ORIGINAL PAPER

The Functional Analytic Psychotherapy Rating Scale: a Replication and Extension

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Abstract Few theories of psychotherapy give direction to the therapist on a moment-to-moment level or make predictions about how specific therapist techniques change client behavior in session. Functional analytic psychotherapy (FAP, Kohlenberg and Tsai in Functional analytic psychotherapy: a guide for creating intense and curative therapeutic relationships. Plenum, New York 1991) provides this direction and prediction. Specifically, FAP claims that client problem behaviors will be displayed in the therapeutic relationship and that the therapist can improve client in-session behavior through differential, contingent responding. Further, it is assumed that these improvements in session can be generalized to out of session relationships. The FAP rating scale (FAPRS) was developed for the purpose of coding in-session client and therapist behaviors in an effort to test FAP's purported mechanism of change. The current study seeks to replicate and extend initial FAPRS findings (Callaghan et al. in J Contemp Psychother 33:321–339, 2003) regarding mechanism of change and to address transportability. FAPRS coding data from a single successful case of an individual diagnosed with Borderline Personality Disorder and treated with FAP is presented. Results indicate that the FAPRS system is transportable and are generally supportive of the claim that therapist contingent responding leads to client improvement.

The majority of psychotherapy process research has focused on specifying the contribution of molar mechanism of change variables to overall outcome (e.g., DeRubeis and Feeley 1990). Fewer studies have attempted to demonstrate the occurrence or impact of therapeutic technique and client improvement on the moment-to-moment level (see Kanter et al. 2005; Moyers and Martin 2006 for exceptions). Rice and Greenberg (1984) have argued that process research conducted on the level of the client–therapist interaction may better serve clinicians by providing more practical recommendations concerning which technique to apply at any given moment in the therapy interaction. In other words, although studies that take broad strokes at process research may encourage clinicians to apply techniques whose overall frequency predicts client outcome (e.g., empathy, normalizing statements), they fail to inform the clinician about when such techniques may or may not be helpful. For example, might there be moments in the therapeutic interaction when normalizing statements are detrimental? Furthermore, when might other interventions whose gross frequency may predict poor outcomes (e.g., therapist personal self-disclosure, Watkins 1990) facilitate positive outcomes when well-timed and used judiciously?

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Few theories provide the moment-to-moment direction necessary to guide hypotheses of this kind. That is, few recommend specific therapist actions in specific client–therapist interactions or provide predictions of how client behavior will change following these therapist actions. Functional analytic psychotherapy (FAP, Kohlenberg and Tsai 1991) meets this requirement. The behavioral theory underlying FAP and several converging lines of evidence (Baruch et al. 2008) lead to two primary assumptions in FAP: (a) the therapeutic relationship and therapy setting are similar enough to relationships and settings in the client's daily life that the client's day-to-day problems will generalize into the therapy session, and (b) therapists can shape these in-session behaviors through differential responding and that these improvements generalize to out of session relationships (Follette et al. 1996).

In FAP, important client behaviors that occur in the context of the therapeutic relationship are referred to as clinically relevant behavior (CRB), including CRB1s—in-session occurrences of out-of-session problem behaviors—and CRB2s—in-session improvements in those problem behaviors. For example, if a client avoids emotional disclosure outside of therapy, then this avoidance will probably be evoked in the therapeutic relationship and be considered a CRB1 and in-session disclosure would be considered a CRB2. CRBs are defined functionally, so the exact topography of behavior that occurs outside of session need not occur during session. For example, when asked to disclose emotions to his wife, this client may simply deny any affect, but when asked by the therapist, the client may engage in an intellectualized or off topic discussion. In either case, the function of those different client behaviors is to avoid contact with or disclosure of an emotional experience. The FAP therapist seeks to increase the frequency of CRB2s through natural reinforcement contingent on their occurrence and to decrease the frequency of CRB1s through natural punishment or extinction when they occur. The word "natural" in this context is meant in behavior analytic terms (Ferster 1967) to signify therapist behaviors that would naturally occur as responses to client behavior in any healthy close relationship; e.g., an assertive client behavior (CRB2) is naturally responded to by complying with the assertive request, an aggressive client behavior (CRB1) is naturally responded to by saying something like, "I don't like what you are doing right now." This clearly defined, moment-to-moment mechanism of change provides a unique opportunity to investigate therapeutic process on the molecular level.

The focus on the therapy relationship and the minutia of the therapeutic interaction makes FAP particularly appropriate for clients with interpersonal problems, such as those diagnosed with personality disorders (Koerner et al. 1996). In a recent, unique single subject analysis (Callaghan et al. 2003), a male client with significant features of narcissistic and histrionic personality disorders was treated with FAP. Four 15-minute session segments throughout the course of therapy were coded using the FAP rating scale (FAPRS, Callaghan and Ruckstuhl 2000), which codes in-session client and therapist behavior on a turn-by-turn basis, including client CRBs, therapist responses to CRBs, and client reports on outside behavior change. Findings suggested that therapist contingent responding to CRBs occurred and that CRB1s decreased and CRB2s increased over the course of FAP. In addition, in-session improvements appeared to generalize to out of session behavior. Thus, this study suggested that FAP was an effective treatment for this client and provided some initial support for FAP's mechanism of change.

However, Callaghan et al. (2003) had several limitations. First, the coding was performed by the therapist and supervisor. Although the two coders had acceptable agreement (86%), it is possible that the lack of independence biased coding results, especially given that rating therapist effectiveness is a major component of the FAPRS system. In addition, different functional classes of CRBs were not distinguished, which allowed the authors to conclude that client behaviors improved, but not which behaviors improved. A more detailed analysis of particular behaviors organized at the level of response class function would provide greater specification of the change process and may lead to increased clinical utility. Other limitations of the study include the small sample of therapy interactions (only one hour total) and a lack of criterion coding.

The current paper sought to replicate and extend the findings of Callaghan et al. (2003) in a variety of ways including: (1) demonstrate the reliability and transportability of the current system with independent coders at another research site, (2) use lag sequential analysis to measure contingent responding to distinct functional classes of CRBs, and (3) provide additional single-case data for the effect of contingent responding on the repertoires of personality disordered clients. In this paper, a case of Borderline Personality Disorder (BPD) successfully treated with FAP was coded with the FAPRS system.

Methods

Client, Therapist, and Treatment

The client was a Caucasian female in her late 20's seen at a university psychology clinic. She met criteria for BPD and described herself as depressed (pre-treatment Beck Depression Inventory = 18; Beck et al. 1961). She did not self-injure, but exhibited extremely chaotic interpersonal relationships, rapid and excessive attachment to male

peers, a socially aversive interpersonal style (including inappropriate disclosures and excessive anger regarding mundane interactions), socially inappropriate attention seeking when in need of support, and an inability to discriminate her impact on others or accept feedback on that impact. The client received 24, 50-min sessions of FAP as per Kohlenberg and Tsai (1991), administered by a female graduate student who was supervised by the second author. All available video recordings of sufficient audio and visual quality (sessions 2, 5, 7, 9, 11, 15, 18, 20, 22, and 24) were coded using a revised FAPRS (Callaghan et al. 2005).

An idiographic case conceptualization of CRBs was developed early in treatment that defined which client behaviors were CRBs (abbreviated in Table 1). This conceptualization was used by the therapist to guide how she shaped (i.e., contingently responded to) client behavior during the therapy session. The client's interpersonal difficulties were grouped into three functional CRB classes: Ineffective need assertion, inability to discriminate her effect on others or accept feedback on her effect (impact/feedback), and generally aversive, interpersonally distancing behaviors (interpersonal closeness).

Over the course of treatment the client improved significantly in several general areas including improved self-care, communication skills, and emotion identification, as per qualitative therapist and client report in the final session. Improvement was particularly dramatic in the client's ability to get her needs met by the therapist and others. In the final session, the client reported that she could now "get someone's attention without having to stress my emotions or be dramatic." This was in line with the therapist's statement in the same session that the client had "learned to … accurately identify [her] feelings and not to rely on drama to get [her] point across." In addition, the client's final session BDI was 8, indicating minimal depression.

The Revised FAPRS Coding System (Callaghan et al. 2005)

The FAPRS system contains six client codes and six therapist codes, all of which will be described below. CRB1, CRB2, Client Focuses on the Therapeutic Relationship (CTR), Outside Problems (O1), Outside Improvements (O2), and Other Client Talk represent the six client codes.

CRB1s and CRB2s are client problems and improvements, respectively, occurring in session as described above. CRBs are defined by the case conceptualization and any client problems or improvements occurring in session that are not part of the case conceptualization are not coded as CRB1s or CRB2s. Examples of CRBs in each functional class are provided in Table 2.

The CTR code captures client talk that involves the therapeutic relationship but does not function as a CRB. For example, the CTR code was given to the client statement, "I was thinking about you asking me why I was bringing this up. Do I always have to have an explanation for why I bring things up?" This same statement could have been considered a CRB with another client or with this client in specific contexts depending on the case conceptualization.

O1s are outside of therapy problem behaviors and O2s are outside of therapy improvements. O1s and O2s are the out-of-session parallels to CRB1s and CRB2s. For example, an Ineffective Need Assertion O1 was coded when the client reported seeking attention from men through jealous outbursts and an O2 was coded when the client described expressing her desire for a more committed relationship with her boyfriend.

The Other Client Talk code covers all client talk that does not fall into one of the other codes. In other words, it defines all talk regarding outside of therapy issues that is not an O1 or O2 and all general conversational turns of

Table 1 Case conceptualization classified by three functional classes

Class	CRB1	CRB2
Ineffective need assertion	Attention seeking Exaggerated, dramatic responding	Identification of needs from therapy and from the therapist Clear requests for assistance from therapist
Impact/feedback	Behavior that demonstrates inability to discriminate impact on the therapist Overly intense or dramatic responses to feedback from therapist regarding the interpersonal impact of her behavior	Recognizing impact of her behavior on the therapist (often catching herself and apologizing before feedback) Accepting feedback from therapist appropriately
Interpersonal closeness	Behavior that functions to distance therapist	Behavior that functions to enhance closeness with the therapist (often by verbally recognizing the importance of the therapeutic relationship)

CRB1 clinically relevant behavior: in-session problem, *CRB2* clinically relevant behavior: in-session improvement

Table 2 Examples of clinically relevant behavior and therapist contingent responses

Class	ECRB	CRB	TCRB
Ineffective need assertion	So what would be most helpful for me to do right now?	CRB1: There is nothing you can do to help me. I just want to die.	TCRB1: You are getting kind of dramatic. Is there something else you want me to know?
Impact/ feedback	How are you feeling about me right now? (after giving client negative feedback)	CRB2: I used to get mad, but since we have a good relationship and you seem to respect me if I do something that bothers you and you tell me, I am glad.	TCRB2: I have to say… you just blew me away with your insight.
Interpersonal closeness	How do you feel when you are in session with me?	CRB2: …Relaxed. I feel good because you are interested in getting to know me and I know this is a place for me to work on things.	TCRB2: I want to stop and say that I felt really connected to you when you said that because I felt like it came straight from the heart.

ECRB therapist evokes clinically relevant behavior, *CRB1* clinically relevant behavior: in-session problem, *CRB2* clinically relevant behavior: in-session improvement, *TCRB1* therapist shapes an in-session problem, *TCRB2* therapist shapes an in-session improvement

speech. For example, the Other Client Talk code was given to the client statements, "I am really into 80s rock right now," and "Yeah, I had a good Thanksgiving."

The FAPRS system contains six therapist codes: Therapist Evokes Clinically Relevant Behavior (ECRB), Therapist Shapes a CRB1 (TCRB1), Therapist Shapes a CRB2 (TCRB2), Ineffective Response to a CRB (INF), Therapist Focuses on the Therapeutic Relationship (TTR), and Other Therapist Talk.

The ECRB code captures therapist attempts to evoke client CRB and thus bring the discussion in vivo. This often takes the form of the therapist drawing parallels between the client's behavior outside and in-session behavior. For example, one therapist turn coded ECRB was "Is what's going on right now what happens between you and other people in your life?" A second common form of ECRB is when the therapist directly requests a CRB2 from the client. An example of this type of ECRB was, "So you feel like I am attacking you. What could you say to me that might help me respond in a way that's more useful to you?" The ECRB code is only used when the therapist brings a new class of CRB into the room. That is, if the discussion is already focused on an in vivo class, the ECRB code is not given until a new class is evoked or the discussion is moved to outside issues and the therapist brings the discussion back to in vivo topics.

TCRB1s and TCRB2s are coded when the coder determines that the therapist has effectively responded to a CRB1 or CRB2 (i.e., successfully shaped). Examples of TCRBs for this client from each functional class are provided in Table 2. Because the FAPRS coder does not have access to the client's future behavior at the time of coding to determine if a therapist response was reinforcing, coders use the apparent effect of the therapist's behavior on the client and their own reaction as a proxy to the function of the therapist's response. TCRB1s and TCRB2s could only be coded following a CRB1 or CRB2 and were only allowed within three therapist turns following a CRB.

The TTR code reflects therapist speech that is focused on the therapeutic relationship that does not shape CRB (TCRBs) or function as an ECRB. For example, therapist statements such as, "So, do you think I have been missing your point?" and "What I am hearing right now is that you want me to know that this was not easy for you" were coded TTR. Specifically, these were coded TTR because they did not function to evoke or shape in the context of the interaction given this client's case conceptualization.

Other Therapist Talk covers all therapist talk that does not meet criteria for any of the other codes and all general conversational turns of speech. For example, the Other Therapist Talk code was given to the therapist statements, "How are you doing today?" and "Would you prefer to meet at 6:00?"

If a single client turn fit the definition of more than one code, coders used the following decision hierarchy: (1) CRBs were coded before all other codes, (2) therapy-focused codes were coded before out-of-session codes, and (3) outside problems and improvements were coded before other outside talk (i.e., CRB1, CRB2 > CTR > O1, O2 > Other Client Talk). In addition, individual turns of speech often have aspects of both problems and improvements. For example, the current client could have identified her needs and expressed them clearly (CRB2) in a manner that was interpersonally distancing (CRB1). If the CRB1 or CRB2 was clearly more prominent, coders were instructed to code by prominence. In cases where they were equally prominent, the turn was coded as an improvement (CRB2 or O2) to reflect the opportunity to reinforce a successive approximation. Coders used decision hierarchy rules for therapist codes similar to those used for client codes (i.e., TCRB1, TCRB2 > ECRB > TTR > TPR).

Determining the Unit of Analysis

Videotaped sessions were transcribed and demarcated into client and therapist turns by the therapist. Short statements that did not require a response by the other member of the

therapeutic dyad (e.g., "Uh huh" or "I see") were not marked as a new turn. Coders used these transcripts and video recordings with audio during coding sessions.

Coder Training

The four coders had received training in FAP for at least one year. Coders 1–3 were graduate students in clinical psychology and coder 4 was a post baccalaureate research assistant. Coders 1 and 2 had both conducted therapy with several clients and coders 3 and 4 had no therapy experience. FAPRS training was provided by the first three authors and consisted of ∼100 h of didactic instruction, practice coding, and code discussion. Coders were not blind to the basic hypotheses of the study (i.e., that contingent responding will improve in-session client behavior) because the functional coding system necessitated an understanding of FAP principles.

Criterion Validity

The first and third authors collaboratively provided criterion codes on four video segments from two client–therapist dyads that represented a wide range of FAP interactions. Each of the four coders coded each criterion clip alone and then recoded each clip in collaboration with another coder. Each possible pair of coders coded at least one criterion clip together. Performing criterion coding in this way produced data that could be used for individual coder calibration and provide the reliability data for each coder when coding alone and in pairs (which is how the actual data coding was performed). Each coder attained a Kappa (Cohen 1960) of at least 0.60 with criterion codes when coding with a partner over the four segments. This criterion was met independently for client and therapist codes.

Coding Procedure

Each coder was provided with a detailed version of the client's case conceptualization and was allowed to ask questions about the case conceptualization before coding began. A shortened version is provided in Table 1. Every client and therapist turn was coded by a pair of coders, one with therapy experience and one without, which produced four rating pairs (1 + 3, 1 + 4, 2 + 3, 2 + 4). This pairing scheme was in direct response to criterion reliability findings described below. The four coding pairs were rotated systematically throughout the 10 sessions coded. Sessions were coded over the course of 4 weeks.

During the initial FAPRS coding, coders did not attempt to classify CRBs by response class. This was done for two reasons. First, unpublished data from the second author's lab indicated that coders were unable to discriminate between CRB functional classes when coding. Second, without functional class discrimination, coding one session required 2–3 h (4–6 person hours) to code. Adding this discrimination was impossible given time constraints. Instead, previously coded CRBs were further classified into one of the three functional classes by the first author and coder 4. First, each CRB and the 12 turns surrounding the CRB (to provide context) were viewed separately by the first author and coder 4 and each CRB was placed into one of the three response classes. On the few turns where the first author and coder 4 disagreed, the tape was reviewed and discussed to produce the final functional class classification.

Data Analysis

The coding data are reported as the total number of each code in a session divided by the number of client or therapist turns in that session. This was done to account for differences in the number of turns per session. These ratios were interpreted visually across time and chi-square analysis was used to determine if there were differences in proportion of CRB1s, CRB2s, O1s and O2s between the first five and the last five sessions coded.

Lag Sequential Analysis (LSA, Bakeman and Gottman 1986) was used to analyze contingent responding in terms of contingent probabilities[1]—the likelihood that one event (event Y) will follow another event (event X). Contingent probabilities can also refer to the likelihood of event Y following a certain number of events after event X. In the current study, contingent probabilities were used to demonstrate the rates and timing of therapist contingent responding. Contingent probabilities are reported for the first turn after a CRB (Lag 1, the therapist's first opportunity to respond), the third turn after a CRB (Lag 3, the therapist's second opportunity to respond), and the fifth turn after a CRB (Lag 5, the therapist's third opportunity to respond).

Results

Criterion Reliability

Reliability statistics for coders when coding alone and in pairs are presented in Table 3. When coding alone, the four coders obtained unacceptable agreement. However,

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[1] A full application of LSA involves the calculation of Z-scores comparing contingent probabilities to overall probabilities, answering the question "Does event Y follow event X more often than would be expected if codes were randomly ordered?" Applying LSA to the current study in this manner would be statistically flawed because contingent responses (TCRB1s and TCRB2s) can only occur in the turns following a CRB. In other words, the order of codes is restricted by the system itself and is thus not independent.

Table 3 Percent agreements and kappas for each coder (1–4) coding alone and in pairs with criterion coders for client codes and therapist codes

	Client codes		Therapist codes	
	% Agreement	Kappa	% Agreement	Kappa
Coder 1				
Alone	66.67	0.56	61.90	0.51
In pair	85.71	0.81	90.48	0.88
Coder 2				
Alone	76.19	0.68	80.95	0.76
In pair	95.24	0.93	100.00	1.00
Coder 3				
Alone	71.43	0.60	71.43	0.64
In pair	71.43	0.61	80.95	0.76
Coder 4				
Alone	71.43	0.63	80.95	0.76
In pair	71.43	0.61	71.43	0.64
Average				
Alone	71.43	0.62	73.81	0.67
In pair	80.95	0.74	85.71	0.82

