Effects of interventions promoting mentalization and interventions disconfirming pathogenic beliefs: A comparative single case study of three patients

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Abstract: Design: The effects of two types of interventions were investigated in an explorative single-case study of three patients with chronic depression and/or borderline personality disorder over 20 therapy sessions (sessions 2–11 and sessions 51–60). The ratings of therapeutic interventions that promoted mentalization were based on the concept of mentalization (Bateman & Fonagy), and the ratings of those disconfirming pathogenic beliefs were based on Control Mastery Theory (Weiss & Sampson). The effect of therapeutic interventions (mentalization vs. pathogenic beliefs) was assessed by measuring the level of reflective self-awareness, which was rated using the Experiencing Scale. The therapeutic alliance relationship was examined each session by a questionnaire. Therapy sessions were analysed with two different time series analyses. Each session was rated in five-minute sections.

Results: In the time-series analysis, therapeutic interventions promoting mentalization and those disconfirming pathogenic beliefs correlated significantly with reflective self-awareness for two of the three patients. For one patient, there was no correlation. However, the results in the trend were different. For all patients, reflective self-awareness decreased or remained stable, and therapeutic alliance improved. This needs to be explained.

ABOUT THE AUTHORS
The authors have been working together in this single-case research project for 10 years. This article shows a main result of this project. All authors are psychodynamically oriented psychotherapists with experience in clinical practice and training. J. Brockmann and H. Kirsch are experienced in psychotherapy research for many years. G. Silberschatz has supervised the project since its beginning. He is a well-known psychotherapy researcher of the San Francisco Psychotherapy Research Group (SFPRG) and was president of the Society for Psychotherapy Research (SPR). The authors published another part of the project “Mr K - A successful case of analytic oriented therapy documented empirically: The role of the therapeutic relationship and reflexive self-awareness” in Psychoanalytic Psychotherapy (2017).

PUBLIC INTEREST STATEMENT
In the past, the effectiveness of psychotherapy was shown in hundreds of high-quality psychotherapy outcome studies. The therapeutic alliance has a great impact on whether psychotherapy works or not. However, we do not know how psychotherapy really works. We asked: 1. Does therapist’s promoting mentalization influence patient’s reflective self-awareness? 2. Does therapist’s disconfirming patient’s pathogenic beliefs influence patient’s reflective self-awareness? The results of a single-case study are: In two therapies therapist and patient had a reciprocal influence. We could show the reciprocal influence in five-minute segments by time series analysis. For one patient, there was no influence. For this patient, reflective self-awareness decreased significantly during therapy. The results show the importance of therapeutic alliance and raise new questions.
Conclusions: The significant association between therapeutic interventions and patients’ reflective self-awareness can be understood as a reciprocal causal process that is co-created by the patient and the therapist. The deviating results, especially for the third patient, are discussed.

Subjects: Techniques & Interventions – Academic; Relational/Interpersonal Psychoanalysis; Integrative Psychotherapy; Psychotherapy

Keywords: mentalization; Control Mastery Theory; experiencing; reflective self-awareness; single case study; time series analysis; therapeutic interventions; therapeutic alliance; clinical ratings

1. Introduction

The active ingredients of an intervention are not necessarily the ones that researchers and clinicians consider pivotal or most effective. This holds true for all interventions, including those for which an evidence base has been established (Kazdin, 2009; Lasca, Gurman, & Wampold, 2014).

Single-case studies can shed light on the complex processes of interventions by providing a fine-grained analysis of change in psychotherapy (Doran, 2016; Hill, 2006; Stiles & Goldsmith, 2010). Single-case studies are explorative and attempt to integrate clinical case material with standardized measures of the process and outcomes evaluated at different times during treatment (APA, 2016).

The Single Case Psychotherapy Research Group at Frankfurt started a discussion about the effects of different interventions on change in therapy and considered recording audiotapes of sessions. The group selected two models for analysing therapeutic interventions. The first was Control Mastery Theory (CMT) (Silberschatz, 2005; Weiss, Sampson, & Mount Zion Psychotherapy Research Group, 1986), which is a psychodynamically oriented model of the therapeutic process. The second was the concept of mentalizing, which focuses on the structure and process of communication (Bateman & Fonagy, 2012). Although the two concepts share certain aspects, such as an empirical tradition to demonstrate their evidence base, they are substantially different: Mentalization focuses more on aspects of the process and structure, whereas CMT emphasizes content and psychodynamic formulation. We chose patients with borderline personality disorder and/or chronic depression because long-term therapy is justified for patients with personality disorder, and these types of interventions are expected to be useful for this specific group of patients (Bateman & Fonagy, 2008; Weiss et al., 1986). We included patients with different diagnoses because we wanted to show that the results did not depend on a particular diagnosis.

2. Overview of the theoretical perspective

2.1. The concept of mentalization and interventions facilitating mentalizing

According to Fonagy and colleagues’ conceptualization, mentalizing is a mental activity that includes the perception and interpretation of human behaviour based on intentional aspects of feelings, wishes, desires, goals, beliefs and reason. Mentalization is seeing oneself from the outside and others from the inside; it is to understand misunderstandings in exploring one’s own mind and the mind of the counterpart. The levels of mentalization can be described by the Reflective Functioning Scale (Fonagy, Target, Steele, & Steele, 1998). Impairments of mentalization can be characterized by different states of mind. In the “teleological mode”, intentions are prominent and not the complex mind of a person. In the “psychic equivalence mode”, physical reality is prominent by neglecting affect and imagination. Physical and psychic reality are equivalent. In the “pretend mode”, imagination is prominent by neglecting reality. Thoughts are felt as real. Full mentalization requires the integration of all three aspects. “Hypermentalization” is characterized by an impairment of the differentiation between self and others and a deficit in integration of affect and
cognition. Full mentalization can be seen as a protective skin against massive affect. The concept of mentalization combines aspects of theory of mind with attachment theory and with the concepts of the development of affect regulatory capacities and “epistemic trust” (Fonagy & Allison, 2014; Fonagy, Luyten, & Allison, 2015). Mentalization-based treatment (MBT) was specifically developed to treat borderline personality disorder, and its efficacy has been demonstrated in a number of studies (Bateman & Fonagy, 1999, 2001, 2008, 2009). Allen, Fonagy, and Bateman (2008) postulated that the concept of mentalization is relevant for understanding psychotherapy in general.

A list adapted from the MBT Adherence and Competence Scale (MBT-MCS) (Karterud et al., 2013) served as the basis for the ratings. The characteristics of interventions that enhance mentalizing are as follows: (1) “Not knowing” stance, (2) promoting exploration, (3) affect focus, (4) addressing antecedents of reflective mentalization (teleological mode, pretend mode, psychic equivalence), (5) stimulating reflective thinking, (6) encouragement and maintenance of successful mentalizing, (7) stop and rewind, (8) monitoring of misunderstandings, (9) addressing irritations in the alliance and (10) transference and countertransference. The characteristics are described in detail and provided in the manual for raters.

2.2. CMT and interventions disconfirming pathogenic beliefs
The San Francisco Psychotherapy Research Group (Weiss & Sampson, 1986) initially introduced the notion of CMT within psychodynamic treatment. CMT has enabled clinicians to summarize problematic issues for a patient using a psychodynamically informed method that draws upon material from the first few sessions of treatment. This formulation is case-specific and can be applied reliably while incorporating unconscious aspects. The (largely unconscious) pathogenic beliefs of a patient play a central role in hindering him from achieving his goals, and they are a central feature in CMT case formulations (Silberschatz, 2005) (e.g., a patient cannot finish his exam and feels depressed because he is preoccupied by thoughts about his mother going through a divorce. He has a strong pathogenic belief that he is responsible for his mother). A case formulation comprises the patient’s goals (e.g., to finish an exam), the pathogenic beliefs stopping him from achieving his goals and the way he tests these beliefs in the treatment setting (e.g., if the therapist criticizes him for doing his own thing). The reliability of this approach to formulations has been established (Albani et al., 2000; Sammet, 2004; Silberschatz, 2005). Disconfirming pathogenic beliefs via the therapeutic stance and interventions is a key task for the therapist within the CMT framework. CMT claims that therapeutic interventions disconfirming pathogenic beliefs are a common factor of all therapeutic approaches: “the control-mastery therapy is not a school of therapy or new set of techniques. It is a theory of how the mind works, how psychopathology develops, and how therapy works” (Silberschatz, 2005, p.xiv). Empirical studies of CMT have shown that disconfirmation of pathogenic beliefs plays an important role in the process and outcomes of psychotherapy (e.g., Silberschatz, 2015; Silberschatz & Curtis, 1993; Weiss & Sampson, 1986).

2.3. Reflective self-awareness
To measure the aspects of reflective self-awareness—i.e., reflection on one’s own desires, feelings and wishes and on those of significant others—we chose the Experiencing Scale (Klein, Mathieu-Coughlan, & Kiesler, 1986). This scale is frequently employed in research on the therapeutic process (Elliott, Greenberg, Watson, Timulak, & Freire, 2013) and originated from Rogerian Therapy (Rogers, 1961). The experiencing concept captures the emotional exploration combined with cognitive elements. It overlaps with certain aspects of mentalization, particularly with domains such as “understanding one’s own mind” and “understanding others’ minds” (Semerari et al., 2003), with an emphasis on the former. It captures in-depth self-exploration, which deepens insight into psychic life (psychic reality), which is considered a central aspect of psychodynamic therapy. One of the key assumptions connected to positive outcomes in psychodynamic therapy is the centrality of facilitating the in-depth emotional exploration of problematic life experiences. Numerous studies and one meta-analysis have shown that therapists’ facilitation of patients’ affective expression is associated with patient improvement (Diener, Hilsenroth, & Weinberger, 2007). A consistent relationship has been found: The higher the
emotional expression level, the better the outcome (Elliott, Greenberg, & Lietaer, 2004; Elliott et al., 2013; Purton, 2004). Mentalization and experiencing concepts overlap. The Experiencing Scale was also used in studies of the San Francisco Psychotherapy Group to examine the effects of interventions disconfirming pathogenic beliefs (Weiss & Sampson, 1986). Thus, it is possible to use the Experiencing Scale as a common outcome measure in both interventions.

2.4. Therapeutic alliance
Therapeutic relationship and therapeutic alliance are often used synonymously (Munder, Wilmers, Leonhart, Linster, & Barth, 2010). However, the therapeutic relationship is theorized to have three components: therapeutic alliance, transference/countertransference and real relationship (Gelso & Carter, 1994; Greenson, 1965). Therapeutic alliance is conceptualized by three aspects: bond, tasks and goals (Bordin, 1979; Horvath & Greenberg, 1986). Therapeutic alliance is a common factor of different types of therapy (Nocross & Lambert, 2011; Wampold, 2015). However, it remains unclear how the therapeutic alliance contributes to outcomes. There are good arguments for viewing it not as a direct effect factor but as a mediator (Muran & Barber, 2010). In this case, it means that the therapeutic alliance may account for the relationship between therapeutic interventions and outcomes. The therapeutic alliance may be necessary but is not the mechanism of change. Questionnaires evaluating the therapeutic relationship capture only some aspects, with an emphasis on the working alliance. The therapeutic alliance was investigated after each session with a self-report questionnaire (STA-R, Brockmann et al., 2011) completed by the patient.

3. Hypothesis

- Therapeutic interventions rated as promoting mentalization will strengthen patients’ reflective self-awareness, as rated using the Experiencing Scale.
- Therapeutic interventions rated as disconfirming pathogenic beliefs will strengthen patients’ reflective self-awareness, as rated using the Experiencing Scale.
- Therapeutic alliance of each session will show the same trend as patients’ reflective self-awareness.

Sessions 2 through 11 and sessions 51 through 60 were rated via verbatim transcripts and audiotapes. Each session was divided into five-minute segments, and each segment was a data point. Ratings were obtained for the two types of therapeutic interventions described above and for the patient reaction variable, labelled “experiencing”. The data were assessed using two different time-series analyses. To aid in the discussion of the results, therapeutic alliance was reported for every session.

4. Methods

4.1. Case context

4.1.1. The patients
Ten therapists (of the 50 approached) agreed to take part in the study. Six therapists referred seven patients for whom a diagnosis of borderline personality disorder and/or chronic depression was assumed upon initial assessment. Once a patient’s written consent was obtained, the Structured Clinical Interview for DSM-IV (SCID-I, SCID-II) (Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1996) was administered by an external, clinically trained interviewer to validate the diagnoses. The diagnoses were confirmed for seven patients, one of whom had to be excluded due to alcohol abuse. Symptom load was measured using the Symptom Checklist SCL-90-R (Franke, 1995) and Beck Depression Inventory BDI-II (Hautzinger, Keller, & Kühner, 2009) before the therapies started. The mean symptom load scores for the six remaining patients were as follows: General Severity Index GSI of the SCL-90-R = 1.8 and the BDI-II = 26. Of the six suitable patients, three were selected for the study. One patient had borderline personality disorder without depression, and one patient had both diagnoses. The patient with chronic depression was
selected at random among four patients. We only chose three patients due to the great complexity of data evaluation. There were $N = 577$ data points (five-minute sections, see Table 1: phases) that had to be rated by $3 \times 3$ raters. Time-series analyses produce a lot of complexity as well.

Patient 1: Chronic major depression, never fully remitted (DSM-IV). The 37-year-old patient had been suffering from depression for the past 11 years. She rated herself as severely depressed on self-report instruments. At the beginning of therapy, her GSI score was 1.8, and her BDI-II score was 32.

Patient 2: Borderline personality disorder, post-traumatic stress disorder, panic disorder with agoraphobia, obsessive–compulsive personality disorder, specific phobia, episodes of binge-eating (DSM-IV). The 38-year-old patient was traumatized after long-term experiences of sexual abuse and violence. She had previously been hospitalized several times with various therapeutic attempts. At the beginning of therapy, her GSI was 2.0.

Patient 3: Borderline personality disorder, dysthymia, obsessive–compulsive disorder, sexual dysfunction (DSM-IV). The 34-year-old patient had no previous hospitalizations, suicide attempts or episodes of harm to himself or to others. At the beginning of therapy, his GSI score was 1.4, and his BDI-II score was 25. All scores were well above the clinical cut-off.

4.1.2. Therapists
The psychotherapists were licenced practitioners in psychodynamic psychotherapy within the German public health system and had several years of clinical experience. They described themselves as influenced most by self-psychology (self-psychology relates to development through an empathic relationship with significant caregivers, conceived of as “self-objects”, which refer to subjective experiences in which the other is in the service of the self; Kohut, 1971; Lichtenberg & Hadley, 1989). Their preferred techniques included interventions focused on accepting, validating and reflecting the patients’ need for psychic regulation of their physiological requirements, their need for attachment and their need for exploration (Lichtenberg & Hadley, 1989). The therapists were blind with regard to the study data during treatment and were not involved in the rating procedures or the data analyses. They were trained in neither CMT nor mentalization-based approaches, and had not been instructed to adhere to or employ these approaches.

4.2. The therapies
Three psychoanalytically oriented treatments were conducted in line with the German healthcare system. The two female patients had female therapists, and the male patient had a male therapist. The short descriptions of the therapies are formulated by clinical experts. The therapists did not adhere to these descriptions. The clinical experts had listened to the audiotapes and transcripts of the sessions previously. The short descriptions give only an impression of the patients. The assessments were not based on valid questionnaires.

Therapy for patient 1

The patient was assessed in the “psychic equivalence mode” of mentalization (i.e., she talked about external facts without affect attunement, thoughts were felt as real) and could not understand the perspectives of different people. The therapist tried to describe her and other people’s affect and perspective, but she seldom succeeded.

Therapy for patient 2

The patient was in the grips of traumatic experiences that had occurred long ago. A disorganized attachment style was prominent, and feeling emotion was threatening for the patient. She was torn between the “psychic equivalence mode” and the “pretend mode” (i.e., she talked about theoretical aspects without a foundation in reality, looking like
pseudomentalization). Deep mistrust impaired the therapeutic alliance. In this part of the therapy, the therapist mainly tried to win the trust of the patient.

Therapy for patient 3

The patient feared losing his impulse control and tried to control his affect and himself in many ways. He had been characterized as having a predominantly insecure-avoidant attachment. He talked in a pseudomentalizing way (pretend mode), accompanied by a tendency for “hypermentalizing” (i.e., a desperate attempt to understand a situation by thinking about it intensely without differentiation between self and others. Constructive problem solving was inhibited). The therapeutic relationship was positive. The therapist’s interventions caused affective arousal, which made the patient fearful. He was not able to tolerate his arousal and tried to control it. Control of the arousal was one of his therapy aims.

5. Evaluation of the therapeutic process

5.1. Assessment of interventions aimed at the facilitation of mentalizing

The coding manual of the interventions was based on the MBT Adherence and Competence Scale (Karterud et al., 2013). For each of the five-minute segments, the transcripts highlighted all of the material that referred to one or more of these aspects of interventions. Three raters judged the segment as a whole with regard to the extent to which the therapist facilitated mentalizing. The senior author attended several intensive workshops provided by the founders of MBT. He trained the raters in the concept of mentalization and the coding procedures by a manual. In addition, the raters were trained over two days by a certified tutor from the Anna Freud Centre in London. The interrater reliability for the reported data yielded an ICC = .65 (Shrout & Fleiss, 1979) (three clinically experienced raters).

5.2. Assessment of interventions regarding disconfirming pathogenic beliefs

Empirical studies of CMT rely on a case-specific formulation of the patient’s plan. The senior author received extensive training in the plan formulation method. He attended several intensive workshops provided by the founders of CMT and trained three raters in the plan formulation method. The raters independently formulated five pathogenic beliefs for each patient after listening to the first three sessions. The pathogenic beliefs could be conscious or unconscious in nature. As a result of a consensual discussion, the five pathogenic beliefs for each patient were tracked on a master list. Raters who were also involved in pathogenic belief formulations were trained using a manual to code the interventions regarding disconfirming pathogenic beliefs. They were coded only when the intervention referred to at least one of the five listed pathogenic beliefs. The overall degree to which a therapist disconfirmed pathogenic beliefs through their interventions was assessed. The interrater reliability for the reported data was mean ICC = .67 (three clinically experienced raters).

5.3. Assessment of patients’ reflective self-awareness (experiencing)

An extensive training manual for the Experiencing Scale is available (Klein et al., 1986), and a German version has also been developed (Bommert & Dahlhoff, 1978). Experiencing is construed along a continuum ranging from simple, limited and external events to states of interplay between an expression of current experiences generated internally and their verbal formulation.

Five external raters were trained using the Experiencing Scale training manual. All raters participated in two four-hour-long booster sessions to ensure manual adherence in the coding process. For each session, three of the five raters were chosen by chance. The interrater reliability for the reported data was mean ICC = .65 (three clinically experienced raters).

There were different raters for each type of therapeutic intervention and patient’s experiencing. Three raters rated each aspect. The ratings were performed based on the audio-recorded and transcribed sessions. The rating procedure, as described in the manual, was applied to the five-
minute segments. The coding manuals are available from the authors upon request. The session number was determined randomly, and raters were blind with regard to the session number and other study data. Seven-point (−3 to +3) Likert scales were used for coding. The mean score for each rating was included in the time-series analysis.

5.4. Therapeutic alliance
The patients rated therapeutic alliance after each session. The Scale of Therapeutic Alliance—Revised (STA-R) was developed based on work by Hatcher and Shannon (unpublished) and the Working Alliance Inventory (WAI-SR) (Hatcher & Gillaspy, 2006). The WAI-SR yields three subscales: Goals, Tasks and Bond. The STA-R has been validated regarding its psychometrics, and it includes the factors “confident collaboration” and “bond” as well as two additional dimensions: “patient’s fear of opening up” and “therapist interference” (Brockmann et al., 2011). The factor “confident collaboration” comprises the WAI-SR subscales Goals and Tasks, which are highly correlated. The STA-R was chosen because it also includes the scale “patient’s fear for opening up”. This could be especially relevant for patients with severe personality disorders.

5.5. Time-series analysis
Psychotherapy is a temporal process involving changes in feelings, thoughts and behaviour. Thus, time-series analyses provide psychotherapy research with a useful tool for analysis of single-case studies (Ramseyer, Kupper, Caspar, Znoj, & Tschacher, 2014; Tschacher & Ramseyer, 2009). A time-series analysis can show the relation between one series of data points X (e.g., therapeutic intervention) and a second series Y (e.g., patient’s experiencing).

However, time series are problematic in that they cannot be analysed using classical inferential statistics because the data points of a time series may not be independent from each other, for example, if there is an inherent trend (i.e., data points are autocorrelated). One rationale for using time-series analyses is that autocorrelations are eliminated in the first step, after which one can test whether time series X (e.g., therapeutic intervention) affects time series Y (e.g., patients’ experiencing).

Time-series analyses allow the computation of correlations between time series X and time series Y. In principle, three different results are conceivable:

(a) lag +1: therapeutic intervention (at time t) affects patients’ experiencing (at time t + 1).
(b) lag −1: therapeutic intervention (at time t) is influenced by patients’ experiencing (at time t − 1).
(c) lag 0: both aspects affect each other (bidirectional).

Time-series analysis is appropriate for testing models based on a time series. The results of time-series analyses depend upon the models chosen. Therefore, we used two different methodological approaches to compare the results: Autoregressive Integrated Moving Average (ARIMA) models (Schmitz, 1989, 1990; Werner, 2005) and multivariate “vector autoregression” (VAR) models (Lütkepohl, 2005; Molenaar & Newell, 2010). ARIMA models were computed using SPSS Expert Modeler (IBM SPSS statistics), and VAR models were computed using the JMULTI and R (Cowpertwait & Metcalfe, 2009) software packages. The two different software packages for VAR yielded comparable results. A detailed description of the statistical procedures can be requested from the first author.

Because trends were eliminated in time-series analyses due to autocorrelations, the trends will be considered separately here. Trends can be misleading for both the clinician and the researcher. The presence of a trend indicating clinical improvement might erroneously be attributed to an intervention when it is actually caused by more global phenomena that extend beyond discernible interventions. This can be illustrated with the example of the weather: During the transition from winter to summer, temperatures rise (positive trend), but this trend is independent of the influence that the clouds have on the temperature on day 1 and the influence that the temperature has on
the clouds on day 2. Time series were computed for three variables: the therapist’s mentalization-based interventions, the therapeutic interventions disconfirming pathogenic beliefs and the patient’s experiencing.

Time series were conducted in five-minute segments. Ten successive therapy sessions were combined into one “phase” (sessions 2–11, sessions 51–60) and investigated accordingly. Missing data within phases were replaced using a five-point smoothing filter. Two values on each side of the reference point were included (Schmitz, 1989, p. 23), with the advantage that the proximal course in the close temporal relation was also accounted for. This approach represents an optimal procedure for addressing the gaps between phases. The rationale for choosing this procedure was that missing data influence the results only when lags greater than 1 are considered, and missing data did not correlate significantly with any of the VAR parameters (Tschacher & Ramseyer, 2009). Time-series analyses were conducted by Schmitz, Ph.D. (Heidelberg, Germany), a specialist in this field (Schmitz, 1990, 1989, 1987). A more detailed description of this procedure can be obtained from the authors. Missing data between the phases were not entered into computations of the trends.

