Psychotherapy Research
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tpsr20

A theoretical and methodological proposal for the descriptive assessment of therapeutic interactions

María Xesús Froján-Parga[a], Elena M. Ruiz-Sancho[a] & Ana Calero-Elvira[a]
[a] Department of Biological and Health Psychology, Universidad Autónoma de Madrid, Madrid, Spain
Published online: 18 Jul 2014.

To cite this article: María Xesús Froján-Parga, Elena M. Ruiz-Sancho & Ana Calero-Elvira (2014): A theoretical and methodological proposal for the descriptive assessment of therapeutic interactions, Psychotherapy Research, DOI: 10.1080/10503307.2014.935518

To link to this article: http://dx.doi.org/10.1080/10503307.2014.935518

Psychotherapy Research, 2014
http://dx.doi.org/10.1080/10503307.2014.935518

Routledge
Taylor & Francis Group

EMPIRICAL PAPER

A theoretical and methodological proposal for the descriptive assessment of therapeutic interactions

MARÍA XESÚS FROJÁN-PARGA, ELENA M. RUIZ-SANCHO, & ANA CALERO-ELVIRA

Department of Biological and Health Psychology, Universidad Autónoma de Madrid, Madrid, Spain

(Received 30 November 2012; revised 21 May 2014; accepted 11 June 2014)

Abstract
Objective: The goal of this study is to show the development of a strategy for a descriptive assessment of the therapeutic interaction. **Method:** In this study, we develop an observational methodology to analyze the dialogues that took place during 92 sessions conducted in a psychological center in Madrid, Spain, in which 19 adults were treated for various psychological problems by 9 behavioral therapists. A system was developed to codify vocal behavior of both the therapists and the clients; the software *The Observer XT* was used for recording. Therapeutic interactions were analyzed using sequential analysis. **Results:** There are three main sequences that synthesize the therapist–client interaction: first, an utterance by the client preceded by a therapist's verbalization, specifically a question (discriminative morphology) and followed by an expression of approval (reinforcement morphology); second, verbalizations of failure or discomfort uttered by the client, followed most often by verbalizations of disapproval (punishing morphology) uttered by the therapist; and third, verbalizations uttered by the client that are discriminated by the therapist after an in-depth explanation and followed by different therapist's utterances (expressions of approval, technical information, etc.). **Conclusions:** Depending on how the client responds the results in this study present a starting point for the study of the functional sequences that form the basis of therapeutic change.

Keywords: descriptive assessment; functional analysis; vocal behavior; psychotherapy; processes research; therapeutic interaction

Introduction

The work we present here relies on two fundamental elements: first, the pre-eminent status of verbal interaction as a basis of the therapeutic process and second, the need to perform an adequate functional analysis of said interaction in order to understand clinical change.

Regarding the importance of verbal behavior in the therapeutic process, back in 1966 Truax established the existence of a direct relation between the therapist's and client's behaviors, explaining change as a product of reinforcement processes. Krasner (1962) had also highlighted elements like social reinforcement and the interpersonal essence of therapy as important factors in treatment. This author pioneered the conceptualization of the therapist as a "reinforcement-issuing machine" in the therapeutic context. A few years later, in Reno University, Willard Day's research group started a strong research line geared toward the analysis of verbal behavior during therapy, thus making the study of the processes that explain clinical change a topic of interest for researchers all around the world. Some of the authors who took part in that research group based their studies in the application of the postulations of radical behaviorism to the analysis of clinical behavior (Hayes, 2005; Hayes, Wilson, Gilford, Follette, & Strosahl, 1996; Kohlenberg & Tsai, 1991; Tsai, Kohlenberg, Kanter, Kohlenberg, Follette, & Callaghan, 2009). In these therapies, the mechanism of change is explained as a consequence of the contingent and differential reinforcement of target client's behaviors: the therapist acquires the function of a discriminative and reinforcing stimulus. It was concluded that part of what happens in therapy could be understood as the development

Correspondence concerning this article should be addressed to María Xesús Froján-Parga, Biological and Health Psychology Department, Universidad Autónoma de Madrid, Madrid, Spain. Email: mxesus.frojan@uam.es

of a new learning history for the client, primarily focused in the establishment of an alternative verbal repertoire to the one that had been present until that moment (Kohlenberg & Tsai, 1995; Strosahl, Hayes, Wilson, & Gilford, 2005).

Regarding the functional analysis of the therapeutic interaction, we can go back to 1953, when Skinner (1953) argued that functional analysis was the appropriate strategy for establishing empirical demonstrations of "cause and effect" relationships between the environment and behavior. From the perspective of Applied Behavior Analysis many researchers have advocated the need to propose alternatives to evaluate the function of a given behavior in natural environments, without the manipulation of variables (Borrero & Borrero, 2008; Borrero & Vollmer, 2002; Mace 1994; Mace & Lalli, 1991; Thompson & Iwata, 2001, 2007). Thus, the development of descriptive assessment, a form of functional assessment which uses direct observation of behavior under naturalistic circumstances to identify the relations between events (Vollmer, Borrero, Wright, Van Camp, & Lalli, 2001). In this sense, functional analysis can be defined as the proposal of hypotheses that will explain behavior starting from the establishment of the possible operant or pavlovian functions that are performed by the elements of a given behavioral interaction.

Similar to other studies describing descriptive assessments (Borrero & Borrero, 2008; Lerman & Iwata, 1993; Samaha, Vollmer, Borrero, Sloman, St. Peter, & Bourret, 2009; Thompson & Iwata, 2001; Vollmer et al., 2001), we are aiming to measure the occurrence of therapist and patient verbalizations in temporal relation to each other. This is not a new idea, but its application to utterances (within the therapeutic interaction) seems to be. Consequently, this study's goal is to explore how the data collection system could be applied in this context. There are a great number of studies published on the subject, for example a special issue of JABA published in 1994; however, this research focuses on response morphologies that are not relevant to psychotherapy in private practice, such as disruptive behavior in institutionalized children, learning issues in children with some degree of generalized development disorder, and similar cases. A few years later, the *Psychotherapy Research* monographic issue featured different studies aimed toward identifying the most influential factors in the therapeutic process, as well as methodological alternatives that could be used in psychological treatment research (Dobson & Kazantzis, 2003). In these studies, and among other relevant topics, the flexibility of therapists from different theoretical perspectives in regards to the client's characteristics was discussed (Connolly Gibbons, Crits-Christoph, Levinson, & Barber, 2003), as was the influence of variables like the therapist's experience (Eells & Lombart, 2003; Franklin, Abramowitz, Furr, Kalsy, & Riggs, 2003). Other studies have been published in this endeavor to clarify the phenomenon of clinical change, putting an emphasis in its different parts or components: the therapeutic relationship, the kind of behavior problem, or the techniques or methodologies used. As for us, we consider that one of the best ways to study the therapeutic process is to make a functional approach from the client–therapist relationship's study, a point of view most coherent with the Applied Behavior Analysis' standpoint.

However, from the Applied Behavior Analysis' perspective, psychotherapy in private practice is often overlooked because it does not meet the required criteria of control. In fact, many professionals in this field strive to use the results of basic experimentation and to follow the guidelines of functional behavior analysis in their clinical practice. Despite this endeavor, explaining the therapeutic process in terms of learning processes is usually criticized from different perspectives: behavior analysts dismiss it because it fails to meet their methodological criteria, and other psychotherapeutic models reject it for its alleged reductionism at attempting to explain the complexity of the human being by means of the principles of classical and operant learning (Hayes, Follette, & Follette, 1995; Kohlenberg, Tsai, & Dougher, 1993; Scotti, McMorrow, & Trawitzki, 1993; Vollmer et al., 2001).

At this point, we have opted to try and adapt the demands of assessment and treatment of Applied Behavior Analysis to the reality of psychotherapy (i.e., contexts that cannot be fully controlled), by using procedures that have been experimentally tested and transferring them to this context. Like other authors (Kohlenberg & Tsai, 1991), our line of research focused on determining whether it is possible to identify the learning processes that occur during the verbal interaction between a therapist and a client and whether these processes underlay, to some extent, the therapeutic change. We do not intend to break with functional analysis since, as stated by Iwata et al. (1982), this approach contributes to the integration of basic and applied research by allowing the incorporation of experimental advances in the analysis and treatment of behavior problems. However, because of the characteristics of our field of application, it is more appropriate to use a descriptive methodology that allows for the relationships between client behaviors and verbal contingencies of reinforcement and punishment to be identified.

The behavioral paradigm seems a strong alternative from which to scientifically approach the study of behavior. Therefore we conceptualize, from a behavioral standpoint, key concepts of the phenomena under study: (i) the therapist–client interaction is viewed as a shaping process, (ii) in-session verbal behavior may be explained by the principles of classical and operant conditioning, and (iii) behavior therapy may be the application of basic behavioral operations for the treatment of psychological problems (Catania, 1998; Perez, 2004). The analysis of verbal interaction between the psychologist and the client is one of the crucial factors to understand how change occurs in therapy. It should be noted that during outpatient treatment the main source of information about the client's problems and progress is his or her own speech. In fact, while many activities other than talking take place during therapy, it is through speech that many of the therapeutic processes are conveyed.

Throughout these decades of researching, several instruments for the coding of in-session verbal behavior have been developed (Callaghan, 1998; Hill, 1978, 1986; Hill, Charles, & Reed, 1981; Hill, Nutt, & Jackson, 1994; Rusell & Stiles, 1979; Stiles, 1979, 1987). These instruments have been used to examine the presence, absence, frequency, and variability of different types of response carried out by the clinician throughout the therapeutic process (e.g., Stiles & Shapiro, 1995). But their design is based in the content and/or shape of the therapist's verbalizations, and not in their possible functional role, which is of paramount importance in our study. Some authors devised specific categorizing instruments for particular verbal interactions (see Gottman's 1979 study on helpful and destructive marital interactions as an example), but the category system created by our research group focuses on the study of any and all verbal interaction rather than on a single, concrete one. Other authors have performed interesting analyses of language use as a social strategy, creating categorizing instruments for the analysis of conversations and texts from different communities and cultures (Guerin, 2003). The only published categorizing system focused in functionality is the *Functional Analytic Psychotherapy Rating Scale* (Callaghan, 1998); despite it pursues the same goal as our research (identifying the mechanisms of change in therapy), we could not use it, mainly due to the fact that the usefulness of this instrument is greatly diminished when used outside the clinical approach of Functional Analytic Psychotherapy.

We intend to solve some of the previously encountered issues by developing a reliable and valid categorization system to code the putative functions of therapist's vocal behavior that has proven to be reliable in classifying a variety of in-session vocal episodes. To develop our system, we considered previous research that are clear antecedents in this line of study, particularly the work of authors from the so-called "Reno group" (Callaghan, Summer, & Weidman, 2003; Follette, Naugle, & Callaghan, 1996; Hayes, 2005; Hayes et al., 1996; Kohlenberg & Tsai, 1991; Luciano, Barnes-Holmes, & Barnes-Holmes, 2002; Luciano & Hayes, 2001) and others like Hamilton (1988) or Rosenfarb (1992). This system has proven to be useful in coding over a hundred clinical sessions with different clients and problems, while maintaining appropriate reliability standards. The results of our work so far suggest that the hypothetical functions of therapist's vocal behavior show systematic changes through the intervention process that are independent of the therapist, the client and the behavioral problem at hand, in contrast to what other authors and studies suggest (Beutler & Clarkin, 1990; Beutler et al., 2004; Blatt, Zuroff, Hawley, & Auerbach, 2010; Carey, 2005). This approach allows a first general model of the therapeutic process through the distribution of the therapist's behavior through the stages of psychological treatment. Discriminant analyses suggested that therapists perform four types of clinically relevant activities: evaluation, explanation, treatment, and consolidation of change. It seems therefore that the putative functions of the therapist's vocal behavior vary systematically with what the clinician does in session (assess, explain, train, treat, consolidate therapeutic gains), independently of his/her personal style or the characteristics of the client or problem under analysis (Froján-Parga, Calero-Elvira, & Montaño-Fidalgo, 2009, 2011; Froján-Parga, Montaño-Fidalgo, & Calero-Elvira, 2010; Ruiz-Sancho, 2011).

The aim of this study is to develop a methodology for the analysis of therapeutic interaction and to describe the behavior sequences that happen naturally throughout it; we seek to accomplish these objectives by analyzing the dialogues between therapists and clients in a number of recorded clinical sessions. In the following pages, we describe the work that was performed, including the development of the categorization systems that were used to describe the vocal behaviors of both the therapists and the clients. At this point, it is convenient to point out that, for this study, the whole therapist's verbal categories subsystem was used (SISC–CVT), as was part of the client's subsystem (SISC–CVC). The reason why only some of the client's verbalizations were studied was their relevance in previous studies by the group (Ruiz, Froján, & Calero, 2013a).

Method

Participants

Recordings of 92 clinical sessions (78 hr, 19 min, and 2 s of observed therapy) were analyzed. These recordings pertained to 19 cases that were treated by 9 behavioral therapists from the Instituto Terapéutico de Madrid (Therapeutic Institute of Madrid), a private clinic in Madrid, Spain, who had varying degrees of experience. In all of the cases, the psychological interventions were conducted during individual therapy using an adult population (see Table I). All coded sessions were selected at random from the pool formed by all recorded sessions from all therapists.

Specific consent for recording was obtained from each participant, and the anonymity and confidentiality of the data were guaranteed. This procedure was approved by the Research Ethics Committee of the Universidad Autónoma de Madrid.

Study Variables

Vocal behavior of the therapist. In total, 13 categories of behavior of the therapists were examined, and either the frequencies (for event categories) or durations (for state categories) were recorded. For the former group, the study calculated the number of occurrences belonging to each category as a percentage of the total number of occurrences belonging to all of the event categories that were recorded. These categories were: discriminative morphology without an indication of the desired direction of the response, discriminative morphology indicating the direction of the desired response, conversational discriminative morphology, low reinforcement morphology, medium reinforcement morphology, high reinforcement morphology, conversational reinforcement morphology, punishment morphology, and other. For the other group, the study examined the amount of time that was devoted to each state category as a percentage of the total observed time of the session. The state categories were: informative morphology, motivational morphology, instructional morphology in session, and instructional morphology outside of the session. The development of the categorization system is explained in the Procedure section.

Vocal behavior of the client. In total, six categories of vocal behaviors of the clients were examined. Behavioral occurrences were recorded according to the frequency of their appearance during the courses of the sessions; in a subsequent analysis, the percentage of behavioral occurrences belonging to each category over the total number of recorded client behaviors was calculated. The following categories were used: providing information, requesting information, showing agreement, showing disagreement, discomfort, and failure. As in the previous case, the Procedure section explains the development of the categorization system.

Materials and Instruments

The recording of the analyzed sessions was performed using a closed-circuit camera and video recorder that belonged to the center.

The study used the SISC–INTER–CVT, composed of two subsystems: the Subsystem of Categorization of the Vocal Behavior of the Therapist (SISC–CVT) and the Subsystem of Categorization of the Vocal Behavior of the Client (SISC–CVC) to code the therapist and client verbalizations. The development of the system and complete description of its categories can be found in other publications by the research group (Froján, Montaño, Calero, García, García, & Ruiz, 2008; Virués-Ortega, Montaño-Fidalgo, Froján-Parga, & Calero-Elvira, 2011; Froján-Parga, Montaño-Fidalgo, & Calero-Elvira, 2006, 2010). A set of coding criteria, along with positive and negative examples for each category are available in the online supplementary material (http://www.aba-elearning.com/documentos/SISC–INTER.pdf) and in the research group's webpage (http:www.grupoacoveo.com).

Sessions were coded using the software *The Observer XT 6.0*. To guarantee the accuracy of the recordings, version 7.0 of *The Observer XT* was periodically used to analyze the degree of inter- and intrarater agreement. The statistical analysis of the data was performed using the software *SPSS 17.0* and the *Generalized Sequential Querier* (*GSEQ*) version 5.0. The *GSEQ* is a statistical software package for analyzing sequential patterns of behavior (Bakeman & Quera, 1995). The program *ObsTxtSds*, version 2.0, which transforms data to the *SDIS* (*Sequential Data Interchange Standard*) language and which was written by the aforementioned authors, was used to convert data obtained with *The Observer XT* for use with the *GSEQ*.

The categories of each subsystem (SISC–CVT and SISC–CVC) that were used in this study are shown in Table II.

Procedure

To obtain a representative sample of the distinct steps through which the behavioral therapeutic process evolves, we created a qualitative selection variable called *intervention phase*. One of these phases comprised the sessions where the therapist explained

Table I. Characteristics of the analyzed recordings (I).

Case	Total sessions (recorded)	Observed sessions (number and duration)	*T*	Sex (T)	Age (T)	Experience (years)	Sex (C)	Age (C)	Problem
1	16(13)	S1 (0h 57′03″) S2 (0h 56′22″) S4 (0h 50′59″) S8 (1h 05′49″) S13(0h 49′44″)	1	F	43	14	F	29	Depression
2	10(10)	S3 (0h 52′ 35″) S4 (0h 51′40″) S6 (0h 43′38″) S8 (0h 37′11″) S9 (0h 54′16″)	1	F	45	16	F	32	Problems with couple
3	21(20)	S2 (0h 49′17″) S5 (1h 05′01″) S7 (0h 51′28″) S9 (0h 42′11″) S20(0h 31′23″)	1	F	47	18	M	31	Obsessive compulsive disorder
4	17(17)	S1 (1h 14′35″) S4 (1h 03′44″) S5 (0h 46′25″) S9 (1h 05′43″) S16(0h 32′53″)	1	F	48	19	F	32	Anxiety problems
5	9(8)	S2 (0h 46′21″) S3 (0h 27′59″) S4 (0h 37′36″) S7[b](0h 18′12″) S8 (0h 33′34″)	1	F	44	15	F	36	Agoraphobia
6	8(8)	S3 (0h 45′03″) S5 (0h 45′04″) S6 (0h 40′02″) S7 (0h 51′16″) S8 (0h 51′11″)	2	M	31	5	F	29	Eating disorders
7	12(10)	S2 (0h 50′03″) S4 (0h 34′13″) S6 (0h 49′39″) S8 (0h 45′12″) S10 (0h 49′04″)	2	M	30	4	M	36	Anxiety problems and social skills
8	10(9)	S2 (0h 54′57″) S5 (0h 55′00″) S7 (0h 20′43″) S8 (0h 38′22″) S10 (0h 51′27″)	2	M	32	6	F	22	Depression
9	9(6)	S2 (0h 48′06″) S2 (0h 45′38″) S4 (1h 27′58″) S8 (0h 48′42″) S9 (0h 58′37″)	3	F	30	4	F	51	Fear of flying
10	8(7)	S2 (1h 03′35″) S4 (1h 01′41″) S5 (0h 55′19″) S6 (1h 00′57″) S7 (0h 56′04″)	3	F	33	7	F	35	Hypochondria and problems with couple
11[a]	5(5)	S2 (0h 49′15″) S3 (1h 08′56″) S4 (1h 03′59″) S5 (0h 51′15″)	3	F	32	6	F	31	Anxiety problems

Table I *(Continued)*

Case	Total sessions (recorded)	Observed sessions (number and duration)	*T*	Sex (T)	Age (T)	Experience (years)	Sex (C)	Age (C)	Problem
12	13(12)	S2 (1h 09′49″) S3 (1h 28′06″) S5 (0h 49′42″) S7 (0h 52′32″) S12 (1h 14′10″)	3	F	30	4	M	34	Social skills
13	9(8)	S1 (0h 51′52″) S4 (0h 58′54″) S5 (0h 54′18″) S7 (0h 51′50″) S8 (0h 55′46″)	4	F	33	7	F	19	Phagophobia
14	13(10)	S2 (0h 53′32″) S6 (1h 01′12″) S7 (0h 53′56″) S10 (0h 56′32″) S12 (0h 59′25″)	5	F	26	1	F	21	Obsessive-compulsive disorder
15[a]	7(5)	S2 (0h 44′57″) S3 (0h 42′21″) S5 (0h 44′28″) S6 (0h 48′46″)	6	F	25	1	F	33	Onychophagia
16	15(13)	S4 (1h 07′32″) S5 (1h 09′09″) S6 (0h 44′54″) S11 (1h 00′55″) S15 (0h 50′58″)	7	F	26	1	F	35	Depression
17	17(15)	S2 (0h 50′18″) S4 (0h 47′49″) S5 (0h 44′52″) S10 (0h 42′14″) S13 (0h 31′48″)	8	F	36	2	F	22	Anxiety problems
18	9(8)	S2 (0h 47′37″) S3 (0h 51′58″) S4 (0h 51′39″) S8[b] (0h 20′43″) S9 (0h 19′02″)	9	F	24	1	M	21	Arachnophobia
19[a]	9(7)	S1 (1h 05′46″) S5 (1k 14′40″) S6 (0h 58′15″) S8 (1h 09′45″)	9	F	24	1	M	25	Eating disorders

Note. T = therapist; C = client; S = session; W = woman; M = men.
[a]The session corresponding to the final phase of treatment could not be recorded; therefore, it could not be analyzed.
[b]Part of the session took place outside of the clinic.

the underlying causes of the patient's issues and presented the intervention plan and is referred to as the *functional analysis and treatment explanation* (phase 2). This session served as the delineation between the *assessment phase* (phase 1), comprising the sessions prior to this one, and the *treatment phase*, comprising the ensuing sessions. Treatment sessions were then identified and divided into three equal-sized groups in chronological order: *treatment initiation* (phase 3), *treatment course* (phase 4) and *treatment conclusion* (phase 5). Once these divisions were established, a random session was chosen from among all recorded sessions from each stage.

After that, the SISC–INTER–CVT was developed; a summary of the elaboration process that has been described in detail in earlier publications (Froján-Parga et al., 2008; Virués-Ortega et al., 2011) is presented here. Taking into account the absence of coding instruments focused in the hypothetical function of in-session verbal behavior, a series of initial categories that could collectively describe the possible functionalities of the vocal behavior of the therapist emerged from the *Basic Behavioral Operations* mentioned by Catania (1998) and were adapted to the clinical context. For the client, an initial classification was performed, in

Table II. Definitions of the SCIS–INTER–CVT categories utilized in this study (I).

Categories of therapist verbal behavior	
Categories[a]	Definition and examples[b]
Discriminative morphology	Therapist verbalization leading to a client behavior (verbal or non-verbal) (Event category)
Possible modifiers[c]:	
Without indicating the desired direction of the response	e.g., Therapist: "What did you do this weekend?" e.g., Patient: "I went to the theater"
Indicating the desired direction of the response	e.g., Therapist: "If you go to the theater would be better right?" e.g., Patient: "Yes"
Conversational	e.g., Therapist: (Any other verbalization of therapist) "Do you understand?" e.g., Patient: "Yes"
Reinforcement morphology	Therapist verbalization indicating approval, agreement, or acceptance of the client's behavior (Event category)
Possible modifiers[c]:	
Conversational	e.g., Patient: "I had never been able to do that without taking a pill, so I'm…" e.g., Therapist: "Proud" e.g., Patient: "Proud of myself"
Low	e.g., Patient: "I had never been able to do that without taking a pill, so I'm proud of myself" e.g., Therapist: "Good"
Medium	e.g., Patient: "I had never been able to do that without taking a pill, so I'm proud of myself" e.g., Therapist: "Very good"
High	e.g., Patient: "I had never been able to do that without taking a pill, so I'm proud of myself" e.g., Therapist: "Excellent"
Punishment morphology	Therapist verbalization indicating disapproval, rejection, and/or lack of acceptance of the client's behavior (Event category) e.g., Patient: "I don't think I can" e.g., Therapist: "No, that's not true"
Informative morphology	Therapist verbalization that communicates technical or clinical knowledge to a non-expert (State category) e.g., Therapist: "You're nervous because you have learned to do tests that test situations are aversive situations"
Motivational morphology	Therapist verbalization that explains the consequences that client behavior (whether the behavior and/or situation is mentioned) will have, is having, has had or could have (hypothetical situations) on clinical change (State category) e.g., Therapist: "If you do your homework this week you will be better"
Instructive morphology in the session	Therapist verbalization that is directed at fostering a client behavior in the clinical context (State category) e.g., Therapist: "You relax…"; "You breathe…"
Instructive morphology outside the session	Therapist verbalization that is directed at fostering a client behavior outside of the clinical context. It does not have to explicitly mention the consequences but it must describe the steps of the action that would be favored (State category) e.g., Therapist: "You have to do the registration for this week"
Other	The therapist verbalizations that cannot be included in any of the previous categories (Event category)
Provide information	Verbalization in which the client engages in providing the therapist with purely descriptive information for evaluation and/or treatment. e.g., Patient: "My family is related to my problem"
Solicite information	Asking and/or petitioning the therapist for information. e.g., Patient: "Why this problem happen to me?"
Show agreement	Client verbalization that indicates agreement with, acceptance of and/or admiration of the therapist's verbalizations. e.g., Therapist: "Each problem has multiple causes" e.g., Patient: "I agree"
Show disagreement	Client verbalization that indicates disagreement with, disapproval of and/or rejection of the therapist's verbalizations. e.g., Therapist: "Each problem has multiple causes" e.g., Patient: "I disagree"
Discomfort	Client verbalization that refers to the suffering caused by behavior problems or the expectation of this discomfort e.g., Patient: "I feel bad"

Table II *(Continued)*

Categories of therapist verbal behavior	
Categories[a]	Definition and examples[b]
Failure	Client verbalization that signals a failure to accomplish a therapeutic objective or the expectation to fail in accomplishing it e.g., Patient: "I won't be able to do that"

Note. [a]To facilitate understanding of the study, we list only the categories that were used for analysis while the SISC–INTER system originally includes more categories.
[b]The complete observational guide including the coding criteria is avalaible upon request. It can also be found in Ruiz-Sancho (2011).
[c]Due to space limitations, only the definitions of the higher level categories are included.

which the possible morphologies of his/her vocal behavior, seen as a *response function* evoked by the vocal behavior of the therapist, were listed. These initial proposals served as a basis for three raters to informally observe and record the therapy sessions and to subsequently discuss the existing disagreements so that the categorization criteria could be refined and made more specific. This process led to the creation of the first versions of the SISC–CVT and the SISC–CVC. The three observers were psychologists with a postgraduate degree in clinical psychology and more than 2 years of clinical practice. They were part of the research group and received 25 hr of training in observational methodology and the use of the program *The Observer XT*. At the end of this process, they achieved a high level of interrater agreement with previously trained observers (91% of agreement, which equals a Kappa value of .80). This process led to the creation of the first versions of the SISC–CVT and the SISC–CVC.

Next, a definitive proposal for each codification system was refined and presented. The vocal behaviors of therapists and clients in 11 therapy sessions were recorded in a systematic manner with the help of the statistical software *The Observer XT*, version 6.0. The "recordings activated by transition" or RATs (Bakeman, 2000; Bakeman & Gottman, 1989; Martin & Bateson, 1986; Quera, 1991) are continuous recordings in which the behavior units correspond to recording units without the establishment of an *a priori* codification unit; instead, the codification unit is determined by the transition from some categories to others as an observed behavior fulfills the criteria established in the definition of each category in the system. The three observers who participated in the earlier step coded, compared and discussed the inaccuracies that they found in this step until they were able to establish criteria that enabled the categorization of the vocal behaviors of both the therapists and the clients that were being studied. These discussions led up to the establishment of agreements that were put to use in the following observations, until the definition of each category had been proven to be clear enough and all three observers coded the same categories in successive trials. The observers introduced pertinent changes until they were able to configure definitive category systems. The classification of the different morphologies was done on a purely descriptive basis; for example, words or expressions indicating approval, agreement, or acceptance of the client's behavior were coded as *morphology of reinforcement* (see Table II) and the different modifiers in that category were indicated according to the type of term used and the tone or emphasis that the therapist employed. In this regard, *morphology of low reinforcement* corresponded to terms such as "Good" or "Right" expressed in a neutral tone; *medium reinforcement* corresponded to more emphatic terms, such as "Very good" or "Good!" and *high reinforcement* to expressions such as "Excellent!" or "Great!" It was during this phase of the investigation that it was decided to record not only the occurrence of a given vocal behavior of the therapist but also its duration. This decision resulted in the establishment of event categories (behaviors for which only the moment at which a behavior occurred was recorded) and state categories (behaviors for which start and end times were coded in the recordings).

An inherent problem to all observational studies is that of ensuring an adequate level of agreement in implementing the corresponding system. One way that seems appropriate to estimate the level of agreement is to analyze the degree of agreement between observations of at least two independent raters and/or by the same rater at two different times. The percentage of agreement between raters is often used as an indicator of the degree of concurrence between two observational records, although this figure does not account for those agreements which may be due to chance. It seems therefore that the most appropriate coefficient of agreement for nominal scales—despite the limitations noted by some authors (Ato, Benavente, & López, 2006; Von Eye &

Mun, 2005)—is Cohen's kappa (1960), not only because it introduces a correction of agreements due to chance, but because this coefficient also follows a normal distribution, which can facilitate interpretation.

Once the categorization systems were established, the process of coding the vocal behaviors of the therapists and clients began, followed by the sequential analysis of the data according to a *log-linear* approach (Bakeman, Adamson, & Strisik, 1995; Bakeman & Gottman, 1989, 1997; Quera, 1993).

The general question that can be answered with a sequential analysis is whether there is a correlation between adjacent or nearly adjacent behaviors. The data were analyzed using sequential analysis techniques based on the log-linear approach (Bakeman, Adamson, & Strisik, 1995; Bakeman & Gottman, !6! 1986/1989, 1997; Quera, 1993). A key concept is the transition probability at a lag r between two behaviors, defined as the probability that, given behavior X occurs in a sequence, behavior Y occurs r events before or after X (i.e., at a negative or positive r lag). Transition probabilities of an order greater than 1, called multiple transition probabilities, can also be studied in cases of longer chains of behavior. To explore the association between specific pairs of categories, the adjusted residuals (z) were calculated, a standard procedure to determine whether a specific target behavior occurs significantly more or less often than expected by chance after each given behavior. Since adjusted residuals values depend on the sample size, we also used Yule's Q statistic as an indicator of effect size (values range from −1 to +1), which is usually calculated in sequential analysis (Bakeman & Quera, 1995).

In order to prevent rater drift, agreement between different raters' coded sessions was assessed every 10 sessions, and comparisons were made using sessions that were randomly chosen from the sample. Two of the raters had taken part in the systems' elaboration, and a third was taught to use both the category system and the Observer XT. All three raters had been trained in behavior modification and observational methodology. For each selected session, only half of the recording was compared; 5 min of the recording were compared, then 5 min were skipped without comparing, and this pattern was continued throughout the session. To maintain the recordings, a criterion kappa of 0.60 was set. This value of kappa is the minimal level that some authors consider a "good" coefficient of agreement, and it is the value of the kappa index that is associated with an acceptable level of the theoretical observer accuracy that is needed for the implementation of a codification system with SISC–CVT characteristics (Bakeman, Quera, McArthur, & Robinson, 1997). According to Gardner (1995), this level of accuracy should not fall below 80%. The intra-observer kappa values for the SISC–CVT ranged between 0.67 and 0.89 with a level of statistical significance that was less than 0.01, which permits us to reject the hypothesis that the levels of agreement that were observed were attributable to chance. The percentage of agreement was always greater than 73%, and it peaked at a value of 90%. The kappa values for inter-observer comparisons ranged between 0.63 and 0.91, with a level of statistical significance that was similar to the kappa value for intra-observer agreement; the percentage of agreement was between 61% and 92%. The intra-observer kappa value for the SISC–CVC was always between 0.60 and 0.90 with percentages of agreement between 72% and 91%, and the inter-observer kappa value for the SISC–CVC was between 0.60 and 0.80 with a percentage of agreement that was always greater than 72% and less than 91%. In both cases, the level of statistical significance was less than 0.01, and these coefficients show a degree of agreement between "good" and "excellent" (Bakeman, 2000; Landis & Koch, 1977). The values of the theoretical accuracy of the observers were between 80% and 93.5% with these characteristics of the recording instruments (Bakeman et al., 1997).

Results

In order to facilitate comprehension of the sequential analyses, basic descriptive information is presented. Specifically, the information of event categories (those whose frequency was registered but not their onset and offset times) is presented as a percentage in which each category was registered as a proportion of total observed event categories. The information about the distribution of state categories (those for which duration was measured) is presented as a percentage of session time in which each of these categories was registered. The descriptive statistical data are presented in Table III; in the following pages we will highlight the most relevant results.

It seems apparent that, in regards to the therapists' verbal behavior, the event categories that were most often observed were the *discriminative morphology without indicating the desired direction of the response, conversational discriminative morphology* and *conversational reinforcement morphology*. The lowest percentages were *high reinforcement morphology* and *punishment morphology*. As for the client's verbal behavior, we find very different distributions: more than half of the client's verbalizations uttered in session are coded as *provide information.*

Before testing the relationship between specific behaviors of the therapist and client, Pearson's *chi-squared* (χ^2) was used as a statistical test of whether a

Table III. Descriptive statistics of the variables related to the psychologist's verbal behavior.

	Mean	*SD*
Categories of therapist verbal behavior		
Without indicating the desired direction of the response discriminative morphology[a]	34.57	14.13
Indicating the desired direction of the response discriminative morphology[a]	3.86	2.63
Conversational discriminative morphology[a]	21.13	13.04
Low reinforcement morphology[a]	4.63	3.10
Medium reinforcement morphology[a]	5.83	3.68
High reinforcement morphology[a]	2.43	1.94
Conversational reinforcement morphology[a]	20.43	11.18
Punishment morphology[a]	2.21	1.85
Informative morphology[b]	32.87	18.01
Motivational morphology[b]	3.06	2.67
Instructive in the session morphology[b]	0.59	1.87
Instructive outside the session morphology[b]	4.42	3.62
Other[a]	5.21	3.04
Categories of client verbal behavior		
Provide information[a]	56.83	12.51
Solicite information[a]	2.91	2.60
Show agreement[a]	21.81	8.75
Show disagreement[a]	1.03	1.10
Discomfort[a]	4.71	3.46
Failure[a]	0.47	0.70

Note. [a]The variable measures the percentage of the total event categories ocurring in a session that were devoted to the event category in question.
[b]The variable measures percentage of session time devoted to the state category in question.

relationship of dependency between the vocal categories of the two groups was present. The value of this statistic—the client's behavior being the given behavior and that of the therapist the conditioned behavior—was χ^2 = 40,010.45, df = 256 for the delay +1 and χ^2 = 79,102.74, df = 256 for the delay −1. Taking the behavior of the therapist as given behavior and that of the client as conditioned behavior, the value of χ^2 = 79,102.74, df = 256 for a +1 delay. For all lags studied, the χ^2 values indicate that the values of the cells vary significantly from a random distribution with a confidence level of 0.99.

Therefore, it appears that the behaviors of the client affect those of the therapist that follow immediately and *vice versa*, and that the behaviors of the therapist in a given moment are related to those of the client for the following position. The next step must necessarily be checking whether client's utterances (always as a response function) are preceded or followed by a therapist's utterance that allows for the explanation of the occurrence of said response. This analysis procedure must be understood within the general approach of process research in therapeutic interaction: The study of the behavior sequence always starts with the therapist, since it is him/her that directs the session; and in order to study the relation between what each of both members of the interaction say, the starting point would be the client's response, considering it to be a function of the previous utterance made by the therapist, the future emission of a similar response by the client depending on the immediately subsequent.

Next, an analysis of the significance associated with −1 and +1 lags was performed. This analysis used the client's vocal behavior categories as given behaviors and the vocal behaviors of the therapist as conditioned behaviors. The results are shown in the Figures 1–6 where the strongest associations between the given and conditional behaviors, according to Yule's *Q* are indicated. In the figures, the bars represent the strength of that correlation, ranging from −1 to 1. Color indicates whether those relations are statistically significant or not, with black representing significant relations and white representing non-significant relations.

In order to illustrate the results of the sequential analysis, some examples of actual dialogues between therapist and client during the clinical interaction have been included in the text. As we explained, these sequences were identified starting from the client's response, analyzing the therapist's utterance that preceded it and the one that followed it. Once these sequences are identified, we present them in the examples as we consider them to occur within the therapeutic session: the therapist issues an utterance (first), the client responds (second) and, lastly, the therapist issues another utterance that will potentially affect the way the client will respond when presented with a similar stimulus.