Table 4 Client codes by session as percent of total client turns

Session	CRB1	CRB2	CTR	O1	O2	Other client talk
2	11.1	3.7	1.9	5.6	3.7	74.1
5	1.3	3.9	15.8	1.3	0.0	77.6
7	33.3	5.3	5.3	0.0	0.0	56.1
9	13.4	4.5	14.9	1.5	6.0	59.7
11	15.0	10.0	11.7	3.3	0.0	60.0
15	7.2	7.2	21.7	0.0	1.4	62.3
18	3.6	2.4	6.0	2.4	0.0	85.7
20	13.0	13.0	11.1	0.0	3.7	59.3
22	9.6	4.1	19.2	1.4	0.0	65.8
24	22.2	14.8	22.2	0.0	0.0	40.7

CRB1 clinically relevant behavior: in-session problem, *CRB2* clinically relevant behavior: in-session improvement, *CTR* client focuses on the therapeutic relationship, *O1* outside problems, *O2* outside improvements

Table 5 Therapist codes by session as percentage of total therapist turns

Session	TTR	ECRB	TCRB1	TCRB2	Other therapist talk
2	1.8	1.8	3.6	1.8	90.9
5	9.3	2.7	0.0	4.0	84.0
7	9.1	1.8	21.8	5.5	61.8
9	17.6	4.4	4.4	1.5	72.1
11	11.7	3.3	15.0	6.7	63.3
15	25.0	5.9	4.4	4.4	60.3
18	5.9	0.0	3.5	3.5	87.1
20	14.8	5.6	14.8	7.4	57.4
22	19.4	5.6	6.9	5.6	62.5
24	40.0	1.8	12.7	7.3	38.2

TTR therapist focuses on the therapeutic relationship, *ECRB* therapist evokes clinically relevant behavior, *TCRB1* therapist shapes an in-session problem, *TCRB2* therapist shapes an in-session improvement

average kappa improved from 0.62 to 0.74 for client codes and from 0.67 to 0.82 for therapist codes when coders coded in pairs, with all kappas above 0.60. Thus, data coding was performed in pairs. Coders lacking in therapy experience (coders 3 and 4) coded as well alone as coders with therapy experience (coders 1 and 2). However, coders without therapy experience performed particularly poorly when coding together as a pair. Thus, each data coding team contained one coder with therapy experience and one without. Inter-coder agreement on the secondary functional class classification was acceptable (percent agreement = 0.93, Kappa = 0.74).

Code Frequency

Client and therapist codes are presented in Tables 4 and 5, respectively, as percentages of total client and therapist turns in each session. Table 6 shows the three CRB functional classes. As can be seen in Table 6, Ineffective Need Assertion (INA) CRBs made up an average of 16.8% of client turns in each session, while the other two classes combined made up 3.0%. In addition, INA CRBs occurred in every session while other CRBs occurred sporadically. For this reason, all further analyses focused on the INA class only.

Figure 1 presents INA CRB1s and CRB2s graphically across the 10 coded sessions. As predicted, INA CRB1s made up a higher percentage of total turns during the first half of treatment (43/314, 13.7%) than during the second half of treatment (28/334, 8.4%); $\chi^2(1, N = 648) = 4.68$,

$P < 0.05$. More INA CRB2s occurred during the second half (22/334, 6.6%) of treatment than during the first half (8/314, 2.5%); $\chi^2(1, N = 648) = 7.94$, $P < 0.01$. Visual inspection of the graph revealed significant variability; however, a clear increase in the ratio of CRB2s to total CRBs is apparent across sessions.

As can be seen in Table 4, O1s and O2s occurred at low and variable rates, and there were no differences in their rates between the first and second halves of therapy.

Lag Sequential Analysis

Of the 71 INA CRB1s, 42 (59.2%) were followed by a TCRB1 at the first opportunity (Lag 1), 21 (29.6%) were followed by a TCRB1 at Lag 3, and 18 (25.4%) were followed by a TCRB1 at Lag 5. A total of 54 (76.1%) of the 71 were followed by a TCRB1 at either Lag 1, 3, or 5. Of

Table 6 CRBs by functional class and session as a percentage of total client turns