6. Results

6.1. Associations between therapeutic interventions and patient’s reflective self-awareness (experiencing)

Significant results were found for two patients for the synchronous correlations (lag 0). A high concordance was also found between the results of the synchronous (cross-) correlations of the univariate ARIMA models and the synchronous (residual) correlations in the multivariate VAR models (Table 1). For the multivariate ARIMA models and the VAR models, the expected models of a lower order, i.e., simple models, were found. This indicated good model fit for these types of time-series models (Lütkepohl, 2005; Werner, 2005).

We also tested whether therapist interventions during an episode affected patients’ experiencing during the subsequent segment. This temporal association was assessed via lag functions. A significant lag +1 value indicated a positive effect of an intervention at a given time point t on experiencing at time point t + 1, and this temporal connection can be considered evidence of a causal relationship. Our results did not support such a causal relationship. We found significant lag +1 or lag −1 values for ARIMA models at three time points (Table 1) and for VAR models at one time point (not shown here). Lag functions of a higher order (for example, lag +2) were not found. Of the 72 associations examined, only 4 significant lag +1 or lag −1 values were found. Thus, these results must be treated with caution.

6.2. Trends between patient’s reflective self-awareness (experiencing) and therapeutic alliance

As reported above, trends can differ from the correlations found in time-series analysis (ARIMA, VAR). This can indicate a different influence on the dependent variable (here: experiencing).

The trends are displayed in Figures 1–3.

The intensity of experiencing remained unchanged for one patient but was reduced for two patients. The therapeutic alliance improved over the course of treatment for all patients.

The coefficient of determination $R^2$ is an indicator of fit. $R^2 = 0.4$ indicates that 40% of the variability is explained. Trends that are assumed to be sufficiently robust have a coefficient of determination $R^2 > 0.3$. The calculations of the trends are not precise because the data between sessions 20–50 are ignored.
7. Discussion

We attempted to focus on the therapeutic process, asking “Do specific psychotherapeutic interventions have an influence on the patient's reflective self-awareness?” and using time-series analysis. Time-series analysis is a radical way to focus on the process in consideration of time sequences.

| Patient No. | Phase | Variable 1—Variable 2 | Lag -1 ARIMA | Synchronous correlations lag 0 ARIMA | Lag 1 ARIMA | Synchronous correlations VAR |
|-------------|-------|-----------------------|--------------|------------------------------------|--------------|-----------------------------|
| 1           | 1 N = 88 | The. Mental.—The. Beliefs | .14          | .64***               | -.04         | .65***                     |
|             |        | The. Mental.—Pat. Experi. | -.02         | .36***               | .06          | .36***                     |
|             |        | The. Beliefs—Pat. Experi. | -.01         | .33**               | .08          | .34***                     |
| 1           | 2 N = 108 | The. Mental.—The. Beliefs | .08          | .40***               | .15          | .62***                     |
|             |        | The. Mental.—Pat. Experi. | .03          | .31**               | .11          | .34***                     |
|             |        | The. Beliefs—Pat. Experi. | -.08         | .37***               | -.02         | .39***                    |
| 2           | 1 N = 90 | The. Mental.—The. Beliefs | .09          | .45***               | .11          | .64***                     |
|             |        | The. Mental.—Pat. Experi. | .10          | .37***               | .15          | .35***                     |
|             |        | The. Beliefs—Pat. Experi. | .27**         | .31**               | .22*         | .28***                     |
| 2           | 2 N = 116 | The. Mental.—The. Beliefs | .11          | .47***               | .04          | .68***                     |
|             |        | The. Mental.—Pat. Experi. | -.02         | .43***               | -.07         | .68***                     |
|             |        | The. Beliefs—Pat. Experi. | .18          | .21*                | .04          | .25***                     |
| 3           | 1 N = 87 | The. Mental.—The. Beliefs | -.041        | .47***               | -.09         | .67***                     |
|             |        | The. Mental.—Pat. Experi. | -.24*         | .02                | -.04         | .16                        |
|             |        | The. Beliefs—Pat. Experi. | -.19         | -.02               | -.04         | .13                        |
| 3           | 2 N = 88 | The. Mental.—The. Beliefs | -.07         | .48***               | .10          | .68***                     |
|             |        | The. Mental.—Pat. Experi. | .01          | .14                | .06          | .17                        |
|             |        | The. Beliefs—Pat. Experi. | -.05         | .14                | -.02         | .10                        |

Notes: The. Mental: therapeutic interventions promoting mentalization; The. Beliefs: therapeutic interventions disconfirming pathogenic beliefs; Pat. Experi.: Patients’ experiencing; N: number of data per variable (time points). N varies because time for each session varied slightly.