As can be observed in Figure 1, the category *provide information* has significant correlations with

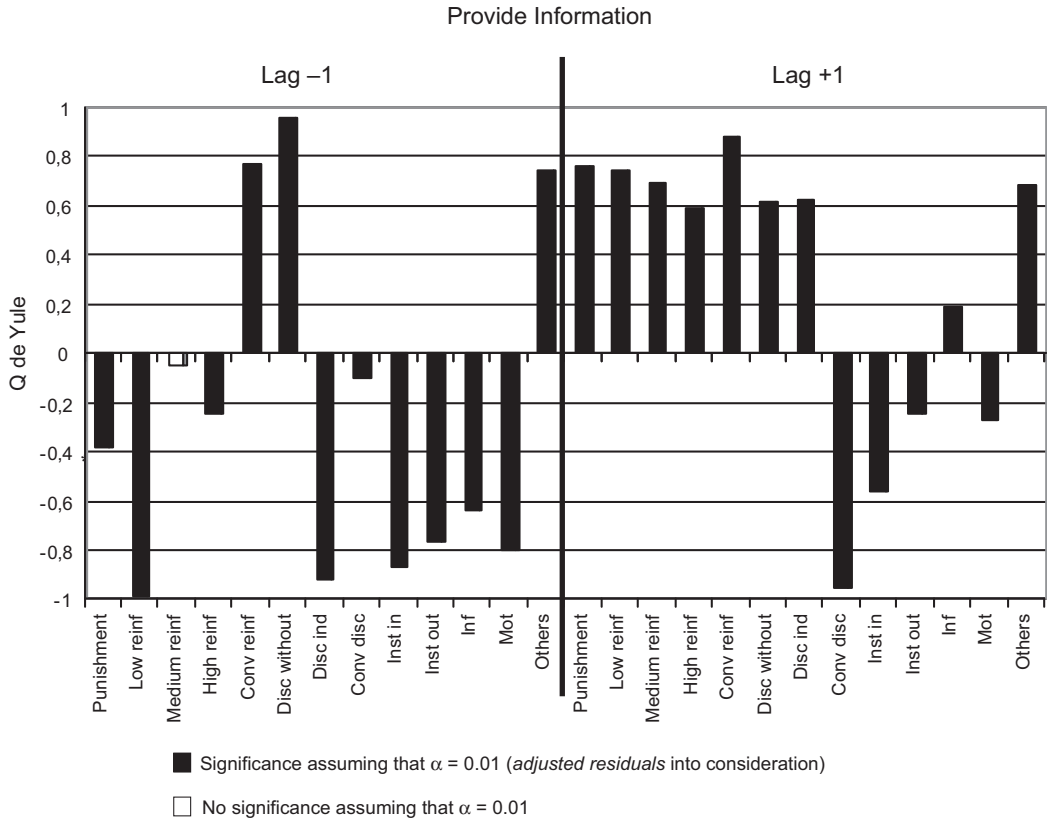

Figure 1. Relationships between the category *provide information* and the categories of the therapist. Ref. = reinforcement morphology; Med. = medium; Conv. = conversational; Disc. = discriminative morphology; Ind. = indicating the desired direction of the response; Inst. = instructive morphology; Inf. = informative morphology; Mot. = motivational morphology.

all of the therapist verbalizations except those of *medium reinforcement morphology* at a lag of −1. We find that one of the strongest associations between client and therapist behavior is that, following client behavior that can be categorized as *provide information*, the therapist produces verbalizations that are coded as *morphology of conversational reinforcement* and, to a lesser extent, as *morphology of punishment* and *morphology of low reinforcement*. However, in the vast majority of cases, the psychologist had, prior to this type of content from the client, formulated verbalizations that were coded as *discriminative morphology without indication* and, on some occasions, had only produced a verbalization that could be categorized as *conversational reinforcement* or *other*. An example of an usual in-session dialogue categorized in this way could be as follows: "What's your job?"(therapist's utterance coded as *discriminative morphology without indication*)—"I'm a teacher" (client's utterance coded as "*provide information"*)—"Good, and…" (therapist's utterance coded as *conversational reinforcement morphology*).

When the client expressed doubt or asked a question, which was recorded as *requesting information* (Figure 2), the therapist generally reacted by producing some type of clarification that was deemed *informative morphology*, although he/she also presented verbalizations that were coded as *instructive morphology outside the session* or *discriminative morphology without indication* on a number of occasions. Furthermore, the three categories of the psychologist's vocal behavior that most often precede client questions are *instructive morphology outside the session*, *other*, and *conversational discriminative morphology*. When this last verbalization appears following a long verbalization by the therapist (which is a type of sequence found in earlier group studies; Ruiz-Sancho, 2011), the client is usually asked whether he/she understood what the therapist said, demonstrating the clinical relevance of this type of verbalization (such as, "Do you understand? Do you agree?") in evoking a client response, that is, asking for information. An example of this in-session sequence could be as follows: "lack of pleasurable activities is one of the reasons of your low mood" (therapist's utterance coded as *informative morphology*)—"And what do I have to do?" (client's utterance coded as *requesting information*)—"This week you will start by going out for a daily ten minute walk…" (therapist's utterance coded as *out-of-session instructional morphology*).

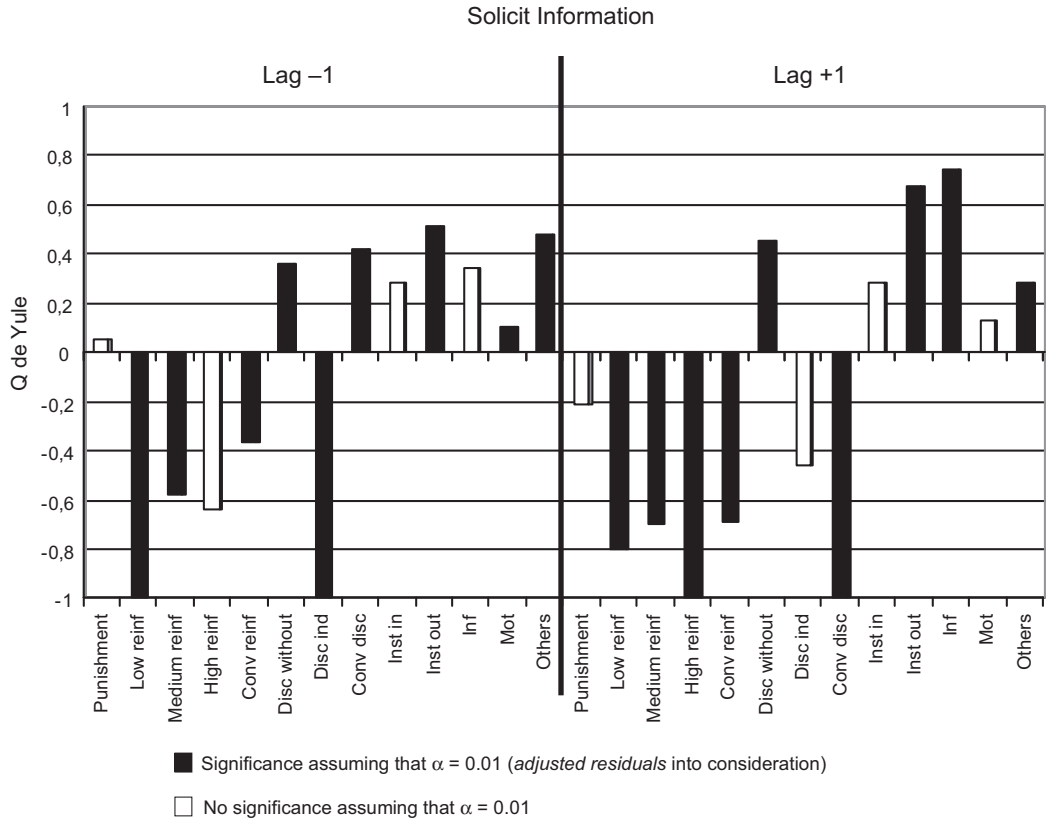

Figure 2. Relationships between the category *solicit information* and the categories of the therapist. Ref. = reinforcement morphology; Med. = medium; Conv. = conversational; Disc. = discriminative morphology; Ind. = indicating the desired direction of the response; Inst. = instructive morphology; Inf. = informative morphology; Mot. = motivational morphology.

The therapist behaviors that are most likely to appear after the client behaviors that are coded as *showing agreement* are *informative morphology*, *morphology of low reinforcement*, and *instructive morphology outside the session*, respectively (Figure 3). When examining the vocal behavior of the therapist that precedes this same client category, it can be observed that the utterances more frequently issued by the therapists are those coded as *discriminative morphology with an indication of the desired direction of the response* and *conversational discriminative morphology*. An example of this sequence would be as follows: "You think that's a good standard, don't you?" (therapist's utterance coded as *discriminative morphology with an indication*)—"Yes" (client's utterance coded as *showing agreement*)—"In that case, that will be the standard by which we will abide in the debate we will have in the next minutes of session…" (therapist's utterance coded as *informative morphology*). The client category *show disagreement* is most commonly followed by *morphology of punishment* behaviors from the therapist (Figure 4); the association with the former is stronger than with the latter, and in turn, it is preceded by therapist verbalizations coded as *morphology of punishment*, *discriminative conversational morphology*, and *informative morphology*. An example would be: "I don't agree with what you're saying" (therapist's utterance coded as *morphology of punishment*)—"But it is true, because…"—(client's utterance coded as *showing disagreement*)—"Wait, listen to me…" (therapist's utterance coded as *morphology of punishment* in this case because it interrupts the client's speech).

In addition, following client verbalizations that are categorized as *failure*, the psychologists made verbalizations that were most often coded as *morphology of punishment*, along with those that were coded as *other* and, to a lesser extent, *morphology of conversational reinforcement* (Figure 5). If we observe the lag −1 for this client verbalization, we find that the probability that the therapist shows verbalizations belonging to the *other* or *morphology of conversational reinforcement* categories is greater than would be expected from mere chance. An example of a frequent dialogue that happens in-session and follows this scheme would be: "What's happening here is you…" (therapist's utterance coded as *others*, because the client interrupts it before any function is apparent)—"I'm a mess, I'm never going to make it" (client's utterance coded as *failure*)—"That is not true…" (therapist's utterance coded as *morphology of punishment*). These same therapist behavior categories remain the only

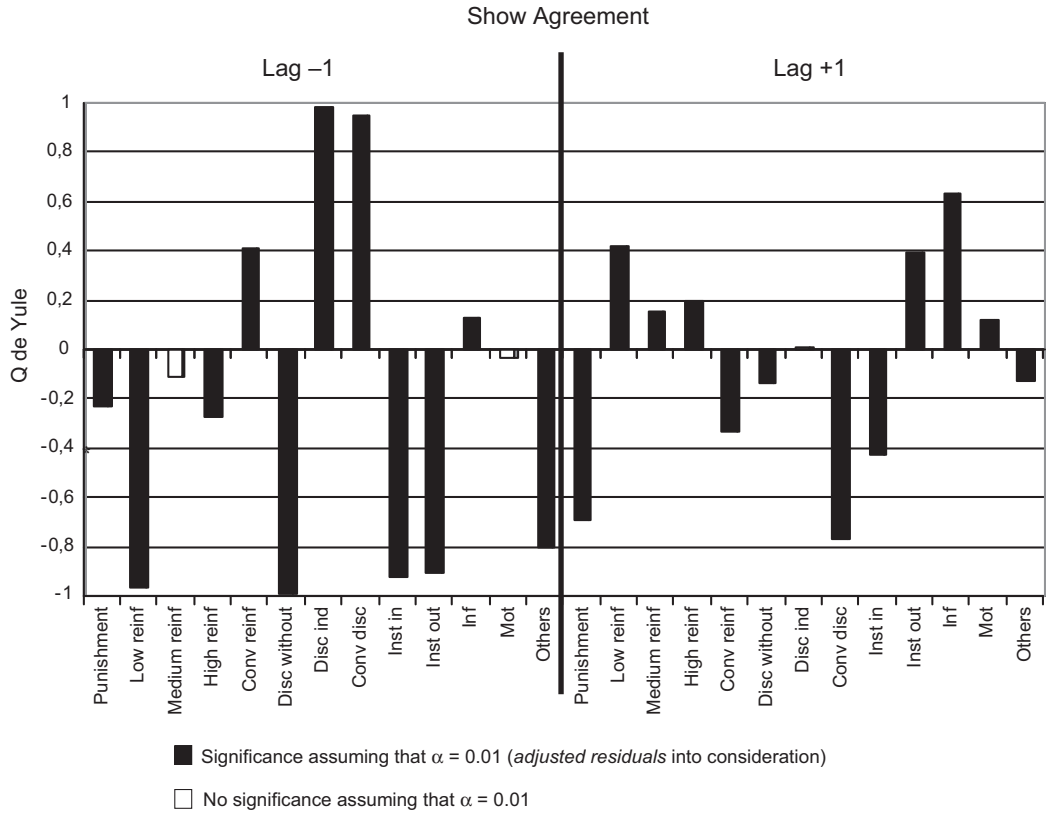

Figure 3. Relationships between the category *show agreement* and the categories of the therapist. Ref. = reinforcement morphology; Med. = medium; Conv. = conversational; Disc. = discriminative morphology; Ind. = indicating the desired direction of the response; Inst. = instructive morphology; Inf. = informative morphology; Mot. = motivational morphology.

ones that show positive associations with the client category of *discomfort* at a lag of –1 (Figure 6). Finally, the vocal behavior of the therapist that is most likely to occur after *discomfort* is one belonging to the *morphology of punishment* or *other* categories; in the previous example: "What's happening here is you…" (therapist's utterance coded as *others* because the client interrupts it before any function is apparent)—"I'm a sad person" (client's utterance coded as *discomfort*)—"That is not true…" (therapist's utterance coded as *morphology of punishment*).

Discussion

The results obtained in this study allow us to state that it is possible to develop a methodology to describe sequences of behavior that occur naturally in the therapeutic interaction; these sequences could be the point of departure for the experimental study of clinical interaction, so that the functional value of therapist verbalizations and their control over client verbalizations could be verified. However, in the field of clinical intervention, experimental studies are practically impossible to perform, both because of the ethical problems that would stem from manipulating the client's behavior and the intrinsic difficulty of such a manipulation. The observation and coding system developed certainly does not provide solid evidence about the behavioral functions of the vocal behavior codes that are being used; however, a descriptive evaluation such as the one proposed here narrows the gap between functional analysis and psychotherapy in private practice, and has the added value of solving the ethical and methodological issues involved in the experimental manipulation of variables. It could also, in the short term, be a more efficient analysis procedure, as it would only include in the functional analysis those sequences previously identified by descriptive analysis as relevant, which may increase its external validity (Mace & Lalli, 1991). In any case, in agreement with Borrero and Borrero (2008), descriptive assessments such as the one presented here allow for decisions to be made about which events belong to which operant class and act on items that are related temporarily as if they were functional relationships; in this sense, descriptive research could consider the identification of types of potential reinforcement contingencies for further study in basic research (Lalli, Browder, Mace, & Brown, 1993; Lerman & Iwata, 1993; Samaha et al., 2009).

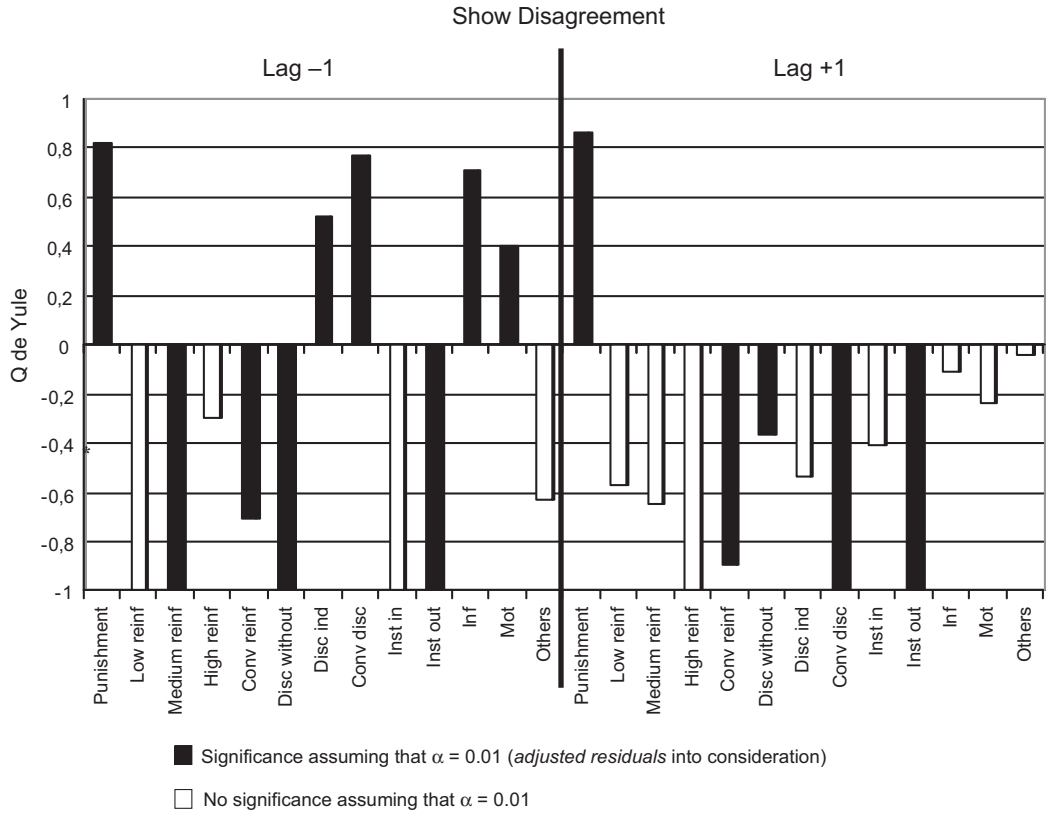

Figure 4. Relationships between the category *show disagreement* and the categories of the therapist. Ref. = reinforcement morphology; Med. = medium; Conv. = conversational; Disc. = discriminative morphology; Ind. = indicating the desired direction of the response; Inst. = instructive morphology; Inf. = informative morphology; Mot. = motivational morphology.

In previous research focusing exclusively on the verbalizations of the therapist, we explored the degree of coincidence between the expected occurrences of actual behavior morphologies and those of the vocal behavior codes in the observation protocol. These results provided support for the construct validity of the SISC–INTER–CVT by testing a set of hypotheses based on known performances of behavioral functions that are rationally defined in the SISC–INTER–CVT (Virués-Ortega et al., 2011). In the work presented here, we included an analysis of the client verbalizations and related them to the categories of verbalizations from the therapists. We know that this is not sufficient to guarantee that the putative functions that we assign are exact, but it supports a coherent approach to this ultimate objective. As we said before, the particular characteristics of the clinical situation make it difficult, if not impossible, to develop a typical procedure for functional analysis. Therefore, we believe that it is crucial to look for alternative ways to conduct this analysis, always bearing in mind that sometimes descriptive and experimental data are not entirely consistent and therefore one should be cautious when planning interventions based on descriptive data (Lerman & Iwata, 1993).

From our perspective, the ultimate goal of the therapeutic interaction is to achieve the elimination of the client's problematic behaviors and to help him/her develop more adaptive behaviors. We believe that it is necessary to first describe how the therapeutic interaction unfolds, before checking the function of the events described and, finally, studying how these functions are responsible for clinical change. For now we only attempt to explain the relationships that were found between the vocal categories of the behaviors employed by the therapist and the client, and we hypothesize a possible functional relationship between them, which can only be verified experimentally. We believe that this research could contribute to the study of psychotherapeutic processes in the context of behavior therapy for several reasons: it is based on an analysis of moment-to-moment occurrences in therapeutic interactions; it uses a methodology that allows for a rigorous observation to take place, and in that differs from the methodologies that are applied in some published processes studies that are based on global measurements of these premises, as Hill and Lambert (2004) or Kazdin (2007) pointed out; and third, it involves a proposal for an observational methodology which may complement a functional analysis

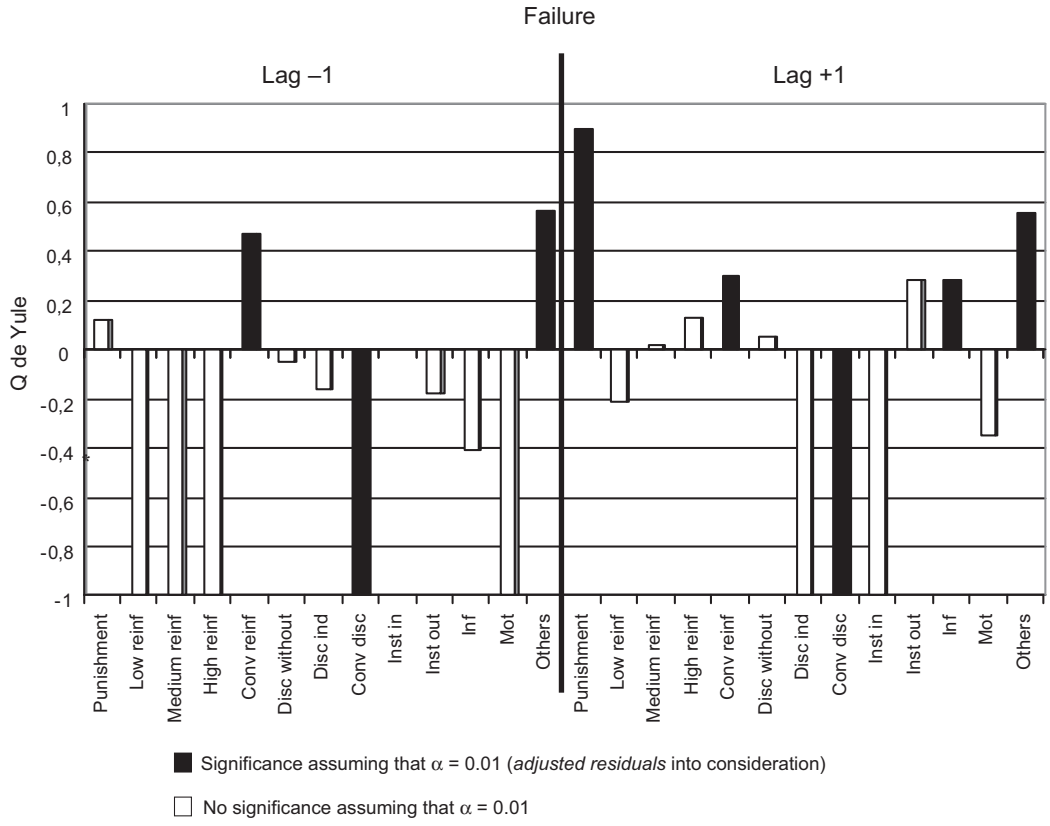

Figure 5. Relationships between the category *failure* and the categories of the therapist. Ref. = reinforcement morphology; Med. = medium; Conv. = conversational; Disc. = discriminative morphology; Ind. = indicating the desired direction of the response; Inst. = instructive morphology; Inf. = informative morphology; Mot. = motivational morphology.

that makes use of complex statistical analyses (lag-sequential) to identify sequences of behavior and their environmental correlates. Finally, we think this approach would also yield many benefits when used for the training and practice of therapists: being able to control the effect of the verbal behavior through the session would mean being more efficient, enabling therapists to reliably spark the changes for which they aim. When training therapists, just as teaching programs incorporate intervention techniques and therapeutic skills, it would be very useful to add this verbal behavior management in the novel's agenda, or even in deep-dive specialization programs.

We will move on, then, to discuss some of the sequences that demonstrate how the various verbal morphologies of the therapist and client are temporally organized, and contextualize them within the framework of the psychotherapeutic action. As we have said, extreme caution is needed when stating that such sequences describe functional relationships and, therefore, reflect the operative mechanisms responsible for clinical change; rather, we will simply point out some of the correlations identified within the ordinary course of the therapeutic process, leaving for future studies the experimental verification of the putative functions of the therapists' verbalizations.

First, we observed that the client verbalizations that are categorized as *provide information* are significantly associated with almost all of the verbalizations of the therapist that appear after this category. Two of the strongest associations occur with behaviors belonging to the *morphology of low reinforcement* and *morphology of conversational reinforcement* categories. This result is unsurprising, because any potentially reinforcing verbalizations of the therapist would be directed toward the vocal behavior of the client, not toward some specific content, the frequency, or intensity of the behavior which the therapist is attempting to encourage. In this sense, both putative reinforcement morphologies would be typical of vocal interactions in which one interlocutor's speech affects what the other speaker says. Other studies from our group have shown that a therapist will use verbalizations that can be characterized as *morphologies of reinforcement*, both *medium* and *high*, when it seems that he/she wants to reinforce the specific contents of the verbalizations of a client, often because these verbalizations refer to therapeutic objectives (verbalizations of achievement, well-being, anticipation of success, etc.) (Froján-Parga, Calero-Elvira, & Montaño-Fidalgo, 2006, 2009, 2011; Ruiz-Sancho, 2011). The *provide information*

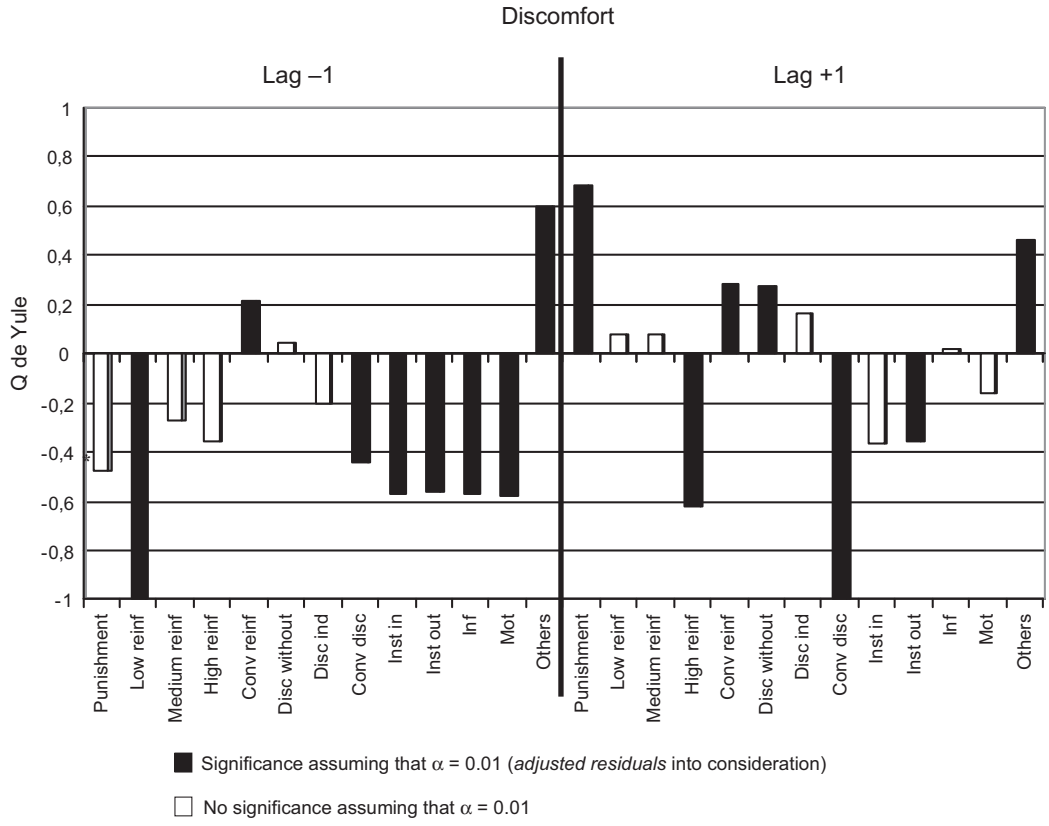

Figure 6. Relationships between the category *discomfort* and the functions of the therapist. Ref. = reinforcement morphology; Med. = medium; Conv. = conversational; Disc. = discriminative morphology; Ind. = indicating the desired direction of the response; Inst. = instructive morphology; Inf. = informative morphology; Mot. = motivational morphology.

category refers to neutral verbalizations of the client, the contents of which are unrelated to any therapeutic purpose (e.g., answering questions about his/her age or describing an ordinary day in his/her life); the therapist does not have any interest in strengthening one or another type of content, but in getting the client to answer questions accurately; the therapist's potentially reinforcing verbalizations therefore would aim to maintain an adequate degree of accuracy in the client's responses, and potentially punitive verbalizations would be employed to reduce inaccuracy rather than to encourage or reduce specific content, such as might be the case of the verbalizations of accomplishment, well-being, discomfort, or failure. Therefore, the rating as *appropriate* or *inappropriate* for verbalizations that fall in the *provide information* category is free from any type of clinical valuation and allows for their inclusion in this category regardless of whether contents refer to pro- or anti-therapeutic behaviors.

Returning to the results of the present study, as opposed to those we have just commented on, a surprising finding is the close relationship between *provide information* and *punishment morphology*, because the contents of the former category are descriptive and neutral and therefore not susceptible to the therapist's disapproval. Nevertheless, the association between these types of verbalizations can be understood if we consider the directorial nature of all behavioral therapy, to which we have previously alluded: In our context, the therapist is the one who directs the interaction, indicating at each moment the way forward: what topics should be dealt with, what kind of information he/she requires the client to provide, and the appropriate moment to change the topic or task and move on to another, what client verbalizations must be eliminated, altered, or encouraged, and so on. For this reason we would say that the utterances of the client must always be considered as a *function of response* to the verbalizations of the therapist, and this is where it is necessary to identify the beginning of the sequences of verbal interaction. Obviously we cannot ignore the fact that the client's responses increase the likelihood of a particular response by the therapist, so that this could act as an *establishing operation* of his/her behavior (Vollmer et al., 2001). However, the characteristics of behavior therapy require the therapist to direct the client toward achieving the established objectives of the exchange, once the functional assessment of the problem that led the client to ask for help has been made. The

therapist knows what to do to achieve change and applies therapeutic procedures in the clinical context or instructs the client so that he/she is exposed to certain reinforcement contingencies in his/her everyday environment.

From a behavioral perspective, we considered the clinical setting as a natural one in which problems take place on the same forms that they do outside of therapeutic contexts. In this sense, the therapeutic situation forms a unique context in which to establish contingencies of reinforcement and punishment for the behavior that has been outlined as the treatment objective (Follete, Naugle, & Callaghan, 1996; Hamilton, 1988; Hayes, Follete, & Follete, 1995; Kohlenberg, Tsai, & Dougher, 1993; Rosenfarb, 1992; Salzinger, 2011).

We also found that psychologists' verbalizations that belong to the discriminative morphology without indicating the desired direction of the response category and, to a lesser degree, the morphology of conversational reinforcement and other categories frequently preceded client behaviors belonging to the provide information category. This result may indicate that the therapist introduces vocal stimuli with the aim of discriminating client verbalizations and the clinical objective of having the client speak; that is, the therapist verbalizations seem directed toward exercising antecedent control over the client behavior. In this regard, we need to take into account that the discriminative morphology alludes to a therapist's verbalization followed by a specific verbal response by the client. "Specific" meaning that client's response is clearly dependent, in terms of content and temporal contiguity, on the therapist's preceding verbalization. Because the discriminative verbalization of the therapist may be general, it may not signal the response that he/she wishes to obtain, which may result in the subsequent appearance of morphology of punishment. This morphology most likely emerges following client verbalizations that do not match the psychologist's goals, and it can be used by the therapist to continue directing the client's speech toward contents that he/she considers to be of interest for resolving the specific problem being treated. It is easy to conclude that verbalizations of the morphology of conversational reinforcement are the way in which the therapist shows attention in order to maintain the client's speech.

A second client category is that of *requesting information*, which is related to behaviors of the therapist that belong to the *instructive morphology outside of the session*, *other*, and *conversational discriminative morphology* categories. In other words, when the client asks for clarification after the psychologist has given him/her guidelines regarding tasks to do in his/her daily life or after the therapist has failed to finish a phrase, the results show that these types of questions are followed by more information from the therapist (*informative morphology*), by the reformulation and new instruction of the homework assignments (*instructional morphology outside the session*) or by questions that the therapist has formulated to answer more precisely the client's question (*discriminative morphology without indicating the desired direction of the response*). More notably, the results show that a *requesting information* verbalization is often preceded by a verbalization that falls into the *discriminative conversational morphology* category. If we look at another sequence, the category *show agreement* appears to be most strongly associated with therapist verbalizations that in some way indicate the direction of the response and confirm that what has been said was understood: *conversational discriminative morphology/discriminative morphology indicating the desired direction of the response—show agreement—informative morphology/instructional morphology outside the session/morphology of low reinforcement*. These results outline a typical interaction sequence in which the state categories of the therapist would end with a question directed at the client to check for his/her comprehension or agreement. The client would then respond, and the nature of the client's response would give rise to new therapist verbalizations that could be extensions of the initial state category, putative reinforcing or punitive stimuli. We cannot forget that the state categories are qualitatively different from the event categories and that state categories include blocks of information, introductions, or motivational verbalizations that are susceptible to fragmentation or stoppage in both our study and our explanation. This sequential pattern would appear most frequently in the sessions in which the therapist presents his hypothesis on the client's problem behavior, the treatment protocol, a technique for training, or the guidelines for homework assignments.

We can see that client verbalizations belonging to the *discomfort* and *failure* categories are usually followed by vocal behaviors from the therapist that can be categorized as having a *punishment morphology*. It includes those therapist's utterances denoting disapproval, refusal, or lack of acceptance of the client's behavior. This behavior pattern may indicate that the clinician was more concerned with encouraging the client's speech than with punishing maladaptive verbalization. However, it is also possible that the expression of discomfort or failure was, in some cases, a therapeutic objective with which the therapist wanted to maintain the discourse. A final result is the relationship between the *other* category and behaviors that demonstrate *failure* and *discomfort*; this result suggests that, in some instances, when

these type of verbalizations are produced in a therapeutic context, the psychologist shows that he/she is unsure how to respond. This uncertainty might include an initially disconnected discourse, debating whether to apply punitive contingencies or manage these expressions in such a way that they nourish the therapeutic process in general.

In Figure 7, we summarize the results that have greatest clinical significance for our study, and we highlight the relationships that were found between client verbalizations and the therapist verbalizations that precede and follow them. In this case, three sequences can be observed. The first sequence is one in which the psychologist exerts a clear antecedent control over the client's speech by delineating a response that will be reinforced with more or less intensity according to its concrete content. In this regard, we think that the different verbalizations uttered by the psychologist will have an effect on the subsequent verbalizations uttered by the client; this effect will (or will not) be the one desired by the psychologist depending on his/her control over the therapeutic situation and his/her knowledge regarding the possible functions of his/her verbal behavior but, in any case, that effect will exist. This is what we refer to as "antecedent control." In some occasions, the psychologist might want the client to simply answer, regardless of the content of the answer; in these cases, control can be very light and any question might discriminate the answer. In other occasions, however, the psychologist searches for a concrete answer so he/she can reinforce it, and has to exert a greater control, uttering one kind of discriminative and not another, which means reinforcing some responses and extinguishing others. For example, Client: "I went out last Friday as you suggested and I had a good time"; Therapist: "That is great! I am glad to hear it" [Rf]). As stated previously, in other studies (Froján-Parga, Montaño-Fidalgo, & Calero-Elvira, 2010; Ruiz-Sancho, Froján-Parga, & Calero-Elvira, 2013b), we found that therapist verbalizations that had a *morphology of reinforcement* contained words and expressions that permitted these words and expressions to be categorized differently as high, medium, low, or simply conversational reinforcement according to whether the client verbalizations were nearing the clinical objectives. At times, the therapist might only be interested in reinforcing the client's act of providing

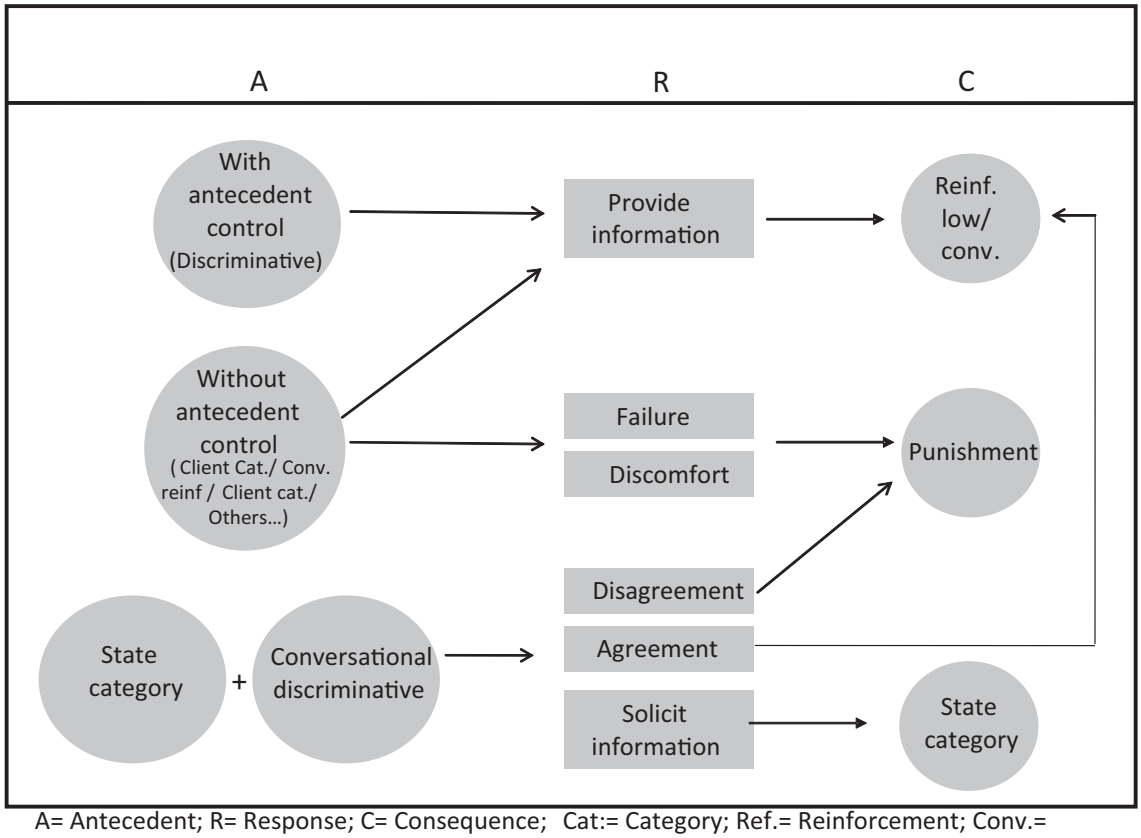

Figure 7. The relationships most emphasized in the discussion between verbal behavior of therapist and client. A = antecedent; R = response; C = consequence; Cat. = category; Ref. = reinforcement; Conv. = conversational.

information (e.g., with *morphologies of conversational reinforcement or low reinforcement*).