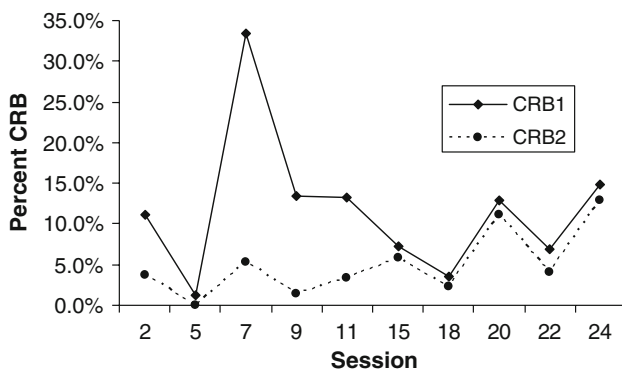| Session	CRB1			CRB2		
	Ineffective need assertion	Impact/ feedback	Interpersonal closeness	Ineffective need assertion	Impact/ feedback	Interpersonal closeness
2	11.1	0.0	0.0	3.7	0.0	0.0
5	1.3	0.0	0.0	0.0	2.6	1.3
7	33.3	0.0	0.0	5.3	0.0	0.0
9	13.4	0.0	0.0	1.5	1.5	1.5
11	13.3	1.7	0.0	3.3	5.0	1.7
15	7.2	0.0	0.0	5.8	1.4	0.0
18	3.6	0.0	0.0	2.4	0.0	0.0
20	13.0	0.0	0.0	11.1	1.9	0.0
22	6.8	1.4	1.4	4.1	0.0	0.0
24	14.8	3.7	3.7	13.0	0.0	1.9
Average	11.8	0.7	0.5	5.0	1.2	0.6

Fig. 1 Percent of Ineffective Need Assertion CRB1s and CRB2s across sessions

the 30 INA CRB2s, 17 (56.7%) were followed by a TCRB2 at Lag 1, 6 (20.0%) were followed by a TCRB2 at Lag 3, and three (10.0%) were followed by a TCRB1 at Lag 5. A total of 21 (70.0%) were followed by a TCRB2 at either Lag 1, 3, or 5. It is possible to compare contingent responding in the current study to that in Callaghan et al. (2003) by comparing overall ratio of TCRBs to CRBs in each study. In Callaghan et al. (2003) there was a TCRB/CRB ratio[2] of about 0.72, while the ratio of TCRBs/CRBs in the current study was 0.68, suggesting that rates of responding were similar across studies.

Within Session Shaping of CRBs

The order of CRB1s and CRB2s within each session has implications for the viability of FAP's in-session shaping

hypothesis. Specifically, if the therapist is shaping improved client behavior in session, early sessions should be characterized by CRB1s followed by CRB2s. In addition, repeated CRB1s before a CRB2 could reflect an extinction burst as the therapist blocks previously reinforced behavior. In later sessions, CRB2s should begin to occur more independently of CRB1s. Across all sessions, INA CRB1s ($M = 51.87$th turn, SD = 34.44) occurred marginally earlier in session than INA CRB2s ($M = 64.87$th turn, SD = 37.00); $t(99) = 1.69$, $P = 0.09$. When treatment was divided into halves, this difference was significant for early sessions (CRB1 $M = 49.60$th turn, SD = 28.23; CRB2 $M = 84.00$th, turn SD = 38.23); $t(49) = 2.99$, $P < 01$, but not late sessions (CRB1 $M = 55.36$th, SD = 42.61; CRB2 $M = 57.91$th, SD = 34.84).

Discussion

Results indicate that the FAPRS system is reliable and transportable. Coders and criterion coders unfamiliar with the client and therapist were able to reliably identify and code client CRBs and therapist contingent responses to them based on the case conceptualization provided. Among this group of coders, coding with a partner was much more reliable, suggesting that future research should use coding pairs.

