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A Micro-Process Analysis of Functional Analytic Psychotherapy's Mechanism of Change

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This study sought to clarify the micro-process of Functional Analytic Psychotherapy (FAP) by using the Functional Analytic Psychotherapy Rating Scale (FAPRS) to code every client and therapist turn of speech over the course of successful treatment of an individual meeting diagnostic criteria for depression and histrionic personality disorder. Treatment consisted of cognitive behavioral therapy alone followed by the addition of FAP techniques in a unique A / A +B design. In-session client behavior improved following the shift to FAP techniques, and micro-process data suggested that client behavior was effectively shaped by in-vivo FAP procedures. These results support FAP's purported mechanisms of change and highlight the advantages of utilizing molecular coding systems to explore these mechanisms.

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FUNCTIONAL ANALYTIC PSYCHOTHERAPY (FAP; Kohlenberg & Tsai, 1991) employs basic behavioral principles and behavioral theory (Skinner, 1953, 1957) to focus the therapist on shaping client behavior as it occurs in the therapeutic relationship during moment-to-moment therapist-client interactions (Callaghan, Naugle, & Follette, 1996; Kohlenberg, Yeater, & Kohlenberg, 1998). Claims that FAP leads to reliable and robust clinical improvement have sparked criticisms that FAP, to date, has generated little supportive empirical research (e.g., Corrigan, 2001). One possible reason for the paucity of data on FAP may be that its focus is on

a functionally defined therapeutic process rather than easily defined and manualized treatment techniques. This focus has steered researchers away from employing FAP, for the most part, in randomized controlled trials or other group designs (see Kohlenberg, Kanter, Bolling, Parker, & Tsai, 2002, for an exception). However, recent calls for researchers to provide empirical support for principles or mechanisms of change rather than treatment packages (e.g., Rosen & Davison, 2003) highlight the need for a shift in focus and the development of novel methodologies. Such alternative methodologies may be more appropriate for the study of treatments such as FAP that define their mechanisms of action at the level of moment-to-moment client-therapist interactions.

The current study employs an "events paradigm" or "task-focused" approach to process research (Stiles, Shapiro, & Elliott, 1986; Wiseman & Rice, 1989) in an initial effort to empirically explore hypotheses about FAP's mechanism of change. Although used with some frequency in studies of family therapy (e.g., Bradley & Furrow, 2004), such an approach rarely has been used to explore cognitive or behavioral psychotherapeutic process, but it is well suited for exploring FAP's hypotheses on the moment-to-moment level (Rice & Greenberg, 1984).

The current study coded every client and therapist turn of speech over the entire course of therapy (20 sessions) of a successful, previously published FAP case using a unique A /A+B design (Kanter et al., 2006) to evaluate if the observed moment-to-moment interaction was consistent with the hypothesized mechanism of change in FAP. This exhaustive approach allows for a rich analysis of the single case but, of course, is limited in terms of generalizability. This study also serves as an exploration of the viability of this methodological approach for future FAP research.

FUNCTIONAL ANALYTIC PSYCHOTHERAPY

FAP focuses on the client's *clinically relevant behaviors* (CRB), that is, functional in-session instantiations of problem behaviors (termed CRB1), as well as alternative adaptive behaviors (termed CRB2), occurring between, and as collaboratively defined by, the client and therapist. When CRBs occur in session, the FAP therapist attempts to shape the client's behavior using immediate natural contingencies (Ferster, 1967)—increasing CRB2s by following them with reinforcing responses and decreasing CRB1s by following them with extinguishing, punishing, or blocking responses. Importantly, FAP purports that improved in-session repertoires generalize to out-of-session environments.

Several reports suggest that the use of FAP techniques leads to improved treatment outcomes (e.g., Gaynor & Lawrence, 2002; Kohlenberg et al., 2002). However, more relevant to the current analysis are reports specifically demonstrating the effects of FAP's proposed mechanism—therapist shaping of in-session client behavior. Two recent studies have investigated the effect of therapist in-session shaping responses during FAP (also see Truax, 1966, and Karpiak & Benjamin, 2004, for important demonstrations of in-session shaping outside the context of FAP).

Callaghan, Summers, and Weidman (2003) applied the FAP Rating Scale (FAPRS; a system for coding each turn-by-turn interaction during the therapy session, as described in detail below) to four segments of therapy spread across the course of treatment of a successfully treated client suffering from maladaptive features of both histrionic and narcissistic personality disorders. Results demonstrated that coders could reliably identify clinically relevant client behaviors as well as the therapist's shaping responses and that in-session client behavior improved over the course of treatment. Thus, Callaghan and colleagues (2003) demonstrated the initial viability of the FAPRS system and reported results that are consistent with FAP theory. However, conclusions were limited by the non-independence of the coders (coding was performed by the therapist and her supervisor), the small sample of client-therapist interaction included in the analysis (only 1 hour total), and the lack of a control or baseline phase.

In a different approach to demonstrating the effects of in-session shaping in FAP, Kanter and colleagues (2006) treated two personality-disordered clients in a unique A/A+B within-subjects design in which the A phase consisted of cognitive behavioral therapy (CBT; A. T. Beck, Rush, Shaw, & Emery, 1979) and the A+B phase consisted of CBT plus FAP techniques (i.e., focus on the therapeutic relationship and *in vivo* shaping). The timing of the phase shift was determined by the stability of idiographic target behaviors which were defined collaboratively with the client in early sessions. These target behaviors were then assessed throughout both phases of treatment by the client via diary cards, which listed each of the client's target behaviors with instructions for daily self-monitoring. Results indicated one successful case and one unsuccessful case. In the successful case, the weekly frequency of the target behaviors (labeled *Histrionics* and *Public Control*—described in detail in the method section below) decreased

dramatically following the introduction of FAP and remained low for the remainder of treatment. This study did not identify in-session interactional patterns (CRBs and therapist responses aimed at shaping CRBs) but identified important out-of-session interpersonal behaviors that should change as a result of in-session FAP techniques. Thus, although final outcome (outside-of-session behavior) was assessed, relevant process (therapist shaping responses) and intermediate outcome (in-session client behavior) were not, limiting conclusions regarding mechanism of change.

