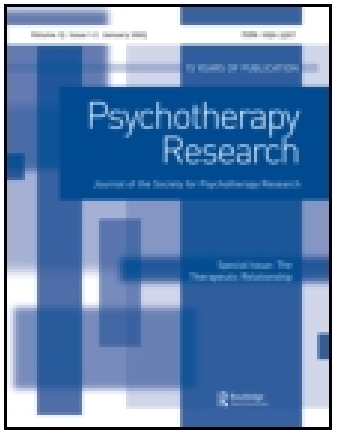

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Change mechanisms in psychotherapy: Multiperspective assessment and relation to outcome

Johannes Volker Mander [a], Andreas Wittorf [b], Angelika Schlarb [c], Martin Hautzinger [c], Stephan Zipfel [a] & Isa Sammet [a]

[a] Department of Psychosomatic Medicine and Psychotherapy, University of Tübingen, Tübingen, Germany

[b] Department of Psychiatry and Psychotherapy, University of Tübingen, Tübingen, Germany

[c] University of Tübingen, Department of Developmental and Clinical Psychology, University of Tübingen, Tübingen, Germany

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Change mechanisms in psychotherapy: Multiperspective assessment and relation to outcome

JOHANNES VOLKER MANDER[1], ANDREAS WITTORF[2], ANGELIKA SCHLARB[3], MARTIN HAUTZINGER[3], STEPHAN ZIPFEL[1], & ISA SAMMET[1]

[1]*Department of Psychosomatic Medicine and Psychotherapy, University of Tübingen, Tübingen, Germany;* [2]*Department of Psychiatry and Psychotherapy, University of Tübingen, Tübingen, Germany &* [3]*University of Tübingen, Department of Developmental and Clinical Psychology, University of Tübingen, Tübingen, Germany*

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Abstract
The study aimed at constructing a reliable and valid post-session questionnaire measuring general change mechanisms of psychotherapy with correspondent versions for patient and therapist perspectives. Therefore, 253 inpatients in early, middle, and late stages of psychotherapy completed the newly developed Scale for the Multiperspective Assessment of General Change Mechanisms in Psychotherapy (SACiP) and diverse outcome measures. The psychometric qualities of the SACiP were excellent as shown by (a) exploratory factor analyses on patient and therapist ratings, (b) confirmatory factor analyses on later measuring times, and (c) high internal consistencies. Supporting construct validity, the SACiP predicted outcome, as shown by correlational analyses and mixed effects modeling. Patient evaluations of change mechanisms were better predictors of outcome than the corresponding therapist evaluations.

Keywords: general change mechanisms; therapeutic alliance; post-session reports; psychotherapy; outcome prediction

Introduction

Promising novel therapeutic paradigms focus on common factors as higher-order principles for combinations of different therapeutic approaches (Grawe, 2004; Orlinsky, 2009; Prochaska & Prochaska, 2010). Grawe's psychological therapy is an integrative framework developed on the basis of broad empirical data (Grawe, 1995, 1997, 2004). It postulates that all psychotherapy should be "research informed". Specifically, interventions should not be based on a specific therapy school, but rather on empirical findings from a background as broad as possible, including basic psychological science and all the various schools of psychotherapy (Smith & Grawe, 2005). This integrative framework should be continually revised to the latest empirical findings (Grawe, 1997). This broad empirical background should then be used to adapt specific therapeutic interventions optimally to the patients' need. The core construct of Grawe's theory is five empirically derived general mechanisms of change: (1) *Resource activation* implies the purposeful use of the individual abilities of the patient for therapeutic change. (2) *Problem actuation* refers to the actual emotional experience of the problem in therapy sessions. (3) *Mastery* implies the concrete experience of learning to cope with problem situations. (4) *Clarification of meaning* refers to the realization of (un)conscious goals and motives of one's own behavior and experience. And, finally, (5) the *therapeutic alliance* reflects the quality of the relationship between therapist and patient (Grawe, 1995, 1997, 1999, 2004; Grawe, Donati, & Bernauer, 1994).

Mechanisms of change can be evaluated using post-session process measures. The Bernese Post Session Report (BPSR; Flückiger, Regli, Zwahlen, Hostettler, & Caspar, 2010; Regli & Grawe, 2000) measures Grawe's mechanisms of change and various other relevant aspects, such as connection to real life or willingness for exertion. The BPSR consists of 11 factors for therapist version and eight factors for the patient version. The BPSR has been used to evaluate the link between change

Johannes Volker Mander and Andreas Wittorf equally contributed to the study and should be considered as joint first authors. Correspondence concerning this article should be addressed to Johannes Volker Mander, University of Tübingen, Department of Psychosomatic Medicine and Psychotherapy, Tübingen, Germany. Email: johannes.mander@med.uni-tuebingen.de

mechanisms and outcome (Stangier, Von Consbruch, Schramm, & Heidenreich, 2010; Zeeck & Hartmann, 2005; Znoj et al., 2009), to explore interactions between and experimental activations of mechanisms of change (Flückiger, Caspar, Holtforth, & Willutzki, 2009; Flückiger & Holtforth, 2008; Gassmann & Grawe, 2006) and to evaluate session-by-session dynamics (Smith & Grawe, 2005; Tschacher, Baur, & Grawe, 2000; Tschitsaz-Stucki & Lutz, 2009).

There are different approaches operationalizing the therapeutic alliance (for overview: Elvins and Green, 2008). Bordin's (1979) conception of the therapeutic alliance is one of the best examined frameworks according to Elvins and Green (2008). He distinguished three general aspects: *Agreement on goals*, *agreement on tasks*, and *emotional bond*. The Working Alliance Inventory (WAI; Horvath & Greenberg, 1986) and its short versions (Hatcher & Gillaspy, 2006; Tracey & Kokotovic, 1989) operationalize Bordin's concept of the therapeutic alliance. While numerous studies demonstrated its significance for outcome evaluation (e.g., Keller, Zoellner, & Feeny, 2010; Webb et al., 2011), the factor structure is an issue of tremendous concern (Guédeney, Fermanian, Curt, & Bifulco, 2005). No study could confirm the original three-subscale structure referring to *tasks*, *goals* and *bonds*. The studies all revealed different factor structures (e.g., Andrusyna, Tang, DeRubeis, & Luborsky, 2001; Hatcher & Barrends, 1996; Hatcher & Gillaspy, 2006; Tracey & Kokotovic, 1989). More specifically, Andrusyna et al. (2001) demonstrated a two-factor structure, with an agreement/confidence factor, which combines the items from the original goals and tasks scales, and a relationship factor with the items from the original bond scale. Hatcher and Gillapsy (2006) developed a new three-factor short version of the WAI which eventually confirmed the factors *goals*, *tasks* and *bond*. Tracey and Kokotovic (1989) found a bilevel factor structure with one general alliance factor explaining most of the variance. Further, a German shortened version (WAI-SR) reproduced the three original factors *tasks*, *goals* and *bond* (Munder, Wilmers, Leonhart, Linster, & Barth, 2010; Wilmers et al., 2008).

There is increasing demand for measuring the processes of therapeutic change and for monitoring of central mechanisms of change in effectiveness research (Lambert, Hansen & Finch, 2001; Lutz, 2003; Norcross & Lambert, 2011; Orlinsky, Ronnestad, & Willutzki, 2004; Prochaska & Norcross, 2010). We have identified several weaknesses in existing instruments measuring the processes of therapeutic change: First, the BPSR shows a different factor structure for the patient and therapist versions. Second, the BPSR comprises only few items which show a one-to-one correspondence between the patient und therapist versions. Thus, an instrument with correspondingly formulated items for both the patient and therapist perspectives seems to be important, as it would allow direct comparisons of the two perspectives. These comparisons could be essential in order to better understand the role of different perspectives in mechanisms of change in explaining outcome variance. If we understood this aspect in a more accurate way, we could better predict therapy outcome using different perspectives on change mechanisms. Consequently, we would be able to develop specific interventions on different mechanisms of change to optimize psychotherapy. Finally, a further shortcoming of the BPSR is that although it includes items measuring some aspects of the therapeutic alliance (i.e., the emotional bond), it does not do so in relation to a specific theoretical concept. However, a strong theoretical framework constitutes an important basis for empirical research. As theoretical concepts concerning the therapeutic alliance are indeed available, research should refer to them. One of the best elaborated and evaluated concepts is Bordin's above-mentioned working alliance model with the WAI as its primary empirical equivalent. However, as we have outlined above, the factor structure of the WAI remains unclear. It should therefore be proposed that the WAI is psychometrically explored again in the framework of new research questions.

Thus, the present study aimed at constructing a reliable and valid post-session questionnaire measuring general change mechanisms of psychotherapy with corresponding versions for the patient and therapist perspectives. For this purpose, we combined reformulated items from the BPSR and the German WAI short version and psychometrically investigated them. We expected that our new instrument would show a seven-factor structure pertaining to Grawe's general change mechanism of *resource activation*, *problem actuation*, *mastery*, and *clarification of meaning*, as well as to the *goal*, *task*, and *bond* components of Bordin's working alliance concept. Further, as an indicator of the criterion-related validity, we expected that more favorable values on these empirically derived dimensions would be associated with better treatment outcome. Additionally, we explored the course of change mechanisms across different stages of psychotherapy and investigated differences between the patient and therapist perspectives. We hypothesized that the perceived intensity of change mechanisms would increase for

both patients and therapists, as has been demonstrated recently by Flückiger et al. (2010).

Method

Subjects

The participants in this study were 296 inpatients. Patients were treated at an inpatient unit as they suffered from severe psychopathology and, thus, could not be effectively treated in an outpatient setting. Specific inclusion criteria were a main diagnosis of a major depressive episode, a somatoform disorder or an eating disorder in the Structured Clinical Interview for DSM-IV, German version (SCID-I; Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997). General exclusion criteria were as follows: (1) an age below 18 or above 59 years, (2) insufficient German-language skills, (3) psychotic or substance-related disorder. Comorbidities of an anxiety or a depressive disorder were no limitation to entering the study. Drop-outs reduced the number of usable data sets to 253 at t_1, to 220 at t_2 and to 202 at t_3. No significant differences between these subgroups were found regarding either their demographic or descriptive composition. The characteristics of the completer sample are provided in Table I.

Measures

Construction of the SACiP. We adapted items from the BPSR (Flückiger et al., 2010) and the German WAI short version (WAI-SR; Munder et al., 2010) to construct a new instrument, the Scale for the Multiperspective Assessment of General Change Mechanisms in Psychotherapy (SACiP). Thus, we will first of all provide a psychometric description of the original instruments.

Table I. Demographic and descriptive data of study completers

	N (%)
Sample	253
Male	82 (32.4)
Age mean (*SD*)	41.3 (13.8)
Married	123 (48.6)
A-level degree	65 (25.7)
Formal professional qualification	163 (64.5)
Employed	94 (37.2)
Major depression	69 (27.3)
Recurrent depression	34 (13.4)
Somatization disorder	15 (6.0)
Undifferentiated somatoform disorder	29 (11.5)
Pain disorder	46 (18.2)
Anorexia nervosa	34 (13.4)
Bulimia nervosa	8 (3.2)
Eating disorder, not otherwise specified	18 (7.1)

The BPSR measures Grawe's change mechanisms and various other relevant aspects (e.g., connection to real life, willingness for exertion). It consists of 11 factors (27 items) from the therapist perspective and eight factors (22 items) from the patient perspective. Therapists rate the first 12 items on a 7-stepped scale and the rest of the items on a 5-stepped scale. Patients rate all items on a 7-stepped scale. In a sample of 429 outpatients, Flückiger et al. (2010) demonstrated a stable factor structure with factor loadings of $.62 \leq \lambda \leq .95$. Confirmatory factor analyses indicated good fit indices mostly in the range of the recommendations by Hu and Bentler (1999). The instrument revealed acceptable to excellent internal consistencies, with $.60 \leq \alpha \leq .90$. Referring to the criterion-related validity, Stangier et al. (2010), Zeeck & Hartmann (2005) and Znoj et al. (2009) demonstrated that therapeutic outcome was predicted by the subscales of the BPSR.

The WAI short version operationalizes Bordin's concept of the therapeutic alliance with the three subscales *agreement on goals*, *agreement on tasks*, and *emotional bond*. The 12 items of the German WAI-SR are rated on a 5-stepped scale. Munder et al. (2010) demonstrated good internal consistencies of the WAI-SR subscales ($\alpha > .80$) and convergent validity with the Helping Alliance Questionnaire. The authors of the original English version of the WAI (Horvath & Greenberg, 1986) demonstrated significant associations between the WAI subscales and therapeutic outcome.

To adapt items for the SACiP, some changes in wording of the original BPSR and WAI-SR items were necessary in order to make the patient and therapist versions correspond better and to focus the items' content explicitly on the current therapy session. The resulting measure was supposed to reflect the seven theoretical dimensions of *resource activation*, *problem actuation*, *mastery*, *clarification of meaning*, *emotional bond*, *agreement on tasks*, and *agreement on goals* with three items each. To facilitate the handling of the instrument by patients and therapists, we further abstained from using negatively worded items. Thus, later reverse coding of certain items becomes obsolete, too. Finally, we applied a uniform rating scale to all items of the former WAI-SR and the BPSR items. Thus, the SACiP consists of 21 items (see Table II) which are rated on a 5-stepped scale ranging from 0 (not correct at all) to 4 (fully correct) with correspondingly formulated items for the patient and the therapist perspectives. The SACiP refers to individual psychotherapy only. The instrument was originally formulated in the German language;[1] the original German items are listed in the appendix. The translation of the German version of the

Table II. Communalities (h^2) and factor loadings (λ) of the six factors of the SACiP from therapist perspective (patient perspective in brackets) at t_1

Factors	Items	h^2	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6
Emotional bond	Today, I felt comfortable in the relationship with the patient (therapist). (Item1)	.77 (.70)	.40 (.41)	.19 (.25)	.00 (.22)	.07 (.07)	.66 (.52)	.05 (.02)
	The patient (therapist) and I understood each other today. (Item 8)	.73 (.83)	.48 (.44)	.20 (.34)	.15 (.14)	.08 (.19)	.60 (.53)	.15 (.08)
	Today, I felt that the patient (therapist) appreciates me. (Item 15)	.73 (.74)	.32 (.31)	.28 (.28)	.19 (.18)	.09 (.10)	.57 (.56)	.13 (.04)
Problem actuation	In today's session, the patient (I) was highly emotionally involved. (Item 2)	.79 (.81)	.15 (.26)	.06 (.14)	.67 (.79)	.12 (.06)	.24 (.09)	.03 (−.01)
	Today, I (the therapist) touched the patient's (my) sore spots. (Item 9)	.73 (.71)	.00 (.01)	−.06 (−.09)	.62 (.62)	.38 (35)	−.07 (.00)	.03 (.04)
	What we did today affected the patient (me) very deeply. (Item 16)	.85 (.82)	.09 (.04)	.10 (.12)	.78 (.85)	.06 (.15)	.02 (.10)	.10 (.03)
Resource activation	In today's session, the patient (I) felt where his/her (my) strengths lie. (Item 3)	.79 (.76)	.25 (.20)	.77 (.70)	−.01 (.09)	.16 (.06)	.22 (.36)	.18 (−.16)
	By means of today's session, the patient (I) felt enhanced in his/her (my) self-concept. (Item 10)	.83 (.73)	.19 (.14)	.71 (.62)	.00 (.25)	.18 (−.03)	.21 (.27)	.15 (−.17)
	Today, I (the therapist) intentionally used the patient's (my) abilities for therapy. (Item 17)	.75 (.67)	.22 (.16)	.73 (.64)	.15 (.16)	.21 (.13)	.08 (.23)	.26 (.06)
Clarification of meaning	Today, I (the therapist) enabled the patient (me) to view his/her (my) problems in new contexts. (Item 4)	.78 (.78)	.15 (.21)	.25 (.20)	.23 (.26)	.75 (.68)	.04 (.13)	.12 (−.06)
	The patient(I) has (have) a better understanding of himself/herself (myself) and his/her (my) difficulties after today's session. (Item 11)	.76 (.81)	.30 (.31)	.36 (.30)	.27 (.15)	.57 (.74)	.13 (.10)	.24 (.03)
	Today, the patient (I) became more aware of the motives for his/her (my) behavior. (Item 18)	.78 (.78)	.32 (.14)	.31 (.34)	.21 (.26)	.53 (.68)	.18 (.21)	.25 (.08)
Agreement on collaboration	Today, the patient (therapist) and I worked toward mutually agreed upon goals (Item 5)#	.70 (.79)	.61 (.70)	.17 (.26)	.13 (.24)	.30 (.13)	.26 (.25)	.08 (−.19)
	Today, the patient (therapist) and I agreed about the steps to be made in therapy. (Item 6)+	.75 (.83)	.77 (.82)	.11 (.21)	−.03 (.18)	.05 (.05)	.12 (.07)	.13 (−.13)
	Today, the patient (therapist) and I had a good understanding of what changes are good for him/her (me). (Item 12)#	.72 (.72)	.69 (.72)	.24 (.25)	.08 (.17)	.21 (.08)	.04 (.12)	.17 (.13)
	The patient (therapist) and I agreed on the usefulness of the activities in today's session. (Item 13)+	.73 (.77)	.72 (.76)	.20 (.21)	.14 (.12)	.16 (.14)	.23 (.21)	.13 (.11)
	Today, the patient (therapist) and I had a shared view on what his/her (my) real problems are. (Item 19)#	.72 (.73)	.65 (.51)	.11 (.18)	.19 (.35)	.27 (.35)	.21 (.29)	.16 (.30)
	Today, the patient (therapist) agreed with me on how therapy was conducted. (Item 20)+	.72 (.81)	.75 (.65)	.19 (.27)	.01 (.10)	−.04 (.15)	.25 (.28)	.11 (.37)
Mastery	After today's session, I assume that the patient (I) can cope better with situations which are difficult for him/her (me). (Item 7)	.79 (.79)	.33 (.34)	.39 (.12)	.06 (.14)	.25 (.03)	.16 (.01)	.67 (.77)
	Today, we really made progress in therapy in overcoming the patient's (my) problems. (Item 14)	.77 (.70)	.45 (.38)	.29 (.16)	.25 (.18)	.23 (.06)	.12 (.38)	.17 (.56)
	I have the impression that the patient's (my) capacity to act improved by today's session. (Item 21)	.83 (.81)	.26 (.29)	.50 (.17)	.06 (.23)	.17 (.10)	.09 (.06)	.68 (.78)

Note. Underlined factor loadings indicate the item-factor association. # These items correspond to the theoretical dimension "agreement on goals";+these items correspond to the theoretical dimension "agreement on tasks."

SACiP into English was carried out according to the forward-backward procedure. After a member of the research team translated the original version into English, a bi-lingual PhD student translated the English version back into German without referring to the original German version. The differences between the back-translated and the original German version were minimal and the final version (see Table II) was developed by consensus.

Outcome measures. The German version of the Symptom-Checklist-90-Revised (SCL-90-R; Franke, 2002) is a measure of general symptom severity. It consists of 11 subscales, with 90 items on a 5-stepped scale. It showed excellent internal consistencies, with $.79 \leq \alpha \leq .89$ and good retest reliabilities, with $.69 \leq r \leq .92$, and acceptable construct validity, with scale-outcome correlations of $.27 \leq r \leq .81$.

The Beck Depression Inventory (BDI; Hautzinger, Bailer, Worall, & Keller, 1994) (QIDS; Rush et al.,

2003) is a screening instrument for depression derived from the criteria of the DSM-IV (American Psychiatric Association, 2000). It consists of 21 items on a 4-stepped scale. It revealed an internal consistency of $\alpha = .88$, a split-half reliability of $r = .72$, a retest reliability of $r = .75$ and convergent validities of $.71 \leq r \leq .89$.

The Quick Inventory of Depressive Symptomatology (QIDS; Rush et al., 2003) is another screening instrument for depression derived from the criteria of the DSM-IV (American Psychiatric Association, 2000). It consists of 16 items on a 4-stepped scale. It revealed an excellent internal consistency, with $\alpha = .86$, and an excellent convergent validity, with a correlation of $r = .86$ with the BDI.

The Screening for Somatoform Disorders (SOMS; Rief, Hiller, & Heuser, 1997) is a screening instrument for somatoform disorders derived from the criteria of the DSM-IV (American Psychiatric Association, 2000). It consists of 68 items on a 7-stepped scale. It revealed an excellent internal consistency, with $\alpha = .87$, a retest reliability of $r = .85$, and a convergent validity with a correlation of $r = .50$ with the SCL-90-R.

The Eating Disorder Inventory (EDI-2; Paul & Thiel, 2005) is a screening instrument for eating disorders. It consists of 11 subscales with 91 items on a 6-stepped scale. It showed an excellent internal consistency, with $\alpha = .96$ for the whole scale, and $.79 \leq \alpha \leq .89$ for the subscales, as well as a retest reliability of $r = .88$.

Treatment and Study Design

All patients completed a 6 to 10 week inpatient treatment in the Department of Psychosomatic Medicine and Psychotherapy of Tübingen University, Germany. They received individual therapy, group therapy, art therapy and music therapy two times a week. Individual therapy was conducted two times a week. Patients received a minimum of 12 and a maximum of 20 treatment sessions. The mean number of treatment sessions was 14 ($SD = 1.12$) sessions. Therapists were 30 psychotherapists with at least 1 year of experience. Twenty-four therapists were female; all therapists were trained in disorder-specific psychotherapy according to international guidelines.

All patients were assessed with the SCID-I to diagnose psychiatric disorders. Patients were allocated to three different groups according to their main diagnosis: a depressive, somatoform and eating disorder sample. Each disorder group received three outcome measures, two instruments measuring general symptomatology and one disorder-specific measure: The SCL-90-R as a measure of general symptom severity and the QIDS as a measure of general depressiveness were administered to all patients. Additionally, the patients with depression completed the BDI. The SOMS was administered to the somatoform group. The eating disorder sample completed the EDI-2.

All patients were assessed at baseline (t_0), after the fourth individual therapy session (t_1), after the eighth session (t_2) and after the last session (t_3), respectively. All instruments measuring clinical symptomatology were administered at all four measuring times. Each patient and individual therapist completed the SACiP. It was administered starting with t_1 so that patient and therapist had time to become acquainted with each other before. The initial SCID-I assessment was conducted by three PhD students who completed a university-based training. They were regularly supervised by a university-affiliated expert. The local ethics committee of the medical faculty approved the study protocol.

Statistical Analysis

Exploratory and confirmatory factor analyses. At first, the factor structure of the SACiP was explored by conducting exploratory factor analyses (EFA), a maximum likelihood procedure, with orthogonal (Varimax) and oblique (Oblimin direct) rotations on the data of the therapist and patient perspective at t_1. To confirm the exploratory model, we conducted several confirmatory factor analyses (CFA), a maximum likelihood estimation, on the data of therapist and patient perspective at t_2 and t_3. For implementation of EFA and CFA, Bühner (2010) and Backhaus, Erichson, Plinke and Weiber (2010) recommend an adequate sample size of at least 100 subjects. Bühner (2010) suggests a factor loading of at least $\lambda = .45$ and a difference loading to the next highest factor of at least .15. As a criterion for factor selection, we used the Jolliffe (1972, 1986) criterion. It states that all factors with eigenvalues more than .7 should be retained. According to Field (2009) and Jolliffe (1972, 1986) this procedure is adequate when the number of variables is lower than 30 and the communalities after extraction are all greater than .7. As therapist and patient ratings might vary across different measuring times, this could result in different factor structures at different points in time. To test for the stability of the factor structure, we applied confirmatory factor analyses at the remaining measuring times. We used fit indices and cut-off scores following the recommendations by Hu and Bentler (1999): Comparative-Fit Index (CFI) $\approx .95$, Root Mean Square Error of Approximation (RMSEA) $\leq .08$, Standardized Root Mean Residual (SRMR) $\leq .11$. To test the criterion-related validity, we first calculated a global outcome score. It was

defined as the mean score of the three z-standardized outcome scores (pre-post difference scores) for each disorder group. The reduction of data by means of the global outcome score aimed at minimizing potential alpha errors. We then correlated the global outcome score with the SACiP factors to be extracted.

Mixed-effects modeling. As the structure of our data set is nested, we applied a mixed-effects modeling approach in order to investigate the effects of the mechanisms of change factors, of measuring time and of perspective (patient versus therapist) on global outcome. We applied the mixed-effects approach in line with the recommendations of Heck, Thomas and Tabata (2010) and of Field (2009). We computed a series of mixed-effects models, that is, one model for each of the extracted general change mechanism factors. The models included two levels: (a) level 1, patients nested within therapists, and (b) level 2, therapists. For all models, we used the global outcome score as the dependent variable. At level 1 (the patient level), we modeled mechanisms of change, perspective, measuring time and global outcome at baseline as fixed effects. We further tested interactions between perspective and change mechanisms as well as time and change mechanisms. At level 2 (the therapist level), we further modeled therapists (intercepts) and mechanisms of change (slopes) as random effects. All statistical analyses were conducted using SPSS 19 and Amos 19.

Results

Exploratory and Confirmatory Factor Analyses

As we did not find differences in the factor structure between the results obtained by Varimax and Oblimin direct (delta = 0) rotation, we report on the solutions of the former method only. A Kaiser-Meyer-Olkin (KMO) score of .92 and a highly significant ($\chi^2 = 3420.32$, $p < .001$) Bartlett's test of sphericity confirmed the adequacy of the data for factor analysis. The EFA revealed a six-factor solution, which accounts for 76.17% of the variance. The items of the theoretical scales for agreement on tasks and goals loaded on the same factor, which we named *agreement on collaboration*. All other factors corresponded to the predicted subscales. The initial eigenvalues were 9.30, 2.28, 1.81, 1.10, 0.85 and .76 from therapist, and 9.47, 2.20, 1.65, 1.10, .92 and .81 from patient perspective, for *agreement on collaboration*, *resource activation*, *problem actuation*, *clarification of meaning*, *emotional bond* and *mastery*, respectively. Table II presents communalities and factor loadings of the items and subscales. All fit indices of the CFA confirmed the exploratory model for the subsequent measuring times, as can be seen in Table III. Global mean scores of the subscales, correlations with outcome along with reliability information can be found in Table IV.

Table III. Chi-square and fit-indices of the confirmatory factor analysis for t_2 and t_3

	χ^2	CFI	RMSEA	SRMR
SACiP-T t_2	344.46	.945	.068	.053
SACiP-T t_3	367.32	.944	.074	.082
SACiP-P t_2	335.90	.936	.067	.049
SACiP-P t_3	327.38	.941	.067	.049

Note. SACiP-T t_2/t_3 = SACiP, therapist perspective after eighth/last therapy session; SACiP-P t_2/t_3 = SACiP, patient perspective after eighth/last therapy session; CFI = Comparative-Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Residual.

Mixed-Effects Modeling

The intraclass correlation was significant for all six models ($.28 \leq r \leq .30$; $p < .05$), indicating differences in global outcome between level 2 units (therapists). The relationship between mechanisms of change and global outcome showed significant variance in intercepts across therapists for all six mechanisms of change: for *emotional bond*, $\text{var}(u_{0j}) = 7.90$, $\chi^2(1) = 59.25$, $p < .01$; for *problem actuation*, $\text{var}(u_{0j}) = 8.15$, $\chi^2(1) = 59.61$, $p < .01$; for *resource activation*, $\text{var}(u_{0j}) = 8.42$, $\chi^2(1) = 62.63$, $p < .01$; for *clarification of meaning*, $\text{var}(u_{0j}) = 7.75$, $\chi^2(1) = 58.29$, $p < .01$; for *agreement on collaboration*, $\text{var}(u_{0j}) = 8.69$, $\chi^2(1) = 61.09$, $p < .01$; and for *mastery*, $\text{var}(u_{0j}) = 9.00$, $\chi^2(1) = 63.53$, $p < .01$. The slopes did not vary across therapists, all $\text{var}(u_{1j}) \leq 0.72$, $\chi^2(1) \leq 3.26$, $p > .10$. The slopes and intercepts did not significantly covary, all $\text{var}(u_{1j}) \leq 0.04$, $\chi^2(1) \leq 0.20$, $p > .10$. Thus, the application of mixed-effects modeling was justified.

Emotional bond significantly predicted global outcome, $F(1, 609.80) = 4.76$, $p = .029$. There were no other significant effects in the model, all Fs ≤ 0.90, $p \geq .35$. For the *problem actuation* model, there were no significant effects, all Fs ≤ 0.64, $p \geq .42$. *Resource activation* significantly predicted global outcome, $F(1, 614.48) = 29.49$, $p < .001$. There were no other significant effects in the model, all Fs ≤ 0.31, $p \geq .58$. *Clarification of meaning* significantly predicted global outcome, $F(1, 610.34) = 10.18$, $p < .001$. Perspective marginally significantly predicted the global outcome, $F(1, 611.64) = 3.62$, $p = .057$, whereby the patient perspective was a more relevant predictor than the therapist perspective. *Clarification of meaning* and perspective marginally significantly interacted, $F(1, 613.24) = 3.14$, $p = .076$. The interaction was broken down by conducting separate

Table IV. Global means (average over t_1, t_2, and t_3), correlations with global outcome and reliabilities of the SACiP

	Therapist perspective			Patient perspective			
Subscale	Mean (*SD*)	*r*	α	Mean (*SD*)	*r*	α	r_{tp}
Emotional bond	2.56 (.65)	.15*	.81	3.11 (.72)	.21**	.74	.20**
Problem actuation	2.16 (.65)	.02	.81	2.45 (.81)	.01	.74	.21**
Resource activation	1.92 (.72)	.16*	.87	1.93 (.80)	.22**	.71	.24**
Clarification of meaning	1.95 (.74)	.11	.84	2.26 (.82)	.23***	.77	.21**
Agreement on collaboration	2.41 (.60)	.14*	.90	2.60 (.79)	.24***	.86	.24**
Mastery	1.79 (.74)	.14*	.87	2.10 (.91)	.23***	.86	.19**

Note. *r* = Pearson correlation with global outcome; reliability α = α-coefficient of internal consistency; r_{pt} = correlation of therapist with patient perspective; * = $p < .05$; ** = $p < .01$; *** = $p < .001$.

multilevel models on patient and therapist perspective. The models specified were the same as the main model but with the main effect and interaction term involving perspective. These analyses showed that for patient perspective, *clarification of meaning* was a significant predictor of global outcome, $b = .16$, $t(298.95) = 4.88$, $p < .001$. For therapist perspective, the effect of *clarification of meaning* on global outcome was only marginally significant, $b = .07$, $t(271.17) = 1.82$, $p = .070$. The interaction effect, therefore, reflects the difference in slopes for patient and therapist perspectives as a predictor of global outcome. There was a strong positive slope for patient perspective and a slightly positive slope for therapist perspective. There were no other significant effects in the model, all *F*s ≤ 0.23, $p \geq .63$. *Agreement on collaboration* significantly predicted global outcome, $F(1, 613.14) = 22.67$, $p < .001$. There were no other significant effects in the model, all *F*s ≤ 0.29, $p \geq .590$. *Mastery* significantly predicted global outcome, $F(1, 608.20) = 13.18$, $p < .001$. Perspective significantly predicted global outcome, $F(1, 609.36) = 4.14$, $p = .042$, whereby the patient perspective was a more relevant predictor, $F(1, 296.35) = 30.85$, $p < .001$, than the therapist perspective, $F(1, 269.41) = 2.37$, $p = .124$. *Mastery* and perspective marginally significantly interacted, $F(1, 611.07) = 3.69$, $p = .055$. The interaction was broken down by conducting separate multilevel models on patient and therapist perspectives. The models specified were the same as the main model but excluded the main effect and interaction term involving perspective. These analyses showed that for patient perspective, mastery was a significant predictor of global outcome, $b = .16$, $t(296.35) = 5.55$, $p < .001$. For therapist perspective, the effect of *mastery* on global outcome was not significant, $b = .06$, $t(269.41) = 1.54$, $p = .124$. The interaction effect, therefore, reflects the difference in slopes for patient and therapist perspective as a predictor of global outcome. There was a strong positive slope for patient perspective and a slightly positive slope for therapist perspective. There were no other significant effects in the model, all *F*s ≤ 0.21, $p \geq .65$. There was no significant effect of measuring time for any of the change mechanisms. Regression coefficients of the significant estimates of the six mixed-effects models are depicted in Table V.

Discussion

The goals of the present study were to develop a reliable and valid instrument measuring mechanisms of change with corresponding versions for the patient

Table V. Regression coefficients of the (marginally) significant estimates of the six mixed effects models

Model		*b*	*SE b*	95% CI	*p*
1	Emotional Bond	.18	.02	.02, .34	.029
2	Problem Actuation	–	–	–	–
3	Resource Activation	.14	.03	.09, .19	<.001
4	Clarification of Meaning	.23	.07	.09, .38	<.001
4	Clarification of Meaning: Perspective Main Effect	.21	.11	−.01, .43	.056
4	Clarification of Meaning/Perspective Interaction	−.09	.05	−.18, .01	.076
5	Agreement on Collaboration	.14	.03	.08, .19	<.001
6	Mastery	.25	.07	.11, .38	<.001
6	Mastery: Perspective Main Effect	.20	.10	.01, .40	.042
6	Mastery/Perspective Interaction	−.09	.05	−.18, .00	.055

Note. *b* = unstandardized regression coefficient; *SE* = standard error; CI = confidence interval.

and the therapist perspectives. Further, we investigated the course of change mechanisms across different stages of therapy and explored differences between patient and therapist perspectives. Therefore, inpatients and their individual therapists completed questionnaires at three measuring times, recording mechanisms of change and clinical symptomatology. Development of the SACiP was informed by two influential theoretical frameworks, Grawe's psychological therapy (Grawe, 2004) and Bordin's conception of the therapeutic alliance (Bordin, 1979), leading to seven theoretically derived subscales with three items each: *Resource activation*, *problem actuation*, *mastery*, *clarification of meaning*, *emotional bond*, *agreement on tasks* and *agreement on goals*. In contrast to these theoretically postulated seven subscales, our exploratory factor analyses revealed six-factor solutions from therapist and patient perspective. Specifically, items pertaining to the theoretical subscales *agreement on tasks* and *agreement on goals* loaded on one factor, which we labeled *agreement on collaboration*. This is in line with the results of Andrusyna et al. (2001), who also demonstrated that the items from the original goals and tasks scales of the WAI loaded on the same factor. Notably, all other factors corresponded to the predicted subscales. Additionally, confirmatory factor analyses on therapist and patient perspectives supported our six-factor structure for each of the remaining measuring times. Finally, internal consistencies for each of the six subscales were excellent from both the therapist and the patient perspectives.

Turning to the predictive validity of the SACiP, all mechanisms of change factors significantly predicted outcome except for problem actuation, whereby more positive experiences of change mechanisms were associated with better outcome. This applies to both the correlation analyses and to the mixed-effects analyses, where we controlled for differential therapist effects. Taken together, these results are indicative of the external validity of the SACiP. Our finding that *problem actuation* alone cannot account for a successful therapy is in accordance with prior studies. For example, Gassman and Grawe (2006) demonstrated, that problem actuation alone did not reliably lead to therapeutic progress. It led to better outcome only when combined with thorough resource activation. Thus, problem actuation seems to be a precondition for the successful implementation of other mechanisms of change.

Interestingly, we found that the patient ratings were consistently higher than the therapist ratings on five of the six mechanisms of change. Further, although significant, patient and therapist ratings of change mechanisms were only lowly correlated ($r \approx .2$). These relatively discrepant ratings are in line with studies on differences between patient and therapist alliance ratings in non-psychotic samples (Tryon, Blackwell, & Hammel, 2007) as well as in psychotic samples (Wittorf et al. 2009, 2010). Thus, the findings of the present study show for the first time ever that differences between patient and therapist ratings are not restricted to alliance ratings but also apply to the other mechanisms of change. As suggested by Tryon et al. (2007), patients and therapists generally may consider different anchor points as crucial when they evaluate therapeutic processes. Unfortunately, to this day there are no studies that have examined the reasoning behind those patient and therapist ratings. The present findings are of high clinical interest because several researchers found that patient and therapist agreement on what is going on in therapy is associated with better outcome (Cummings, Martin, Hallberg, & Slemon, 1992; Kivlighan and Arthur, 2000; Reis and Brown, 1999).

Our correlation analyses indicated larger associations between mechanisms of change and global outcome from the patient than from the therapist perspective. The interactive effects in the mixed-effects models for the factors of clarification of meaning and mastery point in the same direction. The interaction indicated strong positive slopes for the patient perspective and only slightly positive slopes for the therapist perspective. Thus, our findings show that patient evaluations of change mechanisms are more robust predictors of outcome than the corresponding therapist evaluations are. As a clinical consequence, therapists may want to pay special attention to patients' evaluation of change mechanisms.

With regard to measuring time, we found no significant effect for any of the change mechanisms. This result contradicts our hypothesis that the change mechanisms would be perceived as dynamic during the course of therapy. Our finding of an absent time effect is inconsistent with Flückiger et al.'s (2010) study, which demonstrated in a large outpatient sample that an increase particularly of resource activation and problem actuation occurred across the course of therapy. However, outpatients tend to receive longer psychotherapies than inpatients. Thus, the 6 to 10 week inpatient treatments in our study were possibly too short to observe increases in mechanism of change across the course of therapy.

Our study has several limitations as discussed hereafter. First, although the wordings of the SACiP are identical for both the patient and the therapist versions, strictly speaking, some items of the instrument inevitably target the same content from different perspectives. To be more specific, the items of

the *emotional bond* and *agreement on collaboration* factors are "identical" in a strict sense as they are self-reports of identical content from both the patient and the therapist perspectives. The items relating to *problem actuation*, *resource activation*, *clarification of meaning*, and *mastery*, however, have to be viewed as analogous, which means they address the same content, but either as self-report from the patient perspective or as a third-person rating from the therapist perspective. The SACiP scales *problem actuation*, *resource activation*, *clarification of meaning*, and *mastery* reflect what Orlinsky, Ronnestad and Willutzki (2004) defined as in-session impact. The scales *emotional bond* and *agreement on collaboration* closely correspond to Bordin's concept of the therapeutic alliance. The alliance can be assessed from both the patient and the therapist perspectives as self-report, because actual experiences of the dyad's interactions are the criteria of evaluation. However, in practical terms it would be impossible to phrase in-session impact items as self-report items from the therapist perspective, because they reflect actual problem-solving of the patient. Nevertheless, it is important to note that we could not identify differences between the correlations of the patient and therapist perspectives along the self-report scales, on the one hand, and the analogous scales, on the other hand (compare Table IV). Moreover, although the in-session impact scales of the therapist version of the SACiP represent inferences of the therapist, they have been found to be valid outcome predictors. Anyhow, our findings indicate that the assessment of change processes from both the patient and therapist perspectives by means of the SACiP may be helpful for a better understanding of the impact of general change mechanisms on therapy outcome. A second limitation of our study is its naturalistic design without a control group. Thus, future research should investigate general mechanisms of change in randomized clinical trials and manipulate change mechanisms experimentally. Third, another limitation of our study was that we exclusively assessed inpatients. This could interfere with the generalizability of the results to other psychotherapy settings. Thus, future studies should investigate change mechanisms in outpatient samples too. Fourth, the associations of the SACiP scales with outcome are still relatively small. Nevertheless, the strength of the effects of general change mechanisms on therapeutic outcome is considerable in view of the fact that all participants received additional group therapies which also might have contributed to outcome. Thus, future studies administering the SACiP in patients receiving individual therapy only are likely to produce even stronger positive effects. Finally, as our study evaluated the original German version of the SACiP the findings potentially do not apply, in the strictest sense, to the English translation presented here. Thus, it would be important that future studies psychometrically investigate the English version of our instrument.

In summary, the SACiP is the first instrument measuring general change mechanisms in psychotherapy with analogous versions for the patient and therapist, offering the possibility of comparing the two perspectives more directly than was hitherto possible. The SACiP has good psychometric properties and its factor structure is stable over time and invariant across therapist and patient perspectives. The SACiP is a robust predictor of outcome, with stronger effects for the patient than for the therapist version.

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Note

[1] The German version of the SACiP (German „Skalen zur multiperspektivischen Erfassung allgemeiner Wirkfaktoren in der Psychotherapie (SEWiP)") can be obtained from the corresponding author on request.

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Appendix

Original German SACiP (German SEWiP) therapist version (patient version in brackets)

Instruktion: Wie haben Sie die heutige Therapiesitzung erlebt? Bitte geben Sie entsprechend der unten dargestellten Beurteilungsskala an, wie sehr die nachfolgenden 21 Feststellungen für Sie zutreffen. Bitte bearbeiten Sie alle Aussagen, auch wenn Ihnen manche Inhalte nicht ganz passend erscheinen sollten.

Beurteilungsskala: 0 = trifft überhaupt nicht zu; 1 = trifft kaum zu; 2 = trifft halbwegs zu; 3 = trifft überwiegend zu; 4 = trifft genau zu.

Item 1: Heute habe ich mich in der Beziehung zum Patienten (Therapeuten) wohlgefühlt.
Item 2: In der heutigen Sitzung war der Patient (ich) gefühlsmäßig stark beteiligt.
Item 3: In der heutigen Sitzung hat der Patient (habe ich) gespürt, wo seine (meine) Stärken liegen.
Item 4: Heute habe (hat) ich (der Therapeut) den Patienten (mich) seine (meine) Probleme in neuen Zusammenhängen sehen lassen.
Item 5: Der Patient (Therapeut) und ich haben heute an gemeinsamen Zielen gearbeitet.
Item 6: Ich war heute mit dem Patienten (Therapeuten) darüber im Einvernehmen, welche Schritte in der Therapie gemacht werden sollen.
Item 7: Ich gehe nach der heutigen Sitzung davon aus, dass der Patient (ich) für ihn (mich) schwierige Situationen jetzt besser bewältigen kann.
Item 8: Der Patient (Therapeut) und ich haben heute einander verstanden.
Item 9: Heute habe ich an wunde Punkte des Patienten gerührt (Heute hat der Therapeut an meine wunden Punkte gerührt).
Item 10: Durch die heutige Sitzung hat sich der Patient (habe ich mich) in seinem (meinem) Selbstbild aufgewertet gefühlt.
Item 11: Der Patient versteht sich (Ich verstehe mich) selbst und seine (meine) Schwierigkeiten nach der heutigen Sitzung besser.
Item 12: Der Patient (Therapeut) und ich hatten heute eine gute Verständigung darüber, welche Veränderungen gut für ihn (mich) sind.
Item 13: Es herrschte Übereinstimmung zwischen mir und dem Patienten (Therapeuten) über die Nützlichkeit der Aktivitäten in der heutigen Sitzung.
Item 14: Heute sind wir in der Therapie bei der Überwindung der Probleme des Patienten wirklich vorwärts gekommen (Heute sind wir in der Therapie bei der Überwindung meiner Probleme wirklich vorwärts gekommen).
Item 15: Ich habe heute gespürt, dass der Patient (Therapeut) mich wertschätzt.
Item 16: Was wir heute gemacht haben, ging dem Patienten (mir) sehr nahe.
Item 17: Ich habe die Fähigkeiten des Patienten heute für die Therapie gezielt genutzt (Der Therapeut hat meine Fähigkeiten heute für die Therapie gezielt genutzt.
Item 18: Heute ist sich der Patient (bin ich mir) über die Beweggründe seines (meines) Verhaltens klarer geworden.

Item 19: Der Patient (Therapeut) und ich hatten heute eine gemeinsame Vorstellung darüber, was seine (meine) eigentlichen Probleme sind.
Item 20: Ich war heute mit dem Patienten (Therapeuten) einig über die Art und Weise, wie in der Therapie gearbeitet wurde.
Item 21: Ich habe den Eindruck, dass sich die Handlungsfähigkeit des Patienten durch die heutige Sitzung verbessert hat (Ich habe den Eindruck, dass sich meine Handlungsfähigkeit durch die heutige Sitzung verbessert hat).