As predicted by FAP theory, a general decrease in CRB1 and increase in CRB2 occurred over the course of this successful case. In addition, the ratio of INA CRB2s to total INA CRBs increased markedly over the course of therapy, suggesting that treatment functioned to increase the proportion of improved in vivo behavior. However, these patterns were discernable only amidst considerable variability over the course of therapy. It is important to note that FAP does not predict smooth session-by-session

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[2] Callaghan et al. (2003) did not report contingent probabilities, which would have allowed for a direct comparison. An estimated rate of responding from Callaghan and colleagues was found by dividing the proportions of therapist turns that were TCRB1s or TCRB2s by the proportions of client turns that were CRB1s or CRB2s.

changes in CRBs as CRBs can occur for a variety of reasons. CRBs may occur naturally or the therapist may attempt to evoke CRB directly. Like most outpatient psychotherapies, the session agenda is flexible, topics are determined collaboratively, and the therapist does not follow rigid rules or formulas. Thus, one would not expect each session to evoke equal numbers of CRBs. For example, the current client arrived for Session 7 extremely emotionally dysregulated and proceeded to ineffectively assert her needs to the therapist for most of the session, resulting in a large number of CRB1s. Likewise, different therapeutic situations make different classes of CRBs more prominent. For example, denial of interpersonal closeness (Interpersonal Closeness CRB1) did not manifest in the therapeutic relationship as a CRB1 until Session 22 when the therapist began discussing termination.

LSA suggests that the therapist consistently, effectively, and contingently responded to most CRBs within three therapist turns of their occurrence. Although far from definitive, this is an important finding in support of FAP's mechanism of change. Given that the client improved significantly over the course of treatment (as determined by therapist and client report, BDI reduction, and CRB frequency), and contingent responding occurred at a high rate across sessions, results are consistent with the hypothesis that contingent responding changed client behavior. However, alternative explanations are possible. For example, if the high rate of genuine caring and empathy expressed during FAP (which occurs concurrently with contingent responding) caused change, results would look similar. Other research designs are required to rule out this possibility (discussed below).

Within session analyses of the order of CBR1s and CRB2s suggests that in-session client behavior was shaped by therapist responding across sessions. During early sessions, CRB1s almost exclusively preceded CRB2s. This suggests that in most sessions problematic behavior was initially evoked (usually naturally and not through ECRBs) and responded to effectively and contingently by the therapist. This shaping process resulted in more effective behavior later in session. If this pattern had continued throughout treatment it would suggest that each session the therapist was starting over the shaping process. However, in later sessions there was almost no difference in the timing of CRRB1s verses CRB2s and CRB2s occurred more than 26 turns earlier on average in the second half of treatment than in the first half of treatment. This suggests that the client more often demonstrated improvements without first demonstrating problem behaviors in the second half of treatment.

The attempt to demonstrate generalization of improvements to outside behaviors by coding outside of session problem behaviors (O1s) and outside improvements (O2s) was unsuccessful. O1s and O2s were variable and occurred at low levels throughout, possibly due to coding rules that restricted O1s and O2s to very specific examples. Although this client's out-of-session behavior appeared to improve over the course of therapy (e.g., BDI improvements), this change was not successfully captured through turn-by-turn analysis. Considering that low frequency also precluded statistical analysis of O1s and O2s in Callaghan et al. (2003), alternative methods for measuring generalization should be considered in the future.

Although an improvement on previous applications of the FAPRS system, this study has several limitations. Our attempt to demonstrate generalization by coding in-session descriptions of outside behavior failed, limiting claims of outside behavior change to self-report measurement and client and therapist report. Future studies should consider alternate methods for measuring generalization of gains, including use of self-report diary cards (Kanter et al. 2006). In addition, while all significant findings are in line with FAP's hypotheses, this study's design can not rule out other possible mechanisms of change. Future research may benefit from incorporation of more controls over the implementation of FAP such as A–B designs where contingent responding is withheld initially or multiple baseline designs across subjects or response classes.

Nonetheless, the current data highlights the utility of the FAPRS in documenting the process of FAP on a molecular level of analysis. These findings suggest contingent responding may be a viable tool for affecting change in problematic in-session behaviors that are common with personality disordered clients. More broadly, results imply that therapeutic mechanism of change can be captured on the molecular level and that lag analyses of speech turns is a viable technique. While this study focused on the hypotheses of FAP, similar coding systems could be developed and implemented in similar designs to investigate the micro-process of other therapeutic modalities.

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