*p < .05, **p < .01, ***p < .001.

Table 1. Time-series analysis using two methods, ARIMA models and VAR models

Figure 1. Patient 1, development of therapeutic relationship and experiencing in between two phases: sessions 2–11 and sessions 51–60. The mean scores of the ratings (Experiencing, Intervention Path. Bel., Intervention Mental) and the total scores on the therapeutic alliance questionnaire (STA-R) are shown on the vertical axe. R²: coefficient of determination.
7.1. Reliability of the ratings of therapist interventions
We found reliable ratings for two aspects of complex therapeutic interventions. For each aspect, the different raters had to undergo complex training and use a manual. Considering the complexity of these interventions, reliabilities of ICC = .65 and .67 were good (guidelines for interpretation of ICC: <.40 poor, .40–.59 fair, .60–.74 good and .75–1.0 excellent (Cicchetti, 1994)). The results verify that a reliable rating of interventions promoting mentalization is possible, as shown previously for the ratings of interventions disconfirming pathogenic beliefs (Silberschatz, 1986; Silberschatz & Curtis, 1993).

7.2. Relationship between therapeutic interventions and patients’ reflective self-awareness
We found significant correlations (r = .3 for lag 0) between the two types of therapeutic interventions and patients’ reflective self-awareness (experiencing) for two patients. For patient 3, no correlations were found. These results are consistent across the two phases studied and across the two different methods of time-series analyses. Furthermore, the two aspects of interventions were correlated substantially with one another (Table 1). We did not find lag +1 correlations for
multivariate time series, which would have been indicative of a strong causal mechanism, but the lag 0 results of the time analysis suggest that there is a bidirectional association between reflective self-awareness (experiencing) and the two aspects of therapeutic interventions for two of the patients. This can be understood as a “reciprocal causal process” (Jones, Ghannam, Nigg, & Dyer, 1993). We assume that the therapeutic interventions affected patients’ levels of reflective self-awareness (experiencing). However, from a methodological perspective, one cannot make conclusions about the direction of the effect, as the variables were assessed at the same moment in time. Therefore, we cautiously propose that the results for the two patients may demonstrate that (1) interventions disconfirming pathogenic beliefs strengthen patients’ reflective self-awareness (experiencing) and (2) interventions promoting mentalization strengthen patients’ reflective self-awareness (experiencing). Our results replicate the findings of the San Francisco Psychotherapy Research Group (Silberschatz, 2005, 2015; Weiss & Sampson, 1986) on the effectiveness of interventions related to “disconfirming pathogenic beliefs”.

The therapist co-shapes the therapeutic process but does not create a process. It seems unrealistic to assume that only the patients’ experiences influenced the therapeutic interventions, i.e., the patients were the agents, and therapists merely reacted to the patients’ experiencing. To assume that mutual influence is to credit therapeutic interventions as influencing patients and vice versa, Jones et al. (1993) concluded that the same reciprocally causal process occurred in a single-case study. This interpretation is in line with a notion put forward by Stiles, who integrated evidence from a range of studies and questioned whether variables pertinent to the therapeutic process could be investigated in isolation (Stiles, 2013, 2009a, 2009b).

The results are also in line with some clinical experience. Impaired mentalizing capacities make it difficult for the therapist to conceive of and implement the appropriate interventions. Our findings support the notion that mentalization is as much an interpersonal capacity as it is an intrapersonal one (Luyten, Fonagy, Lowyck, & Vermote, 2012). Significant associations were detected for two patients but were consistently absent for the third patient.

For the third patient, we found no correlation ($r = .0$) between the therapeutic interventions and the patient’s reflective self-awareness (experiencing). This unexpected result is very interesting because “cases with contrasting outcomes can result in generalizable knowledge that goes beyond what one single-case study can offer” (Iwakabe, 2011). What discriminated patient 3 from patients 1 and 2? Patient 3 had both of the DSM-IV diagnoses that the other patients had and had considerable problems controlling his affect and impulses.

We tried to measure the influence of the therapeutic interventions on the patients’ experiencing, which captures emotional exploration combined with cognitive elements. The results may not be good news. Focusing in a radical way on the process using time-series analysis, the results revealed a limited influence of specific interventions. This finding is in line with the results of Laska et al. (2014), who found that the most prominent variable in the therapeutic process is therapeutic alliance (Norcross & Lambert, 2011), and with the fact that specific interventions have a limited influence on outcomes (Wampold, 2015; Wampold et al., 1997). This was confirmed by various other meta-analyses for specific disorders. Therefore, we concluded that the therapeutic alliance is a topic for further explanation.

7.3. Relationships among therapeutic interventions, patients’ reflective self-awareness (experiencing) and therapeutic alliance

Contrary to our expectations, the positive relationship between therapeutic interventions and patients’ experiencing (patients 1 and 2) did not lead to a positive trend for patients’ experiencing. This may be confusing at first. We found a positive correlation between the two types of interventions and experiencing (for two patients), but the trend for the patients’ experiencing was not positive (Figures 1–3). In other words, the positive findings of the time analysis (ARIMA, VAR) appear to contradict the results of the trends (experiencing). These trends (experiencing) are in line
with results from other studies. General expectations regarding simple relationships could not be met: “Rogers’ process view (1961), however, also predicted that there would be an increase of experiencing level throughout the course of successful therapy. Unfortunately, this has not been confirmed in most studies…” (Elliott et al., 2013, p. 518). However, numerous studies have demonstrated that the level of experiencing is closely related to patient outcomes (Elliot et al., 2004; Purton, 2004). Experiencing and therapeutic alliance contribute to therapeutic improvement (Fisher, Atzil-Slonim, Bar-Kalifa, Rafaeli, & Peri, 2016).

How can it be understood that interventions (patient 1) are positively correlated with experiencing but are not associated with a positive trend for experiencing or that experiencing is reduced when no positive correlation between experiencing and interventions can be traced (patient 3)? We propose that there was a tendency for a reduction in experiencing during therapy. This tendency was countered by the therapeutic interventions, i.e., experiencing was often revived via the therapeutic interventions. The reduction in experiencing may have been caused by two factors. First, the themes and tasks for patients in progressive therapies often become more complex or face obstacles (Sammet, Rabung, & Leichsenring, 2006). Second, patients with severe affective disturbances tend to regulate experiencing (i.e., emotional exploration combined with cognitive elements) to secure the therapeutic alliance.

Contrary to our expectation, a tendency for reduced experiencing emerged for patient 3. Here, therapeutic interventions were not significantly associated with experiencing. An intensified attachment in a treatment that simultaneously focuses on psychological problems may lead to a vulnerability regarding the level of mentalization among patients (Nolte et al., 2013). Therefore, interventions that promote reflective self-awareness can lead to danger for the patient. It may differ for patients with less severe psychological problems. All three patients were substantially impaired in their psychological functioning. The security of the patient within the therapeutic alliance is paramount and must be prioritized over activation or working through conflictual experiences. For patient 3 (with a diagnosis of borderline personality disorder with impaired impulse control), regulating affect and impulses was a primary goal. For this patient, the Experiencing Scale might not have been the most appropriate way to capture the effectiveness of interventions. Combining the empirical data with clinical observations, we suppose that reduced affective intensity may result from better containment within the therapeutic alliance. The therapeutic alliance is critical: it helps the patient modulate his affect and reduce his epistemic mistrust (epistemic trust is the basic trust in a caregiver as a safe and secure source of information; Fonagy & Allison, 2014; Knox, 2016; Sperber et al., 2010; Wilson & Sperber, 2012). Therapeutic alliance may thus have a great influence on epistemic trust or modulate epistemic trust.

8. Limitations

One limitation of the current study is related to the selection of data collected and analysed. Specifically, the limit of the five-minute segments for each data point for the time-series analyses may have biased the results. Patients’ reactions to the therapeutic intervention might have occurred within the five-minute segments, much later in therapy or even outside the sessions. It could be argued that shorter time segments may have been better suited to identify causal relationships. To determine whether a given therapeutic intervention has a certain effect, one must recognize the meaning of the intervention when it occurs in a context and when it is employed responsively (Stiles, 2013). This creates a time limit with regard to the length of a segment. Beyond using a segment of several minutes in length, the possibility of rating material concerning verbally expressed content and context becomes nearly impossible. The view that segments several minutes in length are needed is shared by those using similar rating procedures (Klein et al. (1986) for Experiencing Scale; Semerari et al. (2003) for Metacognitive Assessment Scale, MAS; Bucci (1997) for Multiple Code Theory).

It is possible that there was a gender influence that we did not consider. Patient 3 was the only male patient and the only male–male pair in therapy.
We collected data from 10 sessions as if they represented a continuum of five-minute sections. Thus, in using this approach, we neglected the fact that time passed between the sessions. Moreover, we followed the approach by Tschacher and Ramseyer (2009) when using VAR modeling and decided not to account for missing data.

9. Conclusions

- The therapeutic interventions promoting mentalization and disconfirming pathogenic beliefs can be rated as reliable by trained clinicians.
- For two of three patients, the therapeutic interventions promoting mentalization and disconfirming pathogenic beliefs were consistently correlated with the patient’s reflective self-awareness (experiencing). It can be understood as a reciprocal causal process.
- Specific interventions may have a limited influence. The therapeutic alliance is critical: it helps the patient modulate his affect and reduce his epistemic mistrust.

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