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Alliance Patterns over the Course of Short-Term Dynamic Psychotherapy (STDP): The Shape of Productive Relationships[1]

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Abstract

The relevance of the shape of alliance processes over the course of psychotherapy has already been highlighted in several process-outcome studies on very brief psychotherapy. The present study applies the shape-of-change methodology to short-term dynamic psychotherapies (STDP) and complements this method with hierarchical linear modeling (HLM). A total of 50 psychotherapies of up to 40 sessions were included. The shape-of-change methodology yields three main patterns: stable, linear and quadratic growth. In particular, the linear growth pattern, along with the slope parameter, is related to treatment outcome. This study sheds additional light on alliance process research, underlines the importance of alliance shape for outcome and also helps to understand its limitations better.

Key-Words: Alliance, Therapeutic Process, