The Functional Analytic Psychotherapy Rating Scale (FAPRS): A Behavioral Psychotherapy Coding System

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Abstract

Many researchers and clinicians believe that the therapeutic relationship is essential in bringing about clinical change. Empirical research to support this contention is scarce in part due to the difficulty of specifying and measuring theoretically derived mechanisms of change and the important dimensions of the client-therapist relationship. Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1991) is a behavioral treatment that delineates how the therapeutic relationship brings about clinical change in clear and measurable terms. While initial research has been conducted to demonstrating the effectiveness of FAP with different populations, the purported mechanism of clinical change in FAP has not been sufficiently documented. This study describes the creation of a behavioral coding system (the Functional Analytic Psychotherapy Rating Scale; FAPRS) to identify and specify the components believed to be essential in bringing about client behavior change in FAP. Interobserver agreement values indicated moderate to high levels of reliability for the coding system. Implications for future tests of FAP's proposed mechanism of change and the validity of the coding system are discussed.

Keywords: Functional Assessment, Behavioral Therapy, Functional Analytic Psychotherapy, Behavioral Rating Scale, Behavioral Coding

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Psychotherapy is a set of circumstances that can produce meaningful, lasting and positive behavior change. It is unclear, however, which aspects of many treatments actually cause change. Most therapies assume that the manipulation of certain critical variables in psychotherapy, called mechanisms of change, will reduce client problem behaviors and increase adaptive behaviors. Although mechanisms of change are assumed to operate in the day-to-day practice of psychotherapy, they are rarely studied empirically, and are often left either unspecified or defined in a way that makes detection and measurement of their operation difficult. The client-therapist relationship is one such potential mechanism of change in need of further specification and study.

Psychotherapy has been described as the "systematic use of a human relationship for therapeutic purposes" (Butler and Strupp, 1986, p. 36). Many other therapists and researchers also regard the therapeutic relationship as essential to the process of client change (Beck, Rush, Shaw, & Emery, 1979; Fiedler, 1950; Greenberg, 1994; Hentschel & Bijleveld, 1995; Horvath & Luborsky, 1993; Krasner, 1962, 1963; Lazarus, 1972; Morganstern, 1988; Rimm & Masters, 1974; Rogers, 1957; Rosenfarb, 1992; Schaap, Bennun, Schindler, & Hoodguin, 1993; Wright & Davis, 1994). There is an important gap, however, between assumptions about the importance of the therapeutic relationship and empirical documentation of the events that change client behavior.

To empirically establish a link between the therapeutic relationship and client behavior change, psychotherapy researchers must accomplish several tasks. First, a treatment must be identified and described. Second, the hypothesized mechanism of change for that treatment must be specified in a way that is clear and measurable. Third, the dimensions of behavior that are hypothesized to change following the manipulation of the mechanism must be defined. Fourth, a measurement system that allows reliable observation of behavior occurring within that treatment must be designed. Fifth, the validity of the hypothesized mechanism of change must be tested by empirically linking the manipulation of that

mechanism to client improvement. This improvement should be documented within the therapeutic relationship, and ultimately it should be shown to generalize to other relationships the client has outside of therapy.

This article presents a method for accomplishing the goals described above for Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1991) an interpersonally oriented, behavioral psychotherapy. It defines FAP's mechanism of change (therapist contingent responding; discussed below) and the dimensions of client behavior that are impacted by the therapist's contingent responses in-session. It describes the development of and presents data on a reliable coding system for FAP (the Functional Analytic Psychotherapy Rating Scale; FAPRS; Callaghan, 1998). Finally, it presents initial data testing the validity of FAP's hypothesized mechanism of change.

The primary purpose of this study was to create and evaluate a coding system that could reliably demonstrate FAP's mechanism of change (and the client behaviors hypothesized to be impacted by it). In the next section, the important dimensions of the therapeutic relationship in FAP will be introduced and FAP's mechanism of change, therapist contingent responding, will be defined.

Functional Analytic Psychotherapy

Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1991; see also Kohlenberg, Hayes & Tsai, 1993) is used primarily to treat psychological disorders that are interpersonally based, such as those with pervasive repertoire deficits including generalized anxiety disorder, dysthymia, social phobia, and the Axis-II personality disorders (American Psychiatric Association, 1994). FAP assumes that the interpersonal problems that clients have in relationships outside of therapy will also occur in the context of the therapeutic relationship. The FAP therapist focuses on creating clinical change in this context. The therapist can influence client problem behaviors and improvements because he or she has direct access to the contingencies that occur in-session. Not all behaviors occur in the therapeutic relationship exactly as they do outside of session. However, the FAP therapist attempts to understand these behaviors principally, or functionally, and looks for opportunities to respond to them in-session, rather than dealing exclusively with events that happened outside of therapy.

Although researchers have only just begun to demonstrate the effectiveness of FAP in treating different problems (Gaynor, 2002; Kohlenberg, et al., 2004), treatments for depression (Kohlenberg, Kanter, Bolling, Parker, & Tsai, 2002), adolescent behavioral problems (Gaynor & Lawrence, 2002), personality disorders (Callaghan, Summers, & Weidman, 2003), and the use of FAP as an adjunctive treatment for post traumatic stress disorder (Prins & Callaghan, 2003) have already been undertaken. Data from these studies indicate mounting evidence for the effectiveness of this treatment with diverse populations and a strong need to attempt to document the mechanism of change in FAP.

Mechanism of Change

The conceptual literature on FAP has identified therapist contingent responding, a specifiable and measurable aspect of the client-therapist relationship, as FAP's mechanism of client change. Therapist contingent responses occur contingent on clients' in-session, clinically relevant behaviors (Callaghan, 1996; Callaghan, Naugle, & Follette, 1996; Follette, Naugle, & Callaghan, 1996; Kohlenberg & Tsai, 1995). Clinically relevant behaviors are clients' specified problem behaviors, targets for improvement, and descriptions of functional relationships between their own behavior and its antecedents and consequences and are described in detail below.

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Clinically Relevant Behaviors

In order to understand what maintains the problems that brought the client to therapy and to plan an effective treatment, FAP therapists conceptualize clients' interpersonal behavioral repertoires in the context of the developing therapeutic relationship. FAP therapists look for and respond to three types of clinically relevant behaviors (CRBs) that occur in therapy. In general, clinically relevant behaviors can be described as behaviors that occur within the context of the therapeutic relationship that have an identifiable (desirable or undesirable) function on the therapist.

Clinically Relevant Behavior 1. Client problem behaviors, CRB1s, are the responses that clients emit in-session that contribute to the client's problems in living outside of treatment. CRB1s are often behavioral excesses that aversively stimulate persons in the client's life, but may also be behavioral or motivational deficits that negatively impact the client's social relationships. For example, a FAP client may present for therapy complaining that he or she would like to develop closer, more meaningful interpersonal relationships, but fears doing so because he or she may be rejected and feel hurt. A CRB1 for such a client would be any escape or avoidance behavior in the therapeutic relationship that prevents the client from developing a better interpersonal relationship with the therapist.

Clinically Relevant Behavior 2. Client improvements, CRB2s, are behaviors that occur in the context of the therapeutic relationship that are effective for the client given his or her goals for therapy. Initially, many FAP clients have repertoire or motivational deficits in areas important to good interpersonal relationships. The FAP therapist's job is to help the client construct an effective repertoire starting with the client's existing skills (e.g., Goldiamond, 1974). Continuing the above example, any client behavior that serves to create a meaningful, close relationship with the therapist, such as appropriate disclosure or displaying affect that feels "risky" to the client, would be identified as a CRB2 for the client.

Clinically Relevant Behavior 3. Client verbal descriptions of controlling variables, or CRB3s, are statements of the functional relationship between the client's behavior and the social-environmental antecedents and consequences of that response. Continuing with the above example, the client might say to the therapist, "The way that you talk to me shows that you care, even when you don't like what I've just done or said. This tells me I can take risks, or even fail miserably. You won't stop caring about me, even though I sometimes do things that are insensitive to you. That's why I like talking to you." Here, the client has emitted a CRB3 because he or she has described the function of an antecedent, the therapist's history of responding in difficult discussions, on his or her own current, private evaluation of the therapeutic relationship. The client has specified the conditions that make it more likely he or she will engage in a particular response with the therapist.

Functional case conceptualization. CRBs are defined according to their function on the therapist, and are formally organized in a functional case conceptualization based on behavioral principles. The case conceptualization describes the current interpersonal repertoire of the client as it is emitted within the therapeutic relationship. The conceptualization is used to guide an idiographic assessment of client behavior and corresponding intervention strategies. Functional case conceptualizations are iterative. They are updated as new client target behaviors are identified and as behavioral improvements are established.

The FAP coding system to be described below was designed to recognize the function of the behavior of both members of the therapeutic dyad. It was also designed to incorporate important contextual variables, and to draw functional distinctions among therapists' responses to client CRBs. In the

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following section we will expand on our definition of therapist contingent responding and reveal some of the therapeutic process of FAP by presenting how FAP therapists decrease problem behaviors and shape or maintain improvements.

In-Session Contingent Responding in FAP

Therapist contingent responding is the contingent application of the therapist's natural (Ferster, 1967, 1972) reaction to the client's behavior as it occurs in session. Contingent responses are delivered based on how the client's behavior actually impacts the therapist (negatively or positively), not simply on the appearance of the behavior. When a FAP therapist detects the occurrence of CRBs in session, he or she seeks to make an immediate, contingent, and appropriate therapeutic response in order to impact the behavior as it occurs. This may include responses that appropriately decrease the frequency or intensity of, or extinguish altogether, problem behaviors. These responses are then combined with therapist behaviors that evoke and reinforce client improvements. The FAP therapist's goal is to affect the frequency and shape the function of the client's in-session behavior in ways that will improve both the therapeutic relationship and generalize to serve the client's goals in outside relationships.

Decreasing problem behaviors. To decrease problematic in session behavior (CRB1), FAP therapists can ignore the maladaptive response, in which case the absence of reinforcement leads to extinction of the problem behavior, or the response can be contingently punished. Examples of contingent punishers include explicitly stating the negative impact that the client's behavior has on the therapist in that moment during session. In the coding system to be described, such a response (an explicit therapist behavior that functions to decrease the future probability of CRB1) is called a TCRB1.

Shaping improvements. Extinction or punishment of maladaptive behaviors is never used alone. Following their contingent response to a CRB1, FAP therapists immediately attempt to construct adaptive, alternative behaviors (CRB2s) that will be more useful for the client (e.g., Hawkins, 1986). Immediately evoking and reinforcing a client CRB2 are particularly salient in the moments following the therapist's response to a CRB1. Thus, FAP therapists constantly seek to detect or evoke and then differentially reinforce adaptive alternative client behaviors. Consistent, differential reinforcement of alternatives to CRB1s allows the FAP therapist to shape functional improvements (CRB2s) in the client's repertoire, rather than just decrease the frequency of symptoms or maladaptive social behaviors.

Drawing functional connections. In the moments following a CRB1, the therapist may also choose to model a description of controlling variables (CRB3) for the client's behavior by pointing out the relationship between maladaptive behaviors in session, their function on the therapist, and their relation to aversive consequences that the client has experienced in other relationships. Client behaviors that evoke therapist escape, avoidance or countercontrol are likely to have the same function on significant others in the client's natural social environment. Although FAP therapists take as their first priority the direct training of improvements (evoking and reinforcing CRB2), drawing functional connections between client behavior in- and out of session is an important element of FAP.

FAP does not attend solely to client problem behaviors, psychological symptoms and distress in therapy sessions. FAP's focus on the development of a prosocial client repertoire marks it as a constructionist approach to therapy. FAP builds on existing client repertoires to enhance functioning, and FAP therapists explicitly conceptualize client strengths throughout treatment. Evoking and differentially reinforcing approximations toward more effective responding enhances the client's interpersonal repertoire and the therapeutic relationship. This two-pronged approach to therapist contingent responding is FAP's mechanism of client behavior change.

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Initial Research on the Mechanism of Change in FAP

The purpose of this study was to begin the empirical documentation of FAP's mechanism of change. The study was thus designed to accomplish two goals: (1) to create a coding system capable of documenting both client and therapist behavior in FAP sessions and; (2) to demonstrate that observers using the coding system can reliably track the occurrence of client and therapist behavior in session. Most importantly this study sought to reliably document the occurrence of CRBs and therapist contingent responses to CRBs. Because reliability is a necessary precursor to validity in any measurement system, the data presented in this study represent a crucial first step toward conducting tests of the model of change proposed for FAP and the implementation of efficacy and effectiveness trials. Because there was no coding manual for FAP prior to this research, the development of the Functional Analytic Psychotherapy Rating Scale (FAPRS) will be described. Data demonstrating the reliability of the FAPRS system, using measures of intra- and interobserver agreement, will then be presented.

Functional Coding with the FAPRS

The FAPRS codes the function of client or therapist behavior rather than the form. Raters using the FAPRS must recognize the function of in session behavior by its effect on the other member of the client-therapist dyad, rather than simply noting the occurrence of a particular topography. As a simple example, two clients might ask their therapist "What did you do over the weekend?" Even though the same question is asked, it could not be coded topographically because an identical question would have a different function depending upon the conceptualization of the client asking it. For a client who has had difficulty showing caring within interpersonal relationships, asking such a question would be an improvement (CRB2). In another instance, however, the question may be representative of a client problem (CRB1) that inhibits the development of the therapeutic relationship and client progress by allowing the client to forestall, avoid, or escape discussing an important event that occurred during the time between sessions with the therapist. When using the FAPRS a client's responses is coded based on the function the behavior has on the therapist, given the client's specific case conceptualization.

As with the client's behavior, the therapist's responses are coded based on the function or impact the behavior has on the client. The therapist's responses are not coded based on how the behavior appears (e.g., making an "I-statement"), nor are they coded based on what the rater believes the therapist's intentions were when making the response. Effectiveness is determined by the function of each therapist response on the client given the case conceptualization. Therapist responses that reinforce or shape the quality of a client's ability to show caring or willingness to share reports of important in-session events would be coded as effective responses by the FAPRS. Missing a client's approximation to positive change or allowing a client to avoid sharing important information would both be coded as ineffective therapist responses.

RESEARCH DESIGN AND METHODS
The FAPRS Coding Manual

Development of Observational Codes and the FAPRS Manual

Reliable assessment of both members of a therapeutic dyad's behavior is a necessary foundation for future studies designed to determine the empirical relationship between specific types of therapist responding and client behavior change. It is also necessary to document FAP's mechanism of change. The FAPRS thus includes both client and therapist behavior codes. The FAPRS was created by extending a set of codes designed to identify therapist behavior employed in a previous empirical study (Callaghan & Follette, 1999).

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Instructions for raters. The Functional Analytic Psychotherapy Rating Scale (FAPRS) employs the speaking "turn" (also called a "floor change") as its unit of analysis. Raters are instructed in procedures for turn-by-turn coding of sessions using session transcripts and videotapes. Raters are allowed to apply only one code to each turn and are provided with a multiple code decision hierarchy for use in situations where more than one codeable event occurs within a turn. The FAPRS gives raters examples, counter examples, and marginal examples for each code. Raters are instructed to code every turn based on the approximate function of the behavior in that turn given the case conceptualization for each client.

Client codes. The client codes used for this study are presented in Table 1. This set of codes indicates whether the client is engaging in the FAP-specific, clinically relevant behaviors (CRB1, CRB2, or CRB3) versus behaviors likely to occur in other therapies (CTR, O1, O2, CPR). For example, if the client talks about the therapeutic relationship, but this behavior is not a specific problem or improvement (CRB), it is coded using the Client Focus on the Therapeutic Relationship (CTR) code. When clients emit responses that are not improvements or problem behaviors (in or outside of session) but are part of general therapy

Table 1. List of Client Codes in FAPRS

Code	Full Name of Code	Brief Description
CRB1	Clinically Relevant Behavior 1 (problems in session)	client engages in problematic behavior in-session in the context of the therapeutic relationship
CRB2	Clinically Relevant Behavior 2 (improvements in session)	client engages in improved behavior in-session in the context of the therapeutic relationship
CRB3	Clinically Relevant Behavior 3 (description of important controlling variables)	client describes how different controlling variables impact the client's behavior and when the client makes these functional descriptions
CTR	Client Focus on the Therapeutic Relationship	client focuses on the therapeutic relationship
O1	Discussion of Clinical Problems Outside the Therapeutic Relationship ("outside CRB1s")	client discusses or describes problem behaviors that have been the focus of treatment but that occur in other situations outside of session
O2	Discussion of Clinical Improvements Outside the Therapeutic Relationship ("outside CRB2s")	client discusses or describes improvements that have been the focus of treatment but that occur in other situations outside of session
CPR	Client Positive Session Progression	client discusses or describes problems as they occur in situations other than the therapeutic relationship, or clarifies or provides context about problems; client engages in generally on-task behavior that is facilitative to discussion

progression, the turn is coded as "Client Session Progression" (CPR). When the client tells the therapist about an occurrence of a clinically relevant behavior outside of the therapy session (i.e. behavior that is a target for therapeutic change), it is coded as an "Outside CRB1" (O1) or "Outside CRB2" (O2). O1s and O2s are not CRBs because they do not occur within the therapeutic relationship.

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FAP assumes that problems and improvements occurring between the client and therapist are directly relevant to client problems and improvements in relationships outside of therapy. O1s and O2s are important to document because their occurrence indicates the extent to which the client's behavior targeted for change in session generalizes outside the therapeutic relationship.

Therapist codes. The therapist codes are presented in Table 2. The FAP-specific therapist behavior codes (TCRB1, -2 and -3, ECRB, M1, -2, and -3) are designed to document therapists' contingent responses to clients' in-session, clinically relevant behaviors. TCRB1, TCRB2 and TCRB3 indicate effective therapist responses to client in-session CRBs 1, 2 and 3 respectively. Ineffective therapist behaviors are noted with the codes M1, M2 and M3, indicating that the therapist has "missed" a CRB occurring in-session. Misses may be due to an inability to discriminate or failure to respond to a CRB. Therapist behavior that brings a

Table 2. ***List of Therapist Codes in FAPRS***

Code	Full Name of Code	Brief Description
TTR	Therapist Focus on Therapeutic Relationship	therapist continues focus on therapeutic relationship including sharing the therapist's feelings in response to the client
ECRB	Therapist Evokes a CRB	therapist evokes a clinically relevant behavior by the client, either CRB1, 2, or 3
TCRB1	Therapist Responds Effectively to CRB1	therapist's response is to in-session client problem behavior
TCRB2	Therapist Responds Effectively to CRB2	therapist responds effectively to in-session improvements
TCRB3	Therapist Responds Effectively to CRB3	therapist responds to the client describing how different controlling variables impact the client's behavior; therapist shapes or models CRB3 for client
RO1	Therapist Responds to Client's Discussion of Clinical Problems Outside the Therapeutic Relationship	therapist comments on problem behaviors the client describes having engaged in outside of the therapy session that are a focus of therapy
RO2	Therapist Responds to Client's Discussion of Clinical Improvements Outside the Therapeutic Relationship	therapist provides verbal reinforcement in response to the client describing improved behaviors outside of the therapy session that are a focus of therapy
TPR	Therapist Positive Session Progression	therapist engages in generally effective or facilitative behavior
M1	Therapist Misses/Does not Respond to CRB1	therapist does not respond to or misses an opportunity to respond to a CRB1
M2	Therapist Misses/Does not Respond to CRB2	therapist fails to reinforce an instance of a client's CRB2 or a reasonable approximation of a CRB2
M3	Therapist Misses/Does not Respond to CRB3	therapist misses an opportunity to respond to a client's description of important controlling variables or reasonable approximation
IN	Generally Ineffective	therapist engages in generally ineffective behavior

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	Therapist Responding	

CRB into the session is noted with the code, Evokes CRB (ECRB). The codes RO1 and RO2 denote effective responses to client descriptions of problem behaviors or improvements occurring outside of the therapeutic relationship. TPR indicates general therapist progression. TTR denotes clinician focus on the therapeutic relationship that is not in response to a targeted CRB, such as describing the process of FAP to the client. Ineffective contingent responding (ICR) and generally ineffective therapist behavior (IN) codes capture therapist behavior that is not beneficial (for example, inappropriately arbitrary reinforcers or punishers) to the client given the goals of treatment using FAP.

Reliability Statistic

Interobserver agreement was determined for all reliability analyses using Cohen's (1960) kappa. The kappa statistic is a measure of inter-rater reliability that improves on percent agreement by correcting for agreement that occurs by chance due to high base rates of some codes compared to others. Fleiss's (1981) guidelines for interpreting kappa were used to judge obtained coefficients as "poor" (less than .40), "fair" (.40 to .60), "good" (.60 to .75), or "excellent" (above .75) for all analyses presented below. A kappa value of .60 or higher (at least "good") was chosen to define the minimum acceptable level of rater competence using the FAPRS.

Participants

In the following discussion participants will be named and numbered to differentiate the Clients (1, 2, 3) Therapists (1, 2) and Raters (1-6). Client-therapist pairs will be referred to as "Dyads" and labeled alphanumerically (A, B, C). The term "Cohort" will refer to the groups (1, 2, 3) of raters trained together. Cohorts are distinguished because not all raters were trained at the same time.

Clients

The 3 clients in this study were adult women with long standing problems across multiple interpersonal relationships. The clients sought psychotherapy services in university clinics and provided informed consent for psychological treatment and for the use of videotapes and other session materials for research.

Therapists

Therapist 1 was one of the co-originators of FAP and was considered an expert in conducting the treatment. Therapist 1 conducted FAP with 2 of the 3 clients (Client 1 and Client 2). Therapist 2 was a doctoral student in clinical psychology with 3 years of experience in FAP and conducted treatment with the third client (Client 3).

Raters

Rater selection. All raters (1-6) are numbered in descending order according to their experience level both in conducting FAP and in using the coding manual. Only raters familiar with the basic principles of FAP were selected to code tapes for the study. This decision was based on the assumption that the functional nature of the coding system requires raters to understand the behavior analytic distinction between how client or therapist responses function as opposed to the superficial appearance, or topography, they may have.

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Criterion rater. Rater 1 was an expert FAP therapist and developed the FAPRS. Rater 1 was thus designated the "criterion" rater for this study. The performance of Raters 2-6 was compared to Rater 1's in some of the reliability analyses to assess their expertise in the use of the FAPRS.

Rater training. All raters received 70-100 hours of training. Training began with individual study of Kohlenberg and Tsai's (1991) text, followed by lectures and discussions on the principles of FAP and behavior analysis in a small group format. Raters then read the FAPRS manual and were instructed in the definition and use of its codes in a small group lecture and discussion format. Raters viewed segments of a FAP therapy session previously coded by Rater 1 and discussed the rationale for the codes applied to each client or therapist turn. In the next stage of training, raters were taught to code videotape segments taken from Dyad A. In each trial the raters observed, coded, and then discussed in small groups each code they applied as well as the rationale for their choice. The number of turns coded prior to discussion was progressively increased across the training from one (turn-by-turn discussion and instruction) to independent coding of an entire therapy session. Across all stages of training, informal quizzes were given to the raters to test their knowledge of the coding manual, their ability to discriminate between codes, and their understanding of the client's functional case conceptualization prior to each training session. No data from these training and discussion sessions are included in the reliability analyses presented in this study.

Rater training cohorts. Raters 2-6 were trained in three "cohorts." Rater 1 trained Rater 2 in the first Cohort. Raters 1 and 2 jointly trained Cohort 2 (Raters 3 and 4). Rater 2 alone trained Cohort 3 (Raters 5 and 6). The goal of using two different trainers was to ensure that effective use of the FAPRS was not dependent upon being trained by the FAPRS' author and to demonstrate the transfer of FAPRS instruction across trainers. This training approach provided a "layering" of training and allowed differences in coding skills to be examined within and across rater training cohorts.

Criterion test. At the conclusion of training, each rater was asked to independently code a "criterion session" tape. All raters coded the same criterion session tape. The criterion session was used to determine each rater's accuracy in meeting FAPRS training goals by comparing his or her performance to Rater 1. If a rater reached the overall (entire session) kappa value set at .60, he or she was allowed to begin independently coding tapes included in the data analyses.

Selection of criterion session. The session used for the criterion test was selected because it demonstrated as many of the FAPRS codes as possible within a single therapy session. This session was coded in its entirety. Raters were not allowed to code with others present, nor were they allowed to discuss their coding of this session.

Apparatus

Videotaped Stimulus Materials

Videotape recordings of FAP treatment sessions were examined for this study. The therapy sessions occurred in a room with two comfortable chairs. The video camera was positioned behind the therapist and was focused on the client.

Selection of videotaped sessions to be coded. A sample of sessions from the entire course of FAP treatment was selected in order to rate approximately every fourth therapy session. When a particular session was of unacceptable quality (e.g., the sound was inaudible or the video was non-viewable), the session occurring one week prior to or after the targeted session was chosen at random.

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This substitution was made if the camera's view of the client was obscured, or when technical problems led to poor audio or video quality.

Transcripts

A person not involved in coding the tapes transcribed each of the sessions used in the analyses. Transcripts provided a close approximation of a verbatim record of each client and therapist "turn" in the treatment session. Transcripts were completed using Mergenthaller and Stinson's (1992) standards for transcription with modifications as described below.

Embedding of turns. Standards that were modified included "embedding" one and two word utterances in the previous speaker's turn. For example, the client might report, "I became extremely angry with my spouse this week," and the therapist simply responded, "Really?" then the turn would be embedded in the previous (client's) turn and would not be coded. One- and two-word utterances were embedded because they often function only to facilitate the previous speaker's verbal behavior. Utterances were embedded only when they were clearly not functional units, such as the answer to a question or a verbal reinforcer or punisher of the previous speaker's behavior. Typical utterances there were not functional units and were embedded included turns such as, "Uhh-huh" or "Umm-hmmm" and "I see" or "OK."

Procedures

Coding Procedures

For all reliability analyses, sessions were coded in a randomized order. No identifying information was included on any transcript that would indicate the order in which sessions progressed, or the point in therapy (e.g. early, middle, late) that was depicted for each dyad. The primary advantage to randomizing session order is that it prevents rater bias due to raters' assumptions about how the therapist or client's behavior should change over time.

The decision to code sessions in a randomized order was conservative, as it would tend to lower estimates of the reliability of the FAPRS. Lacking any information as to the point at which the session occurred during the course of treatment forced raters to code client and therapist behaviors based only upon their apparent function at that moment of the session. When coding sessions out of order, it is difficult for raters to determine whether a particular client behavior functioned as an improvement or problem. Raters could not invoke rules developed on the basis of previously coded sessions because the rater's past experience might have included interactions from later sessions in therapy. Although this was a methodologically sound decision given the development of the FAPRS to prevent bias in coding, this approach made some sessions difficult to code.

Codes not included in the analysis. The M3 (therapist misses/does not respond to a CRB3) code was never used and the ICR (therapist ineffective contingent responding and IN (Generally Ineffective Therapist Responding) codes occurred only a few times. Thus, no measure of reliability was calculable for these codes.

Embedding check. Approximately 25 percent of the Dyad A tapes coded for the study were selected and checked for appropriateness of embedding by Raters 1 and 2. A list of embedding rules was established prior to this check and was used to monitor whether phrases were embedded consistently across sessions. A kappa value of K = .91 between raters 1 and 2 demonstrated excellent agreement (Fleiss, 1981) between raters 1 and 2 for embedding one and two word facilitative utterances.

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FAP Adherence Check

Transcripts from Dyad A were also coded using the Therapist In-vivo Strategies Scale (THISS; Parker, Bolling, & Kohlenberg, 1996) to demonstrate that these sessions were indeed FAP session and not cognitive therapy. The THISS system is a topographical measure of adherence to FAP strategies. It is not a functional measure of FAP competence and was not designed to measure the functional mechanism of change discussed above. The adherence check was performed, before testing the reliability of the FAPRS, to show that FAP therapist behavior in-session can be distinguished from therapist in session behavior in Cognitive Therapy (CT). The adherence check examined therapist use of Cognitive Therapy (CT) and/or Functional Analytic Psychotherapy (FAP) strategies within each session to ensure that FAP sessions contained behaviors specific to FAP, and more therapist strategies specific to FAP than to CT.

Reliability Drift Checks

Reliability decay, or "drift" occurs when a given rater's reliability to a criterion rater decreases over time (Bakeman & Gottman, 1986). This issue is especially important when a series of interactions are coded, such as the long series of Dyad A tapes coded by Rater 2. To assess the potential for drift using the FAPRS, interobserver agreement "drift checks" between Raters 1 and 2 were performed using coded sessions from Dyad A. Insufficient agreement was defined as overall kappa values below K = .5 ("fair" agreement; Fleiss, 1981). Failure to maintain criterion at any point would lead to "booster" training sessions until the rater obtained sufficient agreement values. Rater 1 checked 25% of the Dyad A tapes coded by rater 2 for decay.

RESULTS

Adherence Check Using the THISS Scale

Ratings for FAP-related strategies as measured by the THISS scale were significantly higher (m = 1.83 ; sd = .60) than for CT strategies (m = 1.38 ; sd = .20), $t(15) = -2.45$, $p = .027$, across the 16 Dyad A videotapes used in this study. The mean interobserver reliability for the THISS scale was calculated with Shrout and Fleiss' model (1979) for averaged ratings across a group, yielding consistently high rates of reliability between raters (mean ICC = .94, range = .88 to .98).

Reliability of the FAPRS

Four types of reliability assessment were conducted on the FAPRS coding system. All reliability data for this study are presented in the form of kappa coefficient (Cohen, 1960) values obtained between pairs of raters. The "generalized" kappa formula (which yields a single coefficient for three or more raters) was not used in this study. The authors decided to present only kappas obtained between pairs of raters because the generalized kappa is difficult to interpret. The generalized formula for kappa was judged inappropriate for this study because it cannot be directly compared to kappas obtained between pairs of raters. Because kappa values cannot be averaged across sessions, dyads, or raters, "overall" kappa values were used in this study. The term "overall" kappa indicates that all turns from multiple therapy sessions for a dyad were entered into a single, large kappa matrix for each rater.

Agreement with the criterion rater. Table 3 presents the kappa coefficients obtained between each pair of raters and between each rater and the criterion rater (Rater 1) for the criterion session. All 5 raters reached or exceeded the criterion of k = .60 with the criterion rater. Two of these 5 raters reached excellent agreement with the criterion rater. The remaining 3 raters achieved a good level of agreement (Fleiss, 1981).

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Table 3. ***One Session Reliability to Criterion Tests for Dyad A.***

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
Rater 2	.83				
Rater 3	.64	.56			
Rater 4	.65	.61	.79		
Rater 5	.74	.77	.54	.56	
Rater 6	.62	.62	.48	.49	.71

Agreement between all other rater pairs. Six of the 10 possible pairs of raters (not including the criterion rater) reached or exceeded the criterion kappa of .60 with one another. Two rater pairs obtained excellent agreement. Good agreement was obtained by 3 of 10 rater pairs. Fair agreement was obtained by the remaining 5 rater pairs.

Interrater reliability across multiple sessions. Because kappa coefficients cannot be averaged across dyads, a separate matrix of interobserver agreement values is presented for Dyads A and B, and presented textually for Dyad C below. Table 4 presents the overall kappa coefficients obtained between Raters 2, 3, and 4 across three sessions of Dyad A. Table 5 presents the kappa coefficients obtained between Raters 1, 3 and 4 across three sessions of Dyad B.

Table 4. ***Interrater Agreement Matrix for Multiple Sessions of Dyad A.***

	Rater 2	Rater 3
Rater 3	.60	
Rater 4	.65	.70

Table 5. ***Interrater Agreement Matrix for Multiple Sessions of Dyad B.***

	Rater 1	Rater 2	Rater 3
Rater 2	.77		
Rater 3	.70	.75	
Rater 4	.58	.56	.61

The kappa coefficient obtained between Raters 1 and 3 across three sessions of Dyad C was .61. Of the 10 possible rater pairs in these analyses, 2 achieved excellent agreement, 7 achieved good agreement, and 1 achieved fair agreement.

Intrarater reliability. To test the intrarater reliability of the FAPRS coding system, Rater 1 coded three sessions of Dyad A at two different points in time. The overall kappa coefficient obtained by Rater 1 across an 18-month code-recode interval was .91.

Reliability drift checks. Table 6 presents the kappa values obtained between Raters 1 and 2 for each of 7 reliability drift check sessions of Dyad A, and the overall kappa coefficient across the 7 sessions. None of the sessions ever decreased below a "good" level of agreement.

Table 6. ***Kappa Values for 7 Drift-check Sessions of Dyad A.***

Session	1	2	3	4	5	6	7	Overall
Kappa	.75	.87	.68	.64	.64	.60	.61	.72

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DISCUSSION

Reliability of the Coding Manual

Interrater agreement within dyad. The kappa coefficients between each rater and the criterion rater presented in Table 3 suggest that raters with varying levels of experience can reach at least a good level of agreement with the author of the manual, an expert FAP therapist. The kappas obtained between all possible rater pairs indicate that FAP raters can be expected to agree with each other as well as with a criterion rater. This suggests that all raters learned a set of skills for coding FAP, rather than just the ability to code reliably with the person who trained them.

Table 3 indicates that there may have been a rater training cohort effect. Raters 3 and 4 showed modally good agreement with Raters 1 and 2 who trained them, and excellent agreement with each other. Raters 4 and 5 showed good to excellent agreement with Rater 2 who trained them, and good agreement with one another. When compared to one another according to training cohort, however, Raters 3 and 4 and Raters 5 and 6 uniformly achieved only fair agreement. Interrater agreement is somewhat higher within than between cohorts, and some rater pairs agree better than others. It is possible that raters, across training cohorts, were making different types of coding decisions and errors. All raters, however, remained within an acceptable range of kappa values given the difficulties of functional coding and the fact that the FAPRS is still in development. The possible cohort effect will be addressed in future studies by using a standardized, computer-based training curriculum for training new raters and for retraining experienced raters to a common criterion (Ruckstuhl, Callaghan, & Follette, 2001).

Interrater agreement across multiple sessions. The across-sessions analyses in Tables 4 and 5 indicate that good levels of agreement can be consistently attained using the FAPRS across different sessions for the same client-therapist dyad. The data indicate that raters can sustain these good to excellent levels of agreement across several sessions. These data also show that raters can achieve high levels of agreement for different client-therapists dyads; that is, rater agreement levels generalize across dyads when coding different clients and different therapists.

Assessment of the reliability of the FAPRS for measuring client and therapist behaviors across multiple dyads is challenging and important. The FAPRS requires raters to discriminate and correctly categorize both client and therapist behaviors based upon the approximate function that each dyad member's behavior has on the other person. This can be a difficult task, as each dyad has a topographically different means of creating a common function within the therapeutic relationship. Topography can also change within a particular dyad across time. While two FAP therapists might identify "trusting the therapist" or "feeling close to the therapist" as CRB2s in the functional case conceptualization for two different clients, the way that each client's CRB2 looks is typically quite different, making coding across clients difficult.

The fact that kappa values from Dyads B (Table 5) and C (kappa = .61) matched or exceeded those of Dyad A (Table 4) suggests that using sessions from Dyad A to train the raters did not confound the results for the reliability analyses. Future studies of the FAPRS will train raters with therapy examples from multiple dyads, and to the greatest extent possible, use training materials taken from dyads not included in the data set of the study for which raters are being trained. Given the status of FAP as a relatively new psychotherapy practiced by a limited number of clinicians, it was necessary to train raters using certain dyads. It is encouraging that interobserver agreement rates in this study did not appear to be bound by rater training that used one of the client-therapist dyads included the primary data analysis.

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The data provided for the intrarater reliability check suggest good test-retest reliability for the FAPRS. These data should be interpreted cautiously. The intrarater kappa coefficient represents the coding of one rater (the criterion rater) examining only one client-therapist pair. These data are presented here because they suggest that raters may be able to use the FAPRS consistently across time. This is a promising finding given the length (18 months) of the code-recode interval used and the challenges imposed on the rater by the complexity and subtlety of the behaviors coded.

The data in Table 6 for the drift check analysis indicate that two raters can use the FAPRS, across multiple sessions with good overall reliability. Overall, Rater 2 was able to sustain sufficient agreement with the criterion rater across the sessions used in the data analyses. The session-by-session kappa values indicate that reliability was subject to slight decay. From these tables, we conclude that ongoing training in conjunction with reliability checks may be necessary, and that future studies of the FAPRS should continue to include both session-by-session and overall kappas when examining rater drift.

Testing the Hypothesized Mechanism of Change

The reliability data presented above suggest that the FAPRS is reliable and that an empirical examination of the therapeutic relationship and FAP's proposed mechanism of change is now possible. In this section, a brief example of using the data from the FAPRS to test the hypothesized mechanism of clinical change will be given.

Brief description of lag-sequential analysis. Sequential analysis uniquely captures what occurs in complex interactions (e.g., Bakeman & Gottman, 1986; Gottman & Bakeman, 1979; Gottman & Roy, 1990) and is especially well suited to examining what occurs when two people interact in the context of therapy. Lag-sequential analysis compares the conditional probability of a targeted event, given the occurrence of some other event, to the simple probability of that targeted event. To test whether the mechanism of FAP occurs as hypothesized, researchers can use data from sessions coded with the FAPRS to determine whether the therapist responds contingently to in-session client behaviors. Answering this question helps determine whether the therapist is engaging in the behavior necessary to bring about change. For example, given a CRB2 by the client, we can determine whether the therapist provides a contingent response following that CRB2 (TCRB2) more frequently than he or she emits a TCRB2 independently of the client engaging in improved behavior. A *z*-score and its associated probability are calculated for these comparisons to determine whether these two are statistically significantly different. Interpretations of a significant *z*-score are based on the assumption of the null hypothesis (that there is no sequential relationship in the data).

Analyses. The data used for these sequential analyses consist of 1,788 turns from 31 sessions of Dyad A coded by Rater 1. Transitional probabilities used in the sequential analyses and corresponding *z*-scores were calculated using Allison and Liker's (1982) equations for computing lag sequential analyses. The use of *z*-scores controls for the base rate, or unconditional probability, of the target code. *Z*-scores demonstrate the degree to which the target code is contingent on the occurrence of the given, or specified, code. *Z*-scores above 1.96 are considered significant at the alpha = .05 level and indicate that the target code occurs more often relative to the given event than would be expected, given the unconditional probability of the target event overall. Negative *z*-score values indicate that the target code occurred, statistically, at a level less likely than expected.

Lag-sequential analysis of coded client and therapist behaviors tested the hypothesis that the therapist actually engages in contingent responding; that is, the therapist engages in the behavior necessary

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to effect client change. Data for this analysis are presented in Table 7. Table 7 shows the *z*-scores for the conditional probabilities for lag 1 of the therapist's responses to client problem behaviors in-session (CRB1), client improvements in-session (CRB2), and client identification of relevant controlling variables (CRB3) across all 31 sessions. Transitional probabilities are presented for the therapist missing CRB1s and CRB2s (M1 and M2). The table also indicates the therapist's positive session progression behavior code (TPR) in response to the three antecedent CRBs.

Table 7. ***Results for Sequential Analysis for Therapist Behavior.***
***overall *z*-score for 5165 events, significant at $p < .05$.**

	Therapist Behavior					
	TCRB1	TCRB2	TCRB3	M1	M2	TPR
Antecedent						
CRB1	53.81*	-2.87*	4.70*	15.98*	-.65	-9.16*
CRB2	-2.91*	57.88*	-.38	-.66	15.84	-5.21*
CRB3	-1.37*	-.79	14.66*	-.31	-.18	-.78*

These data demonstrate that at lag 1, the therapist was more likely to respond to a CRB1 than engage in other behavior. While the therapist also missed some CRB1s a test performed on the difference between the *z*-scores (calculated using $Z = (Z_1 - Z_2)/\sqrt{2}$; Rosenthal & Rosnow, 1991) for these two codes revealed that TCRB1 occurred more often than M1 ($Z = 26.75$, $p < .05$). The therapist was also more likely to respond to a CRB2 than engage in any other behavior, and a test between *z*-scores for TCRB2 and M2 was statistically significant ($Z = 29.73$, $p < .05$). The therapist was again more likely to respond to a CRB3 than engage in any other behavior when a CRB3 occurred. The negative *z*-score value for TCRB2 given a CRB1 indicates the therapist was unlikely to respond to the CRB1 behavior as though it were a client improvement. In the same manner, the therapist was statistically less likely to respond to CRB2s with a TCRB1, indicating the therapist did not respond to CRB2s as if they were client problem behaviors.

The lag sequential and *z*-score comparison results indicate that the therapist responded contingently and effectively to CRBs as required by the hypothesized model. The therapist was more likely to respond to the impact of the client's behavior appropriately (e.g., emit a TCRB1 when the client engages in a CBR1) than engage in either an incongruous or ineffective contingent response (e.g., emit a TCBR2 in response to a CRB2) or engage in general therapeutic progression responding (non FAP-specific behavior). This finding provides initial evidence for the presence of the mediating mechanism of FAP and the use of sequential analysis as an investigative method for researching mechanisms of change.

Relating mechanism of change to outcome. To relate this responding to changes in client behavior, future studies of FAP's mechanism of change can compute the simple probabilities with which clients engage in CRB1s, 2s and 3s can be examined across a data set. Data can be divided into thirds of treatment, identified as Early, Middle, and Late thirds, and the combined simple probabilities for CRB1s, 2s, and 3s, can be calculated for each third of the treatment by summing the total events for each code and dividing by the number of client events for that third of treatment. Chi-square analyses can then be used to demonstrate the changes in proportions (simple probabilities) of CRBs during each third to test the hypothesis that problematic behaviors (CRB1s) will decrease and improved behaviors (CRB2s and CRB3s) will increase over the course of treatment.

Implications for Future Research

In an ongoing effort to improve the training of FAP therapists, the coding system described in this study is being used to train therapists in the theory and practice of FAP. The FAPRS is being used to

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teach therapists to accurately identify their own, as well as clients' behaviors in the sessions they conduct. This teaching method provides a technology to empirically document the change in therapists' behaviors over the course of their training and their corresponding effectiveness in bringing about a change in their clients' behavior. The reliability analyses presented in this study are only a first step toward the refinement of observational measures for FAP and eventual studies of the validity of FAP's proposed mechanism of change. Reliability studies are a necessary stage, however, and these initial data are encouraging.

Future studies of the FAPRS must address several weaknesses, including the potential for training cohort effects and possible confounds when training and testing of the FAPRS uses the same dyads. It is likely that a diversity of behavioral exemplars will be required for raters to become well trained in a functional coding system such as the FAPRS. Coders must learn to more quickly and accurately extract information about behavioral function regardless of topography. The development of standardized, computer driven training systems and expansion in the number and diversity of FAP dyads available for study are key steps toward addressing the weaknesses of this study that are being pursued currently.

Conclusion

This analysis of the Functional Analytic Psychotherapy Rating Scale provides evidence that the functional variables hypothesized to be important to FAP's mechanism of change can be reliably observed and documented. The FAPRS coding system will eventually allow clinicians and researchers to test hypotheses about the therapeutic relationship and its role in effecting clinical change in a manner similar to the example provided above. Other psychotherapies may be able to use the methodology described in this study to specify and measure important elements of the therapeutic relationship and their influence on client behavior change. Although this research is in its early phases, it lays the groundwork to explain variance that remains unaccounted for in traditional psychotherapy outcome studies, namely, "What occurs in-session that helps clients improve?"

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