclusions: | GSI Ø COR | | | COR ➡ GSI | | |

*Note.* Gottman and Ringland's (1981) bivariate time series analysis is conducted by comparing four types of regression equations (models) to determine the smallest model (minimum number of terms) that minimizes residual error of prediction. Values under columns A and C represent the number of autoregressive terms in each model. Values under columns B and D represent the number of cross-regressive terms in each model. SSE = sums of squares error (unexplained error variance when a given model is applied). Pairwise comparisons between the four models are evaluated using the Q statistic. The Q-statistic's sampling distribution is very similar to chi-square. Therefore a chi-square table may be used to evaluate statistical significance (the number in parenthesis following Q is the degrees of freedom) of Q. Causality (➡) is implied when Model ii is the best model. Otherwise, causality is *not* implied (Ø). See text for a detailed explanation of this procedure.

*STUDY II:* THE IMPORTANCE OF KEY TOPICS OF DISCUSSION

*Validity studies.*    The Topic Focus Ratios (TFRs) were designed to measure how much each key topic (mother, father, brother, guilt) was discussed in a session. Like the COR, we assessed the validity of this assertion by selecting the hours that received the highest TFR scores for each topic. The transcripts were then read by two independent judges who were asked to classify the transcripts based on their global impression of which of the key topics was discussed most. Both judges matched the computer coding with 100% accuracy. It was concluded that these TFRs measure the extent to which each topic was taken up in a session of psychotherapy.

TFR-GUILT had the additional potential of measuring Ms. M's guilty feelings during the sessions. We thought that guilty feelings would be associated with an increased propensity to use words in the TFR-GUILT category. We tested this hypothesis by correlating Ms. M's TFR-GUILT scores with independent measures of Ms. M's guilt in

each session to demonstrate convergent validity as well as with measures of Ms. M's other relevant negative emotions (i.e., anxiety and depression) to demonstrate discriminant validity. Independent observations of negative emotions were assessed from three perspectives (Ms. M's, Dr. X's, and independent observers'). The results (summarized in Table 3) support the notion that TFR-GUILT specifically measures the amount of guilt *expressed* and *experienced* by the patient during the hour rather than negative emotion in general. Furthermore, the particularly high correlation with Ms. M's self report ($r = .86$, p = .01) indicates that TFR-GUILT specifically measured the patient's subjective experience of guilt.

  *Making the unconscious conscious.*    We hypothesized that Ms. M became more conscious of her guilt over the course of her treatment. Obviously, measuring changes in unconscious processes is a complex matter. However, we believe that the following procedures reasonably estimated such change. First, since we have established that TFR-GUILT measures Ms. M's conscious experience of guilt in a session, we correlated the TFR-GUILT score with session number and found a significant relationship ($r = .31$, p = .02) suggesting that Ms. M increasingly experienced and expressed guilt over time. Secondly, we assumed that Ms. M would be unlikely to self-report feeling guilty when she was *unconsciously* guilty. However, we reasoned that, at these times, both Dr. X and the trained clinical judges might rate her as displaying guilt. In other words, unconscious guilt would be indicated by low agreement between therapist and patient and high agreement between therapist and independent judges. On the other hand, as Ms. M became conscious of her guilt, we expected her to agree with both Dr. X and the clinical judges. We predicted that there would be a shift in agreement over time that would conform to this model of the unconscious becoming conscious. We used the CSR, TSR, and PQS guilt items to measure Ms. M's, Dr. X's, and the independent judges' (respectively) assessment of Ms. M's guilt. All assessments were standardized to make the measures comparable.

  Figure 1 plots the level of agreement between Dr. X and Ms. M, independent judges and Ms. M, and independent judges and Dr. X (respectively). Before session 96, Dr. X and Ms. M were only able to agree about Ms. M's guilt 33% of the time. However, beginning with session 96 they were able to agree 100% of the time. Com-

**TABLE 3.  Correlation Between Topic Focus Ratio-GUILT (TFR-GUILT) and Independent Measures of Ms. M's Negative Emotion During Psychotherapy Sessions from Multiple Perspectives**

| Negative Emotion | Ms M (n = 14) | Dr. X (n = 14) | Observers (n = 53) |
|---|---|---|---|
| guilt | .86* | .38 | .34* |
| anxiety | .28 | .00 | .07 |
| depression | .20 | .10 | .10 |

*Note.* Measures of Ms. M's perspective were extracted from the Client Session Report. Dr. X's perspective was extracted from the Therapist Session Report. The Observer's perspective was extracted from mean ratings of Psychotherapy Process Q-set items. The different numbers of observations reflects the number of times these instruments were applied to the process data.
*p < .05 (2-tailed significance)

parisons between Ms. M's assessments and those of the independent judges follows a similar pattern. Before session 96, they were only able to agree 17% of the time. Beginning with session 96, they agree 75% of the time. Finally, as expected, Dr. X and the judges were in agreement most of the time throughout the treatment. This could suggest that Ms. M became conscious of her guilt at around session 96. Indeed, a post-hoc analysis revealed that Ms. M's TFR-GUILT score was significantly higher after session 96 than it was before session 96 ($t(45.4) = 2.11$, $p = .04$) suggesting an increased expression and experience of guilt following session 96. Recall that session 96 both received the highest COR rating and was a session in which the Ms. M linked her childhood suicide attempt to unconscious guilt. Overall, these analyses support the hypothesis that Ms. M became more conscious of guilt over the course of her treatment.

We hypothesized that two aspects of the therapy process influenced Ms. M's conscious awareness of her guilt. First, we thought that Dr. X's use of specific psychodynamic techniques was important. Examination of Table 1 reveals that one of the items that loaded on the Psychodynamic Technique factor was Q22 "Therapist focuses on patient's feelings of guilt." Second, we thought that Ms. M's level of associative freedom would bear a direct relationship with her awareness of guilt. Both of these hypotheses were tested using Gottman and Ringland's (1981) procedure to determine directional influences. Rather than report the details of the various models as we did in Table 3, we will instead summarize the results by reporting the results of the significance test demonstrating the superiority of Model ii (when appropriate). In our analysis of the relationship between Psychodynamic Technique (PT) and TFR-GUILT, we found that TFR-GUILT did not predict PT. That is, the autoregressive model (Model iii) best explained PT. However, PT did predict TFR-GUILT ($Q(8) = 26.51$, $p < .05$). Thus, our hypothesis that Dr. X's use of psychodynamic technique influenced Ms. M's expression of guilt was supported. In our analysis of the relationship between Co-Occurrence Rate and TFR-GUILT, we found that TFR-GUILT did not predict COR. However, we found that COR did predict TFR-GUILT ($Q(5) = 27.29$, $p < .001$). The hypothesis that associative freedom influenced Ms. M's conscious experience of guilt was supported.

*Why being less accepting/neutral helped.*    We hypothesized that Dr. X's decreased acceptance and neutrality would be specifically linked to the key topics. We found that Dr. X's Acceptance/Neutrality factor score ratings were negatively correlated with the extent to which she discussed Ms. M's mother ($r = -.28$, $p = .04$), father ($r = -.32$, $p = .02$), and guilt ($r = -.29$, $p = .03$) but not her brother ($r = .10$, $p = .49$). This suggests that the more Dr. X discussed these topics the less Accepting/Neutral she was rated. According to Fretter (1995), Dr. X "took an active stance with regard to the mothering issues [that Ms. M] presented in order to demonstrate [Ms. M's] right to have had better mothering herself, as well as to show that she had the right to be a better mother than her mother had been without fearing hurting her mother" (p. 15). We believe that these results capture this stance.

*Talking about key topics and the outcome of therapy.*    Finally, we hypothesized that the extent to which Ms. M discussed each of the key topics would influence changes in her symptoms. Again we used bivariate time series analyses to test the influence of each key topic (TFR-MOTHER, TFR-FATHER, TFR-BROTHER, and TFR-GUILT) on symptom change (as measured by the SCL-90 GSI). We found that TFR-MOTHER and TFR-FATHER were predictors of SCL-90 GSI scores ($Q(10) = 22.57$,

$p < .05$ and $Q(4) = 25.92$, $p < .001$ respectively). The other two key topics were not predictors of symptom change. We also found that Ms. M's SCL-90 GSI scores did not predict the extent to which she discussed her mother, father, or brother but it did predict the extent to which she discussed guilt ($Q(6) = 21.33$, $p < .01$). In sum, Ms. M's discussion of either her mother or father influenced symptom change. Discussion of her brother was neither predictive of symptom change nor predicted by symptom change. Finally, contrary to our expectation, Ms. M's symptom improvement led her to experience and express her guilty feelings to a greater extent.

## DISCUSSION

Most of our eight hypotheses were supported by the results of these two studies. Specifically, we found that: (1) Ms. M showed an increased capacity for free association over time; (2) Dr. X's psychodynamic technique promoted this increase; and (3) Ms. M's associative freedom was helpful in reducing her symptoms. Furthermore, we found that: (4) Ms. M became more conscious of her guilt over time; (5) Ms. M's increased capacity to free associate predicted her later ability to express and experience guilty feelings; (6) Dr. X's use of psychodynamic technique also directly influenced Ms. M's conscious experience of guilt; (7) Dr. X was found to be specifically less accepting and less neutral when discussing certain key topics (i.e., mother, father, and guilt) but not others (i.e., brother); (8) finally, we found that Ms. M's symptoms were directly ameliorated by discussing specific key topics (i.e., mother or father) but not others (i.e., brother). Figure 2 summarizes our results.