The current study addresses the limitations of Callaghan and colleagues (2003) and Kanter and colleagues (2006) by coding each turn of speech in all 20 sessions of Kanter and colleagues' successful case[1] using the FAPRS coding system. The following specific hypotheses were explored:

1. Regarding client behavior, in-session client behavior would improve (i.e., problem behaviors—CRB1s—would decrease and adaptive behaviors—CRB2s—would increase) after the introduction of FAP techniques.
2. Regarding therapist behavior, more therapeutic relationship focus and therapist in-session shaping responses would occur during FAP sessions than during the CBT sessions.
3. Regarding the relationship between client and therapist behavior, lagged analyses of in-session codes would demonstrate that therapist behavior following client CRBs was more effective during the FAP sessions than during CBT sessions.

Method

CLIENT AND THERAPIST

The client, a 25-year-old African-American female, sought treatment for depression and chronic interpersonal distress and was diagnosed with major depressive disorder and histrionic personality disorder (both established by the Structured Clinical Interview for DSM-IV; Spitzer, Williams, & Gibbon, 1995). Symptoms of depression at pretreatment included low mood and significant feelings of worthlessness and guilt. The client received twenty 50-minute sessions of psychotherapy administered by a clinical psychology Ph.D. student (post-masters) who had received training in both CBT and FAP and was supervised by an expert in FAP with considerable experience in CBT.

[1] The unsuccessful case reported in Kanter and colleagues (2006) was not coded due to inconsistent attendance and treatment dropout after the phase shift.

The client's case conceptualization was developed by the therapist and his supervisor using information gathered during assessment and the first five sessions of treatment. The client complained of interpersonal problems caused by a variety of factors, including excessive focus on what others thought of her, difficulties being monogamous, flirtatious behavior with men other than her boyfriend, and difficulty saying "no" to requests from peers. The client's main goals for treatment were to recover from her depression and be more effective interpersonally, most notably to engage in a monogamous and intimate relationship with her boyfriend.

Table 1 summarizes the case conceptualization. The assessment process determined two classes of problem behavior and one class of adaptive behavior. Problem behavior included behaviors controlled by immediate positive social reinforcement (e.g., attaining attention, validation, or approval; labeled *Histrionics*) and behaviors controlled by avoidance of social disapproval, other social aversives, intimacy, and the appearance of vulnerability (labeled *Public Control*). Adaptive behavior targets included increased control by internal stimuli (thus responding more genuinely during interpersonal interactions), engaging in less attention seeking, and more behavior consistent with her value of maintaining a long-term monogamous relationship (labeled *Genuine Responding*).

Frequencies of problem behaviors (i.e., Histrionics and Public Control) were tracked individually through the use of diary cards in Kanter and colleagues (2006). In the current project, in-session occurrences of these classes were not easily distinguishable and thus all in-session problem behavior was simply coded as CRB1. It should be noted that behaviors to be tracked by diary card were determined collaboratively between the client and therapist and designed to be clinically relevant and useful. They were not designed to have functions that would be easily differentiated by observers. Specifically, in this case the client had access to information to distinguish topographically similar responses as either functioning to avoid negative social evaluation (i.e., Public Control) or to access shallow social reinforcement (i.e., Histrionics), but coders did not. Weekly frequencies of genuine responding were not tracked via diary card; however, in-session occurrences were identified, coded, and are referred to as CRB2.

The client was assessed at pre and posttreatment using the Beck Depression Inventory (BDI; A. T. Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Social Support Questionnaire (SSQ; Sarason, Sarason, Shearin, & Pierce, 1987). The SSQ is a well-

Table 1
Abbreviated Case Conceptualization

	Out-of-Session Examples	In-Session Examples (CRB1s)	Effective Responses (TCRB1s)
Histrionics	- Engaging in flirtatious behaviors with men other than her boyfriend in high risk situations (e.g., at dance clubs) - Attention/validation/approval seeking behaviors (usually with men)	- Flirtatious behavior in session - Attention/validation/approval seeking, overdramatization in session	- Explicitly ignoring flirtatious behavior - Prompting client to try out more effective ways of express herself - Mildly punishing responses (e.g., pointing out that being dramatic in session is distracting)
Public Control	- Keeping "guard up" and "mask" on in social situations to avoid social criticism and feelings of vulnerability - Lashing out or being mean to female peers when feelings are hurt (controlled by the negative social reaction of others) - Actions that avoid or reduce intimacy with boyfriend	- Avoiding intimacy or emotional expression in session - Resisting being real or genuine when prompted to by therapist	- Discussing how the client's avoidance maintains distance in the therapeutic relationship and how it negatively effects the therapist - Explicitly blocking client avoidance of difficult conversation topics
	Out-of-Session Examples	In-Session Examples (CRB2s)	Effective Responses (TCRB2s)
Genuine Responding	- Disclosing difficulty to peers in genuine manner - Soliciting the reactions of peers outside of session (i.e., *not* avoiding possible judgments) - Expressing feelings to peers in genuine manner	- Sharing hurt or vulnerability in session - Soliciting the therapist's reaction to her in session (i.e., seeking out possible judgment by therapist) - Genuine responding or behavior that is under appropriate internal stimulus control	- Letting the client know how being genuine effects him positively - Reciprocating with genuine, intimacy building responses (i.e., therapist self-disclosure)

validated self-report measure that asks participants to list up to nine individuals to whom participants feel they could turn for support in different situations and to rate their satisfaction with available support for each situation. At pretreatment the client was moderately depressed (BDI = 17) and reported relatively few individuals to whom she could turn for social support (SSQ Number = 2.7) but viewed her level of support as fairly satisfying (SSQ Satisfaction = 5.3). At posttreatment, her BDI was 0 and both SSQ scales were 6, indicating improved depression and perceived social support. A posttreatment administration of relevant sections of the SCID showed that this client no longer met criteria for major depressive disorder.

DESCRIPTION OF TREATMENT

The first five sessions were devoted to assessment and development of the case conceptualization. Self-monitoring diary cards were developed which prompted the client to keep a tally of Histrionics and Public Control behaviors. These cards provided a measure of behavior change in the client's daily life and were reviewed weekly by the therapist.

Sessions 6 to 11 consisted of CBT (as per A. T. Beck et al., 1979; J. S. Beck, 1995). The most relevant dysfunctional thoughts for this client were "I am worthless" and other variants on her limited value. Theses automatic thoughts were often preceded by real or perceived interpersonal slights and followed by feelings of sadness or anger and ineffective behavior (e.g., flirting with other men, attention seeking). Thought records were completed by the client outside of session and reviewed by the therapist in session. The client was taught to identify relevant depressogenic thinking and to develop more balanced thinking through evidence evaluation and reality testing.

The final nine sessions consisted of CBT enhanced with an increased focus on the therapeutic relationship and differential therapist responding to CRBs (as per FAP). During the CBT phase, the therapist

was specifically asked to refrain from purposefully shaping in-session behavior and to steer the conversation away from the ongoing therapeutic relationship if it came up in session. The timing of the switch from CBT to CBT + FAP was determined by the achievement of stability in targeted behaviors, as recorded on the client's diary card.

FAP RATING SCALE (FAPRS)

In the FAPRS system (Callaghan, Ruckstuhl, & Busch, 2005), one code is applied to each client and therapist turn of speech. A short description of each FAPRS code reported in this manuscript is provided below.[2] The manual is available upon request from the first author.

Client codes. Four client codes are reported here: CRB1, CRB2, Client Focuses on the Therapeutic Relationship (CTR), and Other Client Talk. To be coded as a CRB1 or a CRB2 the client's behavior had to occur within the context of the therapeutic relationship and be a functional problem or improvement as per the conceptualization provided to each coder. CTR was used to reflect when client talk focuses on the therapeutic relationship, but only when the statement was not clinically relevant behavior. This code is important because much of the discussion during FAP sessions centers on the therapeutic relationship; however, not every client statement calls for a shaping response. All other client turns were designated as Other Client Talk, which included talk that facilitated the progression of the therapy session (e.g., small talk, scheduling) and talk about outside issues. It was expected that the assessment and CBT phases of the current study would be coded as mostly Other Client Talk.

Therapist codes. Six therapist codes are reported here: Therapist Evokes Clinically Relevant Behavior (ECRB), Therapist Shapes a CRB1 (TCRB1), Therapist Shapes a CRB2 (TCRB2), Ineffective Response to a Clinically Relevant Behavior (INF), Therapist Focuses on the Therapeutic Relationship (TTR), and Other Therapist Talk.

ECRB reflects when the therapist attempts to bring CRBs into the therapy context. This often occured when the therapist connected outside problems to the therapeutic relationship (e.g., "You said you get angry at your mother when she tries to control the conversation. Is that happening between us now?") or when the therapist specifically asked for the client to engage in a CRB2 ("Could you try expressing your feelings to me in a different way?"). The TCRB1 and TCRB2 codes were given when the therapist effectively shaped CRB1 or CRB2 behaviors, respectively. Although topographies vary, any effective response to a CRB1 should reduce that behavior in the future and any response to a CRB2 should increase that behavior in the future. As it is impossible to code a behavior based on future frequency, coders were instructed to utilize the immediate apparent effect of the therapist's behavior on the client and their own reactions to determine if the therapist turn appeared to shape client behavior effectively. Examples of TCRB1s and TCRB2s for this case are included in the last column of Table 1.

TTR reflects when the therapist speech focused on the therapeutic relationship but the statement does not function to shape or evoke CRB1 or CRB2. This code is important because much of the discussion during FAP sessions centers on the therapeutic relationship; however, not every therapist statement regarding the relationship will be evoking or responding to a client CRB. INF reflects when the therapist ineffectively shaped client behavior. This code is only given if a therapist appeared to reinforce a CRB1 or punish a CRB2. INF codes include instances when the therapist failed to recognize the client's behavior as clinically relevant and when the therapist recognized the behavior as clinically relevant but viewed it as the wrong type (according to the coder) and responded accordingly. Other Therapist Talk reflects all therapist talk that did not fall into any of the specific categories listed above.

The TCRB1, TCRB2, and INF codes are all responses to CRBs; thus, they could only be coded when preceded by a CRB. However, it is unknown how immediate therapist responses must be to effectively shape client behavior. Thus, coders were allowed to code any or all of the three therapist turns following client CRBs as effectively (TCRB1 following a CRB1 or TCRB2 following a CRB2) or ineffectively (INF following either a CRB1 or CRB2) shaping that CRB.

DESCRIPTION OF CODERS AND CODER TRAINING

Coders were three clinical graduate students (Coders 1-3) and one postbaccalaureate assistant (Coder 4). All coders possessed a basic understanding of behavior analysis, had read the original FAP text (Kohlenberg & Tsai, 1991), and had conducted research on FAP for at least 1 year. Coders read a detailed FAPRS training manual and spent approximately 100 hours in training. Coders

[2] Some client codes regarding talk about outside issues were folded into the Other Client Talk code because of indications of poor validity and a lack of importance of these codes to the goals of this manuscript. All coder reliability reported in this manuscript reflects the full FAPRS system in order to provide the most conservative estimate of reliability (agreement was slightly higher if all codes designated Other Client Talk were considered equivalent) and to allow comparisons with previously reported investigations.

2, 3, and 4 had been certified as FAPRS coders for a previous study (Busch, Callaghan, Kanter, Baruch, & Weeks, submitted for publication) by obtaining good agreement with criterion coders on four practice clips, from two different client-therapist dyads, that represented a wide range of therapeutic interactions (all kappas > .60; Cohen, 1960; Fleiss, 1981). Coder 1 (the first author and an expert in the FAPRS system) was one of the criterion coders reported in Busch and colleagues. To account for the lack of a criterion check on Coder 1 before coding, additional inter-team reliability was assessed on 20% of coded data in the current study. All coders had been trained in FAP and thus all were aware of the basic hypotheses of the study. Using nonblind coders was unavoidable because in order to train coders to code functional responding they must understand the timing and direction of changes that take place in operant manipulations.

DATA CODING PROCEDURE

Sessions were digitally recorded in a split screen format, allowing coders to account for nonverbal gestures and facial expressions that give clues to the function of a statement. Before FAPRS coding, sessions were unitized into separate statements (i.e., turns) by trained undergraduate research assistants. All client and therapist statements, except for those that clearly functioned to facilitate the conversation (e.g., "Uhh huh" and "I see"), were demarcated as a turn of speech. Thus, all the turns were identified in advance, allowing the coders to focus on the content of the turn and not whether or not a turn had occurred.

Prior to coding, coders were provided with a detailed case conceptualization and any questions about it were discussed. Sessions were coded in order, but coders were unaware of when assessment ended and CBT began or when the phase shift to FAP occurred. Every turn of speech in all 20 sessions was coded by two coders as a team, one with therapy experience (coder 1 or 2) and one without (coder 3 or 4), so coder teams consisted of coders 1 + 3, 1 + 4, 2 + 3, and 2 + 4. This choice was made due to a discovery during past projects that teams in which both coders lacked therapy experience produced significantly lower agreement with criterion coders.

Each coder first gave a code to each turn of speech without discussion. Then, each turn in which team members disagreed was reviewed. If coders were unable to come to an agreement after discussion, the code lower on the coding hierarchy was entered. The coding hierarchy to resolve disagreements between coders always defaulted to the less FAP-specific code, where (in terms of FAP specificity) CRB1/CRB2 > CTR > Other Client Talk and INF > TCRB1/TCRB2 > ECRB > TTR > Other Therapist Talk. Disagreements between coders after discussion regarding CRB1 vs. CRB2 were always coded as improvements (i.e., CRB2s) in an effort to recognize successive approximations of improvement.

TRANSITIONAL PROBABILITIES

Transitional probabilities are presented to reflect the rate of therapist shaping responses to client CRBs. The transitional probability of Y given X is the likelihood that event Y occurs given that event X has occurred at some set previous point. When consecutive events are analyzed, the event immediately following event X is referred to as *Lag 1*. Lag 1 transitional probabilities answer the question, "Given that X has occurred, what percent of the time will Y be the next event?" The lag of a transitional probability can also be extended beyond the immediate event. For example, a transitional probability at Lag 5 would answer the question, "Given that X has occurred, what is the probability that Y will occur exactly 5 events later?"

This study utilized transitional probabilities to describe patterns of effective (TCRB1 and TCRB2) and ineffective (INF) responses to CRBs. These probabilities are relevant at Lags 1, 3, and 5 after CRBs, as the therapist was given three opportunities to respond to any given CRB (Lag 2 and 4 are ignored because they represent client turns). More complex lag methods (e.g., lag sequential analysis; Bakeman, Gottman, & Mordechai, 1997) were not applied due to the inherent nonindependence of the FAPRS system (i.e., TCRBs could not be coded in the absence of a CRB).

Results

RELIABILITY

To evaluate inter-team reliabilities, 20% of all coded data was recoded a second time. Only two team comparisons (1 + 3 vs. 2 + 4 and 1 + 4 vs. 2 + 3) were made because all others had overlapping team membership (i.e., comparing 1 + 3 to 2 + 3 would artificially inflate agreement due to overlapping coder membership). Kappa was calculated separately for client and therapist codes in order to provide the most conservative estimate of reliability, as calculating one kappa for all codes underestimates chance agreement, thus inflating reliability estimates. For the comparison of Team 1 + 3 to Team 2 + 4, agreement for therapist codes was $k = .67$ (percent agreement = 90.85) and agreement for client codes was $k = .67$ (percent agreement = 89.57). For the comparison of Team 1 + 4 to Team

2+3, agreement for therapist codes was $k = .75$ (percent agreement = 88.65) and agreement for client codes was $k = .66$ (percent agreement = 83.80). All kappa values were greater than .65, indicating good agreement (Fleiss, 1981).