A second sequence presented in the figure shows that there are times when the client responds to a present stimulus with verbalizations of failure or discomfort when confronted with situations in which the therapist does not exert specific antecedent control. It's in those cases in which the client complains, anticipates failure or utters any other anti-therapeutic verbalization without it being in any way evoked by the therapist. In this case, the reaction of the therapist is usually clear; he/she generally *punishes* such expressions or, as we have also seen, experiences indecision about which action would be the most therapeutic (verbalizations categorized under *other*). Not all discomfort or failure verbalizations are anti-therapeutic. During the assessment phase, for example, these kinds of utterances are instrumental in understanding the problem. Likewise, during treatment, these kinds of verbalizations are equally important, in order for shaping, restructuring, or any other chosen treatment technique to be applied on them. But in all these cases, it is the therapist who evokes them, who prepares the setting for them to be uttered and, in order to that, presents some kind of antecedent stimulus. But when these verbalization are started by the client, the results of our study show that the psychologist acts immediately punishing them, because they are probably altering the desired progress of the therapy and may interrupt or slow the therapeutic process down.

Finally, the third major sequence highlights the client's response to a therapist who interrupts him/herself in the middle of a prolonged discourse to either ensure that the client is following the thread of the conversation or ask the client a question to that effect. When this happens, the client might respond by showing agreement or acceptance (which may then be followed by a reinforcing verbalization), disagreement (which may then be followed by a punishing verbalization) or by requesting information, to which the therapist responds with an informative discourse. For example, Therapist (while explaining the effects of an escape behavior): "…that way the behavior, since it reduces fear, will be repeated in the future—Are you understanding this?" Client: "Yes, perfectly, it's quite clear to me"; Therapist (reinforcement): "Great, that will greatly facilitate the application of the strategies I am about to explain now to you." Another example, Therapist (while explaining a specific therapeutic task to do at home): "…you're going to practice this relaxation exercise twice a day for twenty minutes, all right?" Client: "I don't know whether I'll be able to do it"; Therapist (Punishment): "I don't want to hear you say that. You've proven you're ready for this, so get to it." Or one last example: Therapist (while explaining what behavior is): "…as you can see, the term "behavior" is quite wider than it would seem. Do you understand?"; Client: "In some things I don't; I'd like you to explain to me how a thought can be considered behavior"; Therapist (Informative): "I'll explain it to you in greater detail and with some examples. In colloquial terms, behavior is usually linked to action…"

The discussion of behavioral sequences found in this study opens a route for addressing questions about how clinical change is achieved, and facilitates the design of experimental studies that enable the verification of the functional relationship between related events. The results of these future studies will allow for the testing of the hypothesis that guides our research: the vocal interaction that takes place during the therapeutic process gives rise to a relationship that is therapeutic in and of itself (Hill & Knox, 2009). We think that the therapist gives impetus to a series of learning processes that will facilitate the learning of new client behaviors that are more adaptive and less problematic. These learning processes occur (although not exclusively) through the vocal interaction that takes place during a therapy session, whether specific intervention techniques are applied or not. Ultimately, the changes that occur in client verbalizations during the session must be used to promote and maintain changes outside of the session so that that new verbalizations encourage more adaptive behavior in daily life. The shaping of verbal behavior is a powerful technique of behavior change (Kohlenberg et al., 1993): first, in clinical settings, what is said is more easily shaped than what is done; second, shaped verbal behavior can better correspond to the behavior to which it alludes than informed or instructed behavior. This approach to verbal behavior is the one followed by all therapies that were developed in the frame of the contextual approach to therapy; they conceptualize the therapeutic process as a dialectical process, with its progress being a function of the contingencies set in each moment in an open frame of action, allowing for certain forms of the client's behavior to be selected by the contingencies set by the therapist. According to Catania, Matthews, and Shimoff (1990), shaping what people say about what they do seems to be a more effective way of changing their behavior than the direct shaping of their behavior and, certainly, more than when only instructions are given.

We think that the descriptive methodology presented in this study could be a good choice for the analysis of the therapeutic interaction and that, although much work remains to be performed, this could be the first step toward a functional

approximation of what occurs in therapy (Lepper & Mergenthaler, 2008). From there, we might be able to gain insight into change mechanisms that operate in an area as complex as the clinical context, knowing that understanding such mechanisms is the best way to improve psychological treatments (Kazdin, 2007). Functional analytic psychotherapy has already taken a step in this direction and explains the mechanism of change as a result of contingent and differential reinforcement applied to target behaviors of the client: the therapist takes the role of discriminative stimulus and reinforcer, concluding that much of what happens in therapy can be understood as the development of a new learning history for the client, focusing in particular on the establishment of an alternative to a verbal repertoire presented up to that point (Callaghan et al., 2003; Kanter, Schildcrout, & Kohlenberg, 2005; Kohlenberg & Tsai, 1995).

Regardless of the achieved advances, we know the study has some limitations. The sample we used comes from a single therapy clinic, which might imply some biases in its selection. We are currently trying to secure the collaboration of other clinics in order to broaden the sample's representativeness. Regarding the initial distribution of categories in the descriptive study, we find them to have very different percentages. We consider that some of the SISC–INTER–CVT system categories need to be purged, since some of them are more specific than others. Lastly, we expect, at some point, to include the analysis of nonverbal interactions that occur and perhaps play an important role in how therapeutic any interaction may be (e.g., tone of voice, volume, degree of eye contact, the reinforcing nature of a smile). This study paves the way for a variety of interesting follow-up studies. The establishment and study of proven measures and their relationship with the therapist's and patient's behavior, as well as the elements of the functional analysis, will aid us in identifying those factors which are associated with clinical success and failure, thereby allowing us to design more effective plans of action in the clinical setting. In order to that, we intend to carry out micro analysis of case studies that could allow us to find the relations between both of the therapy protagonists' behaviors. For example, studying whether, after the systematic reinforcement by the therapist of certain client's behaviors, these increase significantly, would allow us to advance from the descriptive stage in which we are right now to a more functional one. Later, we could perform quasi-experimental studies training therapists to check whether these hypothetical functional verbalizations have a real effect in therapy.

Thus, the difficulties of the analysis of behavior in uncontrolled settings can be overcome; our proposal for the study of therapeutic interaction and clinical change is somewhat risky, but we believe that studies to date endorse this approach.

Funding

Financial support was received from the Spanish Government (Science and Innovation Ministry, I+D+I Research Grant, SEJ2007-66537-PSIC, PSI2010-15908). The funding sources had no involvement in the study design, collection, analysis and interpretation of data, in the writing of the paper, or in the decision to submit the article for publication.

Supplemental data

Supplemental data (supplementary table) for this article can be accessed here.

References

Ato, M., Benavente, A., & López, J. J. (2006). Comparative analysis of three approaches for rater agreement. *Psicothema*, *18*, 638–645.

Bakeman, R. (2000). Behavioural observation and coding. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 138–159). Cambridge: Cambridge University Press.

Bakeman, R., Adamson, L. B., & Strisik, P. (1995). Lags and logs: Statistical approaches to interaction (SPSS version). In J. M. Gottman (Ed.), *The analysis of change* (pp. 279–308). Mahwah, NJ: Lawrence Erlbaum Associates.

Bakeman, R., & Gottman, J. M. (1989). *Observing interaction: An introduction to sequential analysis*. Cambridge: Cambridge University Press.

Bakeman, R., & Gottman, J. M. (1997). *Observing interaction: An introduction to sequential analysis* (2nd ed.). Cambridge: Cambridge University Press.

Bakeman, R., & Quera, V. (1995). *Analyzing interaction: Sequential analysis with SDIS and GSEQ*. New York, NY: Cambridge University Press.

Bakeman, R., Quera, V., McArthur, D., & Robinson, B. F. (1997). Detecting sequential patterns and determining their reliability with fallible observers. *Psychological Methods*, *2*, 357–370. doi:10.1037/1082-989X.2.4.357

Beutler, L. E., & Clarkin, J. F. (1990). *Systematic treatment selection: Toward targeted therapeutic intervention*. New York, NY: Brunner/Mazel.

Beutler, L. E., Malik, M., Alimohamed, S., Harwood, T. M., Talebi, H., Noble, S., & Wong, E. (2004). Therapist variables. In M. J. Lambert (Ed.), *Bergin and Garfield's handbook of psychotherapy and behaviour change* (5th ed., pp. 227–306). New York, NY: Wiley.

Blatt, S. J., Zuroff, D. C., Hawley, L. L., & Auerbach, J. S. (2010). Predictors of sustained therapeutic change. *Psychotherapy Research*, *20*(1), 37–54. doi:10.1080/10503300903121080

Borrero, C. S. W., & Borrero, J. C. (2008). Descriptive and experimental analyses of potential precursors to problem behavior. *Journal of Applied Behavior Analysis*, *41*(1), 83–96. doi:10.1901/jaba.2008.41-83

Borrero, J. C., & Vollmer, T. R. (2002). An application of the matching law to severe problem behavior. *Journal of Applied Behavior Analysis*, *35*(1), 13–27. doi:10.1901/jaba.2002.35-13

Callaghan, G. M. (1998). Development of a coding system for functional analytical psychotherapy for the analysis of the components effecting clinical change. *Dissertation Abstracts International*, *59*, 5073B.

Callaghan, G. M., Summers, C. J., & Weidman, M. (2003). The treatment of histrionic and narcissistic personality disorder behaviors: A single-subject demonstration of clinical effectiveness using functional analytic psychotherapy. *Journal of Contemporary Psychotherapy*, *33*, 321–339. doi:10.1023/B:JOCP.0000004502.55597.81

Carey, T. A. (2005). Can patients specify treatment parameters? A preliminary investigation. *Clinical Psychology and Psychotherapy*, *12*, 326–335. doi:10.1002/cpp.454

Catania, A. C. (1998). The taxonomy of verbal behaviour. In K. A. Lattal & M. Perone (Ed.), *Handbook of research methods in human operant behaviour* (pp. 405–433). New York, NY: Plenum Press.

Catania, A. C., Matthews, B. A., & Shimoff, E. (1990). Properties of rule-governed behaviour and their implications. In D. E. Blackman & H. Lejeune (Eds.), *Behavior analyses in theory and practice* (pp. 215–236). London: Lawrence Erlbaum Associates.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, *20*(1), 37–46. doi:10.1177/001316446002000104

Connolly Gibbons, M. B., Crits-Christoph, P., Levinson, J., & Barber, J. (2003). Flexibility in manual-based psychotherapies: Predictors of therapist interventions in interpersonal and cognitive-behavioral therapy. *Psychotherapy Research*, *13*, 169–185. doi:10.1093/ptr/kpg017

Dobson, K. S., & Kazantzis, N. (2003). The therapist in cognitive-behavioral therapy: Introduction to a special section. *Psychotherapy Research*, *13*(2), 131–134. doi:10.1080/713869635

Eells, T. D., & Lombart, K. G. (2003). Case formulation and treatment concepts among novice, experienced, and expert cognitive-behavioral and psychodynamic therapists. *Psychotherapy Research*, *13*, 187–204. doi:10.1093/ptr/kpg018

Follette, W. C., Naugle, A. E., & Callaghan, G. M. (1996). A radical behavioural understanding of the therapeutic relationship in effecting change. *Behavior Therapy*, *27*, 623–641. doi:10.1016/S0005-7894(96)80047-5

Franklin, M. E., Abramowitz, J. S., Furr, J. M., Kalsy, S., & Riggs, D. S. (2003). A naturalistic examination of therapist experience and outcome of exposure and ritual prevention for OCD. *Psychotherapy Research*, *13*, 153–167. doi:10.1080/713869637

Froján-Parga, M. X., Calero-Elvira, A., & Montaño-Fidalgo, M. (2006). Procesos de aprendizaje en las técnicas de reestructuración semántica [Learning processes in the cognitive restructuring techniques]. *Análisis y Modificación de Conducta*, *32*, 287–305.