These findings help to answer some of the questions left by the Jones et al. (1993) study. First, the paradoxical Acceptance/Neutrality effect can now be understood as a planned intervention style designed to challenge pathogenic beliefs. It was not that Dr. X was less accepting of Ms. M but rather less accepting of her beliefs regarding her mother, father, and guilt. The theoretical basis for this conclusion is given by both the therapist's formulation (Fretter, 1995) and Control-Mastery Theory (Weiss, 1993). Second, these data established two roles for Psychodynamic Technique in Ms. M's treatment (i.e., increasing Ms. M's capacity for free association and increasing her awareness of guilty feelings). According to CMT, many of Ms. M's difficulties were caused and maintained by unconscious guilt. CMT argues that the unconscious guilt must be recognized and overcome in order for Ms. M to make substantive and long-lasting improvements. The demonstration of a shift of guilt from unconscious to conscious may, therefore, account for some of Ms. M's improvements in functioning and sense of well-being (e.g., her ability to acknowledge her successes without feeling guilty).

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**FIGURE 1  Making the Unconscious Conscious**. Agreement in ratings of Ms. M's guilt plotted over time. The upper line graph plots the agreement between client (CSR) and therapist (TSR) guilt ratings. The middle line graph plots the agreement between client (CSR) guilt and independent judges' (PQS) guilt ratings. The bottom line plots the agreement between independent judges' (PQS) and therapist (TSR) guilt ratings. Since the ratings were actually dichotomous (i.e., yes or no), the maximum points indicates perfect agreement and the minimum points indicate complete disagreement.

**FIGURE 2  Summary of Results**

In addition to documenting that unconscious guilt became conscious, our data provide important information about *when* and *how* this shift occurred. We found that symptom reduction led to increased awareness of guilt. This finding is explainable from a traditional psychoanalytic view which holds that symptoms are an expression of unconscious conflict. The lifting of symptoms would be expected to lead to conscious experiencing of the conflict. This finding is also in line with Howard, Lueger, Maling, & Martinovich's (1993) finding that symptomatic improvement (remediation) tends to precede changes in long-standing maladaptive patterns (rehabilitation). But more importantly, the fact that this change occurred after a year of psychotherapy argues for the utility of longer-term treatments. Many therapists understand that crucial change processes occur long after a patient achieves symptom relief, and that imposing limits on the number of treatment sessions necessarily curtails such change. However, there is as yet little research on psychological changes that occur over the longer term. Our data stand in contrast to the current emphasis in psychotherapy research on brief treatments and symptom change, which of course could not identify the kinds of change processes captured in the present study. It is also worth noting that, unlike many patients suffering from major depression who are treated in brief therapy (Shea et al., 1992), Ms. M has maintained her therapeutic gains for over two years post-therapy.

Our study also replicated a major finding of Spence et al. (1993): that a patient's associative freedom increases over time in a successful treatment. This replication was somewhat surprising given the differences between Ms. M's two-and-a-half year psychodynamic psychotherapy and the seven-year classically conducted psychoanalysis studied by Spence et al. Nonetheless, our replication of the relationship between associative freedom and length of treatment is particularly important for the quantitative single case literature where generalizabilty may only be argued by replication (Hilliard, 1993).

This study also demonstrated new ways of using language data to understand psychotherapy process. Though computer-assisted content analyses of language data is not new, using such categories to predict symptom change in a time series analysis is unusual. Our results demonstrate the merit of such an approach. Nonetheless, this method suffers from a basic limitation inherent to *classical content coding strategy* (Russell & Stiles, 1979). Designed to provide "objective, systematic, and quantitative description of the manifest content of communication" (Berelson, 1952, p. 18), this strategy attempts to address what Meehl (1991) calls *the problem* of psychoana-

lytic research. Namely, "How do we get the advantages of having a skilled observer, who knows what to listen for and how to classify it, without having the methodological disadvantage that anyone who is skilled (in this sense) has been theoretically brainwashed in the course of his training?" (p. 280). Classical content coding is not only objective and systematic but also (when done by computer) perfectly reliable. Yet, there are accompanying validity problems. Single words were counted without consideration of the context in which they occur. In fact, this method's claim of perfect reliability is dependent on this point. Thus, a situation emerges in which the potentially brainwashed human coder is replaced by a *brainless* automaton. This problem was addressed in the present research, to a certain extent, by the numerous validity studies but problems remain. For example, consider Spence et al.'s (1993) free association measure. It is unclear that the data presented either here or in Spence et al.'s (1993) paper strongly supports the construct validity of COR. What these data show is that COR seems to be related to certain therapeutic processes that theoretically should be related to free association. They do not directly test the relationship between COR and another direct measure of free association. Until such a measure becomes available, the construct validity of COR will remain an open question. Without the context, more parsimonious explanations cannot be ruled out. For instance, what if the aggregate COR were mostly measuring the extent to which the patient included the therapist in her discourse (e.g., frequent use of "you-I")? If this were the case then the COR might really be a measure of transference (which would also tend to increase in a psychodynamic treatment) or therapeutic alliance (which tends to be associated with positive outcome) (Horvath, Gaston, & Luborsky, 1993). There has already been some research exploring these possibilities (Spence, Mayes, & Dahl, 1994). In sum, it is clear that the classical content coding strategy does a poor job of adequately capturing the complexity and contextual boundedness of natural spoken language. We believe that the imprecision of this measure contributed to the small size of many of our reported effects. Future research may determine whether some loss in reliability due to human coders is worth the potential gain in validity.