CODE FREQUENCY

Table 2 presents the rate at which relevant client and therapist codes occurred both in each session as well as the average rate across each phase. The upper panel of Fig. 1 graphs the rate of CRB1s and CRB2s relative to total client turns across all 20 sessions. CRB1s were infrequent during assessment, rose during CBT, peaked at the beginning of FAP, trended downward until Session 18, and flattened until Session 20. CRB2s were almost nonexistent during assessment and CBT and were higher throughout FAP. Both CRB1s and CRB2s showed significant session-to-session variability during FAP.

The lower panel of Fig. 1 graphically displays rates of therapist effective shaping responses (combined TCRB1s and TCRB2s relative to all therapist codes) and rates of other therapist relationship focused codes (ECRBs and TTRs) across sessions to demonstrate differences in therapist behavior between phases. Rate of therapist shaping was very low during assessment and CBT and clearly higher during FAP. Focus on the relationship (other than therapist shaping) was almost nonexistent during assessment, low during CBT, and higher during FAP. Although both sets of codes are clearly higher during FAP sessions, there is great session-to-session variability during the FAP phase.

To establish that FAP techniques occurred more often during the FAP phase than during the CBT phase, a Pearson's chi-square test was conducted comparing the rates of relationship-focused codes (ECRB + TTR) during CBT (26 of 582 total therapist turns) to their rate during FAP (282 of 1062). This

Table 2
Percentage of Client and Therapist Codes During Each Session and Averaged Across Each Phase of Treatment

Session	CRB1 (%)	CRB2 (%)	CTR (%)	ECRB (%)	TCRB1 (%)	TCRB2 (%)	INF (%)	TTR (%)
Assessment								
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.85	0.00	1.71	0.00	0.00	0.00	0.00	0.85
5	0.00	0.00	2.60	0.00	0.00	0.00	0.00	2.56
Total	0.17	0.00	0.86	0.00	0.00	0.00	0.00	0.68
CBT								
6	4.12	0.00	3.09	0.00	1.04	0.00	0.00	9.38
7	4.10	0.82	0.82	0.82	1.64	0.82	0.82	1.64
8	1.15	0.00	3.45	0.00	0.00	0.00	1.15	5.75
9	10.23	0.00	0.00	0.00	1.12	0.00	2.25	0.00
10	2.38	0.00	8.33	0.00	0.00	0.00	0.00	8.24
11	0.98	0.00	2.94	0.00	0.00	0.00	0.00	1.94
Total	3.83	0.14	3.11	0.14	0.63	0.14	0.70	4.49
FAP								
12	15.43	6.29	27.43	2.30	11.49	3.45	0.00	32.76
13	1.12	3.37	8.99	1.12	0.00	2.25	0.00	14.61
14	6.74	4.49	7.87	1.11	4.44	3.33	0.00	16.67
15	13.04	2.61	54.78	4.31	8.62	1.72	0.00	59.48
16	10.20	15.31	41.84	1.02	9.18	9.18	1.02	46.94
17	5.26	0.88	4.39	2.61	3.48	0.00	0.87	9.57
18	2.05	0.68	6.16	0.00	1.36	0.00	0.00	11.56
19	2.54	5.08	5.93	0.00	0.00	5.04	0.00	7.56
20	1.75	7.02	23.68	0.88	2.63	3.51	0.00	25.44
Total	6.46	5.08	20.12	1.46	4.58	3.16	0.21	24.95

Notes. CBT = cognitive-behavioral therapy; FAP = functional analytic psychotherapy; CRB1 = client's clinically relevant problem behaviors; CRB2 = client's clinically relevant adaptive behaviors; CTR = client focuses on the therapeutic relationship; ECRB = therapist evokes CRB; TCRB1 = therapist shapes a CRB1; TCRB2 = therapist shapes a CRB2; INF = ineffective response to a CRB; TTR = therapist focuses on the therapeutic relationship.