Froján-Parga, M. X., Calero-Elvira, A., & Montaño-Fidalgo, M. (2009). Analysis of the therapist's verbal behavior during cognitive restructuring debates: A case study. *Psychotherapy Research*, *19*(1), 30–41. doi:10.1080/10503300802326046

Froján-Parga, M. X., Calero-Elvira, A., & Montaño-Fidalgo, M. (2011). Study of the Socratic method during cognitive restructuring. *Clinical Psychology & Psychotherapy*, *18*(2), 110–123. doi:10.1002/cpp.676

Froján-Parga, M. X., Montaño-Fidalgo, M., & Calero-Elvira, A. (2006). ¿Por qué la gente cambia en terapia? Un estudio preliminar [Why do people change in therapy? A preliminary study]. *Psicothema*, *18*, 797–803.

Froján-Parga, M. X., Montaño-Fidalgo, M., & Calero-Elvira, A. (2010). Therapists' verbal behavior analysis: A descriptive approach to psychotherapeutic phenomenon. *Spanish Journal of Psychology*, *13*, 914–926. doi:10.1017/S1138741600002560

Froján-Parga, M. X., Montaño-Fidalgo, M., Calero-Elvira, A., García-Soler, A., Garzón-Fernández, A., & Ruiz-Sancho, E. (2008). Sistema de categorización de la conducta verbal del terapeuta [Therapist's verbal behavior coding system]. *Psicothema*, *20*, 603–609.

Gardner, W. (1995). On the reliability of sequential data: Measurement, meaning, and correction. In J. M. Gottman (Ed.), *The analysis of change* (pp. 339–359). Hillsdale, NJ: Lawrence Erlbaum Associates.

Gottman, J. (1979). *Marital interaction: Experimental investigations*. New York, NY: Academic Press.

Guerin, B. (2003). Language use as social strategy: A review and an analytic framework for the social sciences. *Review of General Psychology*, *7*, 251–298. doi:10.1037/1089-2680.7.3.251

Hamilton, S. A. (1988). Behavioral formulations of verbal behaviour in psychotherapy. *Clinical Psychology Review*, *8*, 181–193. doi:10.1016/0272-7358(88)90058-X

Hayes, S. C. (2005). Eleven rules for a more successful clinical psychology. *Journal of Clinical Psychology*, *61*, 1055–1060. doi:10.1002/jclp.20136

Hayes, S. C., Follette, W. C., & Follette, V. M. (1995). Behavior therapy: A contextual approach. In A. S. Gurman & S. B. Messer (Eds.), *Essential psychotherapies. Theory and practice* (pp. 128–181). New York, NY: Guilford Press.

Hayes, S. C., Wilson, K. G., Gilford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology*, *64*, 1152–1168. doi:10.1037/0022-006X.64.6.1152

Hill, C. E. (1978). Development of a counselor verbal category system. *Journal of Counseling Psychology*, *25*, 461–468. doi:10.1037/0022-0167.25.5.461

Hill, C. E. (1986). An overview of the Hill Counselor and client verbal response modes category systems. In L. S. Greenberg & W. S. Pinsof (Eds.), *The psychotherapeutic process: A research handbook* (pp. 131–160). New York, NY: Guildford Press.

Hill, C. E., Charles, D., & Reed, K. G. (1981). A longitudinal analysis of changes in counselling skills during doctoral training in counselling psychology. *Journal of Counseling Psychology*, *28*, 428–436. doi:10.1037/0022-0167.28.5.428

Hill, C. E., & Knox, S. (2009). Processing the therapeutic relationship. *Psychotherapy Research*, 19(1), 13–29. doi:10.1080/10503300802621206

Hill, C. E., & Lambert, M. J. (2004). Methodological issues in studying psychotherapy process and outcome. In M. J. Lambert (Ed.), *Bergin and Garfield's handbook of psychotherapy and behavior change* (5th ed., pp. 84–135). New York, NY: John Wiley.

Hill, C. E., Nutt, E. A. & Jackson, S. (1994). Trends in psychotherapy process research: Samples, measures, researchers and classic publications. *Journal of Counseling Psychology*, *41*, 364–377. doi:10.1037/0022-0167.41.3.364

Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1982). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis*, *27*, 197–209. (Reprinted from Analysis and Intervention in Developmental Disabilities, 2, 3–30, 1982.) doi:10.1901/jaba.1994.27-197

Kanter, J. W., Schildcrout, J. S., & Kohlenberg, R. J. (2005). In vivo processes in cognitive therapy for depression: Frequency and benefits. *Psychotherapy Research*, *15*, 366–373. doi:10.1080/10503300500226316

Kazdin, A. E. (2007). Mediators and mechanisms of change in psychotherapy research. *Annual Review of Clinical Psychology*, *3*(1), 1–27. doi:10.1146/annurev.clinpsy.3.022806.091432

Kohlenberg, R. J., & Tsai, M. (1991). *Functional analytic psychotherapy: Creating intense and curative therapeutic relationships*. New York, NY: Plenum Press.

Kohlenberg, R. J., & Tsai, M. (1995). Functional analytic psychotherapy. A behavioral approach to intensive treatment. In W. O'Donohue & L. Krasner (Eds.), *Theories of behavior therapy. Exploring behavior change* (pp. 637–658). Washington, DC: APA.

Kohlenberg, R. J., Tsai, M., & Dougher, M. J. (1993). The dimensions of clinical behavior analysis. *The Behavior Analyst*, *16*, 271–282.

Krasner, L. (1962). The therapist as a social reinforcement machine. In H. H. Strupp & L. Luborsky (Eds.), *Research in psychotherapy* (Vol. 2, pp. 61–94). Washington, DC: American Psychological Association.

Lalli, J. S., Browder, D. M., Mace, F. C., & Brown, D. K. (1993). Teacher use of descriptive analysis data to implement interventions to decrease students' problem behaviors. *Journal of Applied Behavior Analysis*, *26*, 227–238. doi:10.1901/jaba.1993.26-227

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*(1), 159–174. doi:10.2307/2529310

Lepper, G., & Mergenthaler, G. (2008). Observing therapeutic interaction in the "Lisa" case. *Psychotherapy Research*, *18*, 634–644. doi:10.1080/10503300701442001

Lerman, D. C., & Iwata, B. A. (1993). Descriptive and experimental analysis of variables maintaining self-injurious behavior. *Journal of Applied Behavior Analysis*, *26*, 293–319. doi:10.1901/jaba.1993.26-293

Luciano, M. C., Barnes-Holmes, Y., & Barnes-Holmes, D. (2002). Establishing reports of saying and doing and discriminations of say–do relations. *Research in Developmental Disabilities*, *23*, 406–421. doi:10.1016/S0891-4222(02)00142-7

Luciano, M. C., & Hayes, S. C. (2001).Trauma of experiential avoidance. *International Journal of Clinical and Health Psychology*, *1*, 109–157.

Mace, F. C. (1994). The significance and future of functional analysis methodologies. *Journal of Applied Behavior Analysis*, *27*, 385–392. doi:10.1901/jaba.1994.27-385

Mace, F. C., & Lalli, J. S. (1991). Linking descriptive and experimental analyses in the treatment of bizarre speech. *Journal of Applied Behavior Analysis*, *24*, 553–562. doi:10.1901/jaba.1991.24-553

Martin, P., & Bateson, P. (1986). *Measuring behaviour: An introductory guide*. Cambridge: Cambridge University Press.

Pérez, M. (2004). *Contingencia y drama: la psicología según el conductismo* [Contingency and drama: Psychology according to behaviorismo]. Madrid: Minerva Ediciones.

Quera, V. (1991). Muestreo y registro observacional [Sampling and observational registering]. In M. T. Anguera (Ed.), *Metodología observacional en la investigación psicológica. Volumen I: Fundamentación* [Observational methodology in psychological research. Vol. I: Basis] (pp. 241–327). Barcelona: Promociones y Publicaciones Universitarias.

Quera, V. (1993). Análisis secuencial [Sequential analysis]. In M. T. Anguera (Ed.), *Metodología observacional en la investigación psicológica. Volumen II: Fundamentación* [Observational methodology in psychological research. Vol. II: Groundwork] (pp. 341–583). Barcelona: Promociones y Publicaciones Universitarias.

Rosenfarb, I. S. (1992). A behaviour analytic interpretation of the therapeutic relationship. *Psychological Record*, *42*, 341–354.

Ruiz-Sancho, E. (2011). *Una aproximación funcional al estudio de la conducta verbal en terapia* [A functionalapproximation to thestudy of verbal behavior in therapy]. (Unpublished doctoral dissertation). Universidad Autónoma de Madrid, Madrid.

Ruiz-Sancho, E., Froján-Parga, M. X., & Calero-Elvira, A. (2013a). Análisis de la conducta verbal del cliente durante el proceso terapéutico [An analysis of the client's verbal behavior during the therapeutic process]. *Anales de Psicología*, *29*(3), 779–790. doi:10.6018/analesps.29.3.135401

Ruiz-Sancho, E., Froján-Parga, M. X., & Calero-Elvira, A. (2013b). Functional analysis of the verbal interaction between psychologist and client during the therapeutic process. *Behavior Modification*, *37*, 516–542. doi:10.1177/0145445513477127

Russell, R. L., & Stiles, W. B. (1979). Categories for classifying language in psychotherapy. *Psychological Bulletin*, *86*, 404–419. doi:10.1037/0033-2909.86.2.404

Salzinger, K. (2011). Therapeutic change view through behavior analytic lenses. *Clínica y Salud*, *22*, 237–244. doi:10.5093/cl2011v22n3a4

Samaha, A. L., Vollmer, R. R., Borrero, C., Sloman, K., St Peter, C. C., & Bourret, J. (2009). Analyses of response–stimulus sequences in descriptive observations. *Journal of Applied Behavior Analysis*, *42*, 447–468. doi:10.1901/jaba.2009.42-447

Scotti, J. R., McMorrow, M. J., & Trawitzki, A. L. (1993). Behavioral treatment of chronic psychiatric disorders: Publication trends and future directions. *Behavior Therapy*, *24*, 527–550. doi:10.1016/S0005-7894(05)80316-8

Skinner, B. F. (1953). *Science and human behavior*. New York, NY: Macmillan.

Stiles, W. B. (1979). Verbal response modes and psychotherapeutic technique. *Psychiatry*, *42*, 49–62.

Stiles, W. B. (1987). Verbal response modes as intersubjective categories. In R. L. Russell (Ed.), *Language in psychotherapy: Strategies of discovery* (pp. 131–170). New York, NY: Plenum Press.

Stiles, W. B., & Shapiro, D. A. (1995). Verbal exchange structure of a brief psychodynamic-interpersonal and cognitive-behavioral psychotherapy. *Journal of Consulting and Clinical Psychology*, *63*(1), 15–27. doi:10.1037/0022-006X.63.1.15

Strosahl, K. D., Hayes, S. C., Wilson, K. G., & Gilford, E. V. (2005). An ACT premier: Core therapy processes, intervention strategies and therapist competencies. In S. C. Hayes & K. D. Strosahl (Eds.), *A practical guide to acceptance and commitment therapy* (pp. 31–58). New York, NY: Springer Science + Business Media.

Thompson, R. H., & Iwata, B. A. (2001). A descriptive analysis of social consequences following problem behavior. *Journal of Applied Behavior Analysis*, *34*, 169–178. doi:10.1901/jaba.2001.34-169

Thompson, R. H. & Iwata, B. A. (2007). A comparison of outcomes from descriptive and functional analyses of problem behavior. *Journal of Applied Behavior Analysis*, *40*, 333–338. doi:10.1901/jaba.2007.56-06

Truax, C. B. (1966). Reinforcement and nonreinforcement in Rogerian psychotherapy. *Journal of Abnormal Psychology*, *71*(1), 1–9. doi:10.1037/h0022912

Tsai, M., Kohlenberg, R. J., Kanter, J. W., Kohlenberg, B., Follette, W. C., & Callaghan, G. M. (2009). *A guide to functional analytic psychotherapy. Awareness, courage, love and behaviorism*. New York, NY: Springer.

Virués-Ortega, J., Montaño-Fidalgo, M., Froján-Parga, M. X., & Calero-Elvira, A. (2011). Descriptive analysis of the verbal behavior of a therapist: A known-group validity analysis of the behavioral functions involved in clinical interaction. *Behavior Therapy*, *42*, 547–559. doi:10.1016/j.beth.2010.12.004

Vollmer, T. R., Borrero, J. C., Wright, C. S., Van Camp, C., & Lalli, J. S. (2001). Identifying possible contingencies during descriptive analyses of severe behavior disorders. *Journal of Applied Behavior Analysis*, *34*, 269–287. doi:10.1901/jaba.2001.34-269

Von Eye, A., & Mun, E. Y. (2005). *Analyzing rater agreement*. Mahwah, NJ: Lawrence Erlbaum Associates.