These limitations notwithstanding, the results of this investigation were valuable in at least five respects. First, they enriched our understanding of Ms. M's recovery from major depression. Second, they drew attention to a potential benefit of longer-term treatments. Third, they contributed external validity to previous research on the COR. Fourth, they offered novel ways to use an old research methodology. Finally, they reminded us that rigorous empirical work can be conducted on psychotherapy process while adhering closely to the primary clinical data. That is, the words.

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**Zusammenfassung**

Eine 208 Sitzungen umfassende Behandlung (die bereits von Jones et al., 1993, untersucht wurde) wurde unter Verwendung zweier computerunterstützter inhaltsanalytischer Methoden analysiert. Die erste Methode misst die assoziative Freiheit eines Patienten durch die Bestimmung der Häufigkeit, mit der üblicherweise assoziierte Wortpaare vorkommen. Die zweite Methode bestimmt die Inhalte einer jeden Sitzung durch die Feststellung des Anteils von gegenstandsbezogenen Worten in einer jeden Therapiestunde. Die Ergebnisse zeigen, dass die assoziative Freiheit der untersuchten Patientin (a) mit der Zeit zunahm (was eine Replikation der Ergebnisse von Spence et al., 1993, darstellt), (b) beeinflusst war durch den Einsatz psychodynamischer Techniken und (c) die Symptomveränderung vorhersagte. Die Analysen des Gegenstandes des therapeutischen Dialogs legen nahe, dass (a) die Therapeutin eine nicht neutrale Haltung einnahm (was paradoxerweise als hilfreich nachgewiesen wurde; Jones et al., 1993), wenn sie bestimmte wesentliche Inhalte ansprach, (b) dass die Tatsache, dass die Patientin diese Gegenstände ansprach, mit der Symptombesserung in Beziehung stand. Die Ergebnisse werden im Hinblick auf ihren Beitrag zu einem Verständnis des Falles diskutiert, aber auch im Hinblick auf eine Theorie des psychotherapeutischen Prozesses.

**Résumé**

Une thérapie de 208 séances, déjà investiguée par E.E. Jones et al. (1993), a été étudiée à l'aide de deux stratégies d'analyse de contenu informatisées. La première mesure la liberté associative de la patiente en déterminant le taux d'apparition simultanée de couples de mots fréquemment associés. La seconde mesure les thèmes de chaque séance en déterminant la proportion par séance de mots évoquant un thème. Les résultats montrent que la liberté associative de la patiente a) augmente avec le temps, b) est influencée par des techniques psychodynamiques, c) peut prédire le changement symptomatique. L'analyse des thèmes de discussion révèle que a) la thérapeute n'est pas neutre en discutant de certains sujets-clés (ce qui, paradoxalement, avait été démontré par Jones et al., 1993, comme utile), b) l'élaboration de ces thèmes par la patiente est en rapport avec l'amélioration des symptômes. La discussion des résultats porte sur l'éclaircissement du cas investigué comme sur la théorie du processus psychothérapeutique.

**Resumen**

Se estudió un tratamiento de 208 sesiones (investigado previamente por E.E. Jones et al, 1993) utilizando dos estrategias de analisis de contenido asistidas por computadora. La primera midió la libertad asociativa de la paciente utilizando la Escala de Co-ocurrencia de pares de palabras comúnmente asociados. La segunda analizó los tópicos de cada sesion según la proporción de palabras vinculadas al tópico de cada sesión. Los resultados mostraron que la libertad asociativa de la paciente : a) aumentaba con el tiempo (replicando los resultados de D.P. Spence et al, 1993), b) se veía influida por el uso de técnicas psicodinámicas, y c) predecía el cambio de síntomas. El análisis del tópico de discusión reveló que : a) la terapeuta desplegaba una actitud no neutral en la discusión de ciertos tópicos clave que, paradójicamente, Jones et al., 1993 consideraron util, y b) la discusión de estos tópicos por la paciente se relacionaba con una mejoría de los síntomas. Se discuten los resultados en términos de su contribución a la comprensión del caso así también como a la teoría del proceso psicoterapéutico.