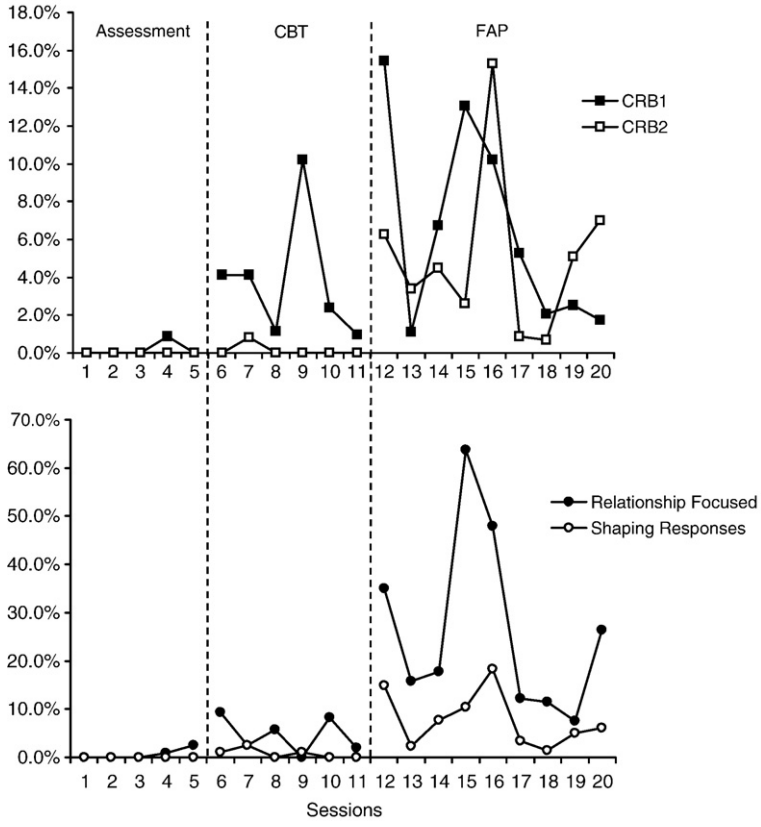

FIGURE 1 \Rates of client's clinically relevant problem behaviors (CRB1s) and adaptive behaviors (CRB2s) relative to total client turns across all 20 sessions of assessment, cognitive-behavioral therapy (CBT), and functional analytic psychotherapy (FAP) (upper panel); rates of therapist effective shaping responses to client CRBs (combined TCRB1s and TCRB2s relative to all therapist codes) and rates of other therapist relationship focused codes (therapist evokes CRB, ECRBs, and therapist focuses on the therapeutic relationship, TTRs) across sessions (lower panel).

difference in rates was significant, χ^2 (1, N = 1644) = 120.46, p < .0001. In addition, therapist shaping responses (TCRB1s and TCRB2s) occurred at a higher rate during FAP (84 of 1062) than during CBT (5 of 582), χ^2 (1, N = 1644) = 36.50, p < .0001.

LAGGED ANALYSES

Only one CRB1 and no CRB2s occurred during the assessment phase, so lagged results for that phase are not relevant. During CBT, 22 CRB1s and 1 CRB2 were coded. During FAP, 73 CRB1s and 52 CRB2s were coded. Lagged results for the CBT and FAP phases are presented in Table 3. Specifically, Table 3 shows the rate at which effective, ineffective, and other codes followed CRB1s and CRB2s at Lag 1, Lag 3, and Lag 5. Note that only 1 CRB2 occurred during CBT, so the therapist response rates to CRB2s during the CBT phase (i.e., the 100% effective response rate at Lag 1 and 0% response rates at Lags 3 and Lag 5) are not meaningful.

Rates of effective and ineffective therapist responses to CRB1s in CBT and FAP were compared using Pearson's chi-square and Fisher Exact tests.[3] CRB1s were effectively responded to more often during FAP than during CBT at Lag 1, χ^2 (1, N = 95) = 7.28, p < .01, Lag 3, p = .04, and Lag 5, p < .01. CRB1s were also followed by an ineffective code (a reinforcing response to a CRB1) less often during FAP than during CBT at Lag 1, p = .02, but not at Lag 3 or Lag 5. Note that the low rate of CRB2s during the CBT phase precludes any comparison between CBT and FAP phases regarding the lag results of CRB2s.

Some CRBs were responded to at multiple lags, leaving unclear, thus far, the prevalence of multiple responses to the same CRB (i.e., CRBs followed by TCRBs at two or three of the lags investigated), and

[3] Omnibus chi-square tests were not performed prior to these specific comparisons because expected values for at least one cell would have been less than five for all 3 lags, violating the assumptions of the chi-square test. Fisher Exact tests were performed rather than chi-square tests for five of the six specific comparisons made because of low expected cell values.

Table 3
Transitional Probabilities of TCRBs, INFs, and All Other Codes Following CRB1s and CRB2s at Lags 1, 3, and 5

	CRB1					
	Lag 1		Lag 3		Lag 5	
	CBT (*N*=22)	FAP (*N*=73)	CBT (*N*=22)	FAP (*N*=73)	CBT (*N*=22)	*FAP* (N=73)
TCRB1	18.18%	50.68%[a]	4.55%	27.40%[b]	0.00%	26.03%[b]
	n=4	*n*=37	*n*=1	*n*=20	*n*=0	*n*=19
INF	18.18%	2.74%[b]	0.00%	1.37%	0.00%	1.37%
	n=4	*n*=2	*n*=0	*n*=1	*n*=0	*n*=1
Other[c]	63.64%	46.58%	95.45%	71.23%	100.00%	72.60%
	n=14	*n*=34	*n*=21	*n*=52	*n*=22	*n*=53
	CRB2[d]					
	Lag 1		Lag 3		Lag 5	
	CBT (*N*=1)	FAP (*N*=52)	CBT (*N*=1)	FAP (*N*=52)	CBT (*N*=1)	FAP (*N*=52)
TCRB2	100.00%	46.15%	0.00%	17.31%	0.00%	13.46%
	n=1	*n*=24	*n*=0	*n*=9	*n*=0	*n*=7
INF	0.00%	0.00%	0.00%	1.92%	0.00%	0.00%
	n=0	*n*=0	*n*=0	*n*=1	*n*=0	*n*=0
Other[c]	0.00%	53.85%	100.00%	80.77%	100.00%	86.54%
	n=0	*n*=28	*n*=1	*n*=42	*n*=1	*n*=45

Notes. CBT=cognitive-behavioral therapy; FAP=functional analytic psychotherapy; CRB1=client's clinically relevant problem behaviors; CRB2=client's clinically relevant adaptive behaviors; TCRB1=therapist shapes a CRB1; TCRB2=therapist shapes a CRB2; INF=ineffective response to a CRB.
[a] $p<.01$ by Chi Square test.
[b] $p<.05$ by two-tailed Fisher Exact test.
[c] Comparisons of rates of "other" codes are not applicable.
[d] Comparisons between CBT and FAP regarding CRB2s were impossible due to the lack of CRB2s occurring during the CBT phase.

the total number of CRBs responded to overall (i.e., CRBs followed by TCRBs at lag 1, 3, 5, or any combination). None of the 22 CRB1s occurring during the CBT phase were followed by TCRB1s at multiple lags, while 5 of the 22 were followed by TCRB1s at one of the three lags. The single CRB2 occurring during the CBT phase was followed by a TCRB2 only at Lag 1. Twenty-one of the 73 CRB1s occurring during the FAP phase were followed by TCRB1s at multiple lags, while 50 of the 73 where followed by TCRB1s at 1 or more of the 3 lags. Five of the 52 CRB2s occurring during the FAP phase were followed by TCRB2s at multiple lags, while 35 of the 52 were followed by TCRB2s at one or more of the three lags. A full account of all codes produced for this study is available upon request from the 1st author.

Discussion

The current study coded all client and therapist behavior across the entire course of therapy of a client successfully treated with CBT (Phase A) followed by CBT+FAP (Phase A+B). The aim was to follow up on earlier single-subject analyses presented in Kanter and colleagues (2006) that suggested that the introduction of FAP in Phase B led to significant improvements in ideographically defined, outside-of-session target variables. The current study explored hypotheses about FAP's mechanism of change on a moment-to-moment level, specifically seeking to demonstrate that client in-session behavior also improved and that the therapist shaped this client in-session behavior only during the FAP phase.

Findings are supportive of hypotheses regarding improved client in-session behavior. First, the phase shift from CBT to FAP clearly had an effect on the frequency of adaptive client behavior (CRB2). However, change in client problem behaviors (CRB1) was somewhat more difficult to interpret. CRB1s occurred at low levels during the assessment phase, increased during CBT, spiked during the first FAP session, and then were variable for the remainder of FAP with a clear decrease by the final sessions. It appears that the lengthy assessment period was not evocative of clinically relevant behavior for this client, and a more fully developed therapeutic relationship was required to evoke problematic behaviors, which took several sessions to form. It should be noted here that this design did not control for the passage of time, and it is possible that improvement following the phase shift was due to the passage of time or the accumulating dose of therapy.

It is noteworthy that the rate of in-session client problem behaviors peaked during the beginning of the FAP phase. In a typical single subject A/A+B design, an increase in the problem behavior after the phase shift would be considered problematic. In the current study, however, this pattern was expected as the therapist was not focusing on the relationship or purposefully evoking CRB during the CBT phase. During the FAP phase the therapist began to purposefully evoke CRB and challenge the client to try new behavior, which as expected, led to increased in-session problem behavior—especially avoidance of intimacy and emotional expression. That said, significant in-session problem behavior did occur during the CBT phase, indicating, as purported by FAP theory, that the occurrence of CRBs is a function of the therapeutic context and not specifically the context of FAP techniques.

The stability of an effect is a significant consideration in single-subject research. The variability in the rates of both in-session problem and adaptive behavior over treatment was far from ideal in the current study, but not unexpected given the nature of both FAP and outpatient therapy in general. The occurrence of CRBs undoubtedly is influenced by several factors, including life events occurring immediately prior to therapy and the topic and tone of the discussion (both of which were sure to have differed across sessions). During the FAP phase, the variability is even less surprising, because although the therapist engaged in some CBT and some FAP in each session, the proportion varied (as evidenced by the proportions of relationship focused codes from session 12 to session 20 in the lower panel of Fig. 1). Despite this variability, visual inspection revealed large overall changes in client behavior across the phase shift. These data, although complex, when combined with previously reported dairy-card findings, suggest that both in-session and out-of-session behavior improved dramatically following the shift to FAP for this client.

Findings also support the hypothesis regarding therapist behavior. Relationship focused turns (ECRBs and TTRs) and shaping responses (TCRB1s and TCRB2s) occurred at a high rate during FAP sessions and at a low rate during CBT sessions. As with client behavior, considerable variability was seen in therapist codes after the phase shift, consistent with the idiographic nature of FAP, but in general a clear increase in rates of these codes after the phase shift was seen. This provides a relatively simple verification that FAP techniques indeed occurred after but not before the phase shift.

Regarding the hypothesis about the relationship between client and therapist behavior in FAP, transitional probability comparisons indicated that specific, effective therapist shaping responses reliably followed client target behaviors during the FAP phase. Although ineffective shaping responses were infrequent during both CBT and FAP, there was a significantly higher rate of ineffective shaping at Lag 1 during CBT sessions, providing additional evidence that client in-session behavior was shaped more effectively during the FAP phase. In total, these results replicate previous findings that therapist in-session responding can shape client in-session behavior in predicable ways (Busch et al., submitted for publication; Callaghan et al., 2003; Karpiak & Benjamin, 2004; Truax, 1966), and when viewed alongside the results of Kanter and colleagues (2006), suggest that in-vivo shaping can significantly affect out-of-session client behavior.

LIMITATIONS

There are several limitations to the current study. First, results are presented for a single client-therapist dyad and may be quite idiosyncratic to that particular case, including the possibility that the client presented here may have been particularly susceptible to in-session socially mediated shaping procedures and to demand characteristics regarding diary card reporting. Thus, coding of multiple clients is needed to reach more definitive conclusions. Second, we chose to code a client whose symptoms had clearly remitted during her time in therapy. It is possible that coding the tapes of a client for whom therapy was less successful would have led to different conclusions. Third, no ratings for adherence or competence in the CBT phase were included, and the therapist was proscribed from focusing on the relationship during the CBT phase, a limitation that is not placed on therapists conducting standard CBT. Thus, this study should not be used to make inferences specifically about the nature of CBT or about in-vivo interventions in standard CBT; however, recent data does suggest that CBT therapists focus on the therapeutic relationship rarely, even when not restricted (Kanter, Schildcrout, & Kohlenberg, 2005). Finally, coders were not blind to the hypotheses of the study, which leaves open the possibility that their ratings were biased. Of note, however, is that although not blind to hypotheses, coders were blind to the timing of phase changes.

FUTURE DIRECTIONS

Coding psychotherapy sessions on the molecular level allows for a precise account of the therapy process. The products of this approach have the potential to provide therapists with specific direction on effective responses to specific in-session client behaviors. Continuing this line of research is

necessary to investigate the mechanism of change in FAP. This could include within-subject multiple baseline designs where the therapist responds to classes of client in-session behavior in a systematic order or an A-B-B+C design where the "B" is increased focus on the therapeutic relationship and the "C" is in-vivo shaping. Although the present study focused on therapist in-session shaping responses, the same approach could be usefully applied to other therapeutic process variables and test hypotheses stemming from other therapy modalities.

References

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

Beck, J. S. (1995). *Cognitive therapy: Basics and beyond.* New York: Guilford Press.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression.* New York: Guilford Press.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, *4*, 561–571.

Bradley, B., & Furrow, J. (2004). Toward a mini-theory of the blamer softening event: Tracking the moment-by-moment process. *Journal of Marital and Family Therapy*, *30*, 233–246.

Busch, A. M., Callaghan, G. M., Kanter, J. W., Baruch, D. E., & Weeks, C. E. (submitted for publication). The Functional Analytic Psychotherapy Rating Scale: A replication and extension.

Callaghan, G. M., Naugle, A. E., & Follette, W. C. (1996). Useful constructions of the client-therapist relationship. *Psychotherapy: Theory, Research, Practice, Training*, *33*, 381–390.

Callaghan, G. M., Ruckstuhl, L. E., & Busch, A. M. (2005). *Manual for the Functional Analytic Psychotherapy Rating Scale, Version 3*. Unpublished manual.

Callaghan, G. M., Summers, C. J., & Weidman, M. (2003). The treatment of histrionic and narcissistic personality disorder behaviors: A single-subject demonstration of clinical effectiveness using Functional Analytic Psychotherapy. *Journal of Contemporary Psychotherapy*, *33*, 321–339.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, *20*, 37–46.

Corrigan, P. W. (2001). Getting ahead of the data: A threat to some behavior therapies. *the Behavior Therapist*, *24*, 189–193.

Ferster, C. B. (1967). Arbitrary and natural reinforcement. *Psychological Record*, *17*, 341–347.

Fleiss, J. L. (1981). *Statistical methods for rates and proportions.* New York: Wiley.

Gaynor, S. T., & Lawrence, P. (2002). Complementing CBT for depressed adolescents with Learning through In Vivo Experience (LIVE): Conceptual analysis, treatment description, and feasibility study. *Behavioral and Cognitive Psychotherapy*, *30*, 79–101.

Kanter, J. W., Landes, S. J., Busch, A. M., Rusch, L. C., Brown, K. R., Baruch, D. E., et al. (2006). The effect of contingent reinforcement on target variables in outpatient psychotherapy for depression: A successful and unsuccessful case using Functional Analytic Psychotherapy. *Journal of Applied Behavior Analysis*, *39*, 463–467.

Kanter, J. W., Schildcrout, J. S., & Kohlenberg, R. J. (2005). The frequency and benefits of a focus on the client-therapist relationship in cognitive therapy for depression. *Psychotherapy Research*, *15*, 366–373.

Karpiak, C. P., & Benjamin, L. S. (2004). Therapist affirmation and the process and outcome of psychotherapy: Two sequential analytic studies. *Journal of Clinical Psychology*, *60*, 659–676.

Kohlenberg, B. S., Yeater, E. A., & Kohlenberg, R. J. (1998). Functional analytic psychotherapy, the therapeutic alliance, and brief psychotherapy. In J. D. Safran, & J. C. Muran (Eds.), *The therapeutic alliance in brief psychotherapy* (pp. 63–93). Washington, DC: American Psychological Association Press.

Kohlenberg, R. J., Kanter, J. W., Bolling, M. Y., Parker, C., & Tsai, M. (2002). Enhancing cognitive therapy for depression with Functional Analytic Psychotherapy: Treatment guidelines and empirical findings. *Cognitive and Behavioral Practice,*, *9*, 213–229.

Kohlenberg, R. J., & Tsai, M. (1991). *Functional Analytic Psychotherapy: A guide for creating intense and curative therapeutic relationships.* New York: Plenum.

Rice, L. N., & Greenberg, L. S. (1984). The new research paradigm. In L. N. Rice, & L. S. Greenberg (Eds.), *Patterns of change* (pp. 29–66). New York: Guilford Press.

Rosen, G. M., & Davison, G. C. (2003). Psychology should list empirically supported principles of change (ESPs) and not credential trademarked therapies or other treatment packages. *Behavior Modification,*, *27*, 300–312.

Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships,*, *4*, 497–510.

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

Skinner, B. F. (1957). *Verbal behavior.* New York: Appleton-Century-Crofts.

Spitzer, R. L., Williams, J. B. W., & Gibbon, M. (1995). *Structured Clinical Interview for DSM-IV Axis I Disorders (SCID).* Biometrics Research Department, New York State Psychiatric Institute.

Stiles, W. B., Shapiro, D. A., & Elliott, R. (1986). Are all psychotherapies equivalent? *American Psychologist*, *41*, 165–180.

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

Wiseman, H., & Rice, L. N. (1989). Sequential analysis of therapist-client interaction during change events: A task-focused approach. *Journal of Consulting and Clinical Psychology*, *57*, 281–286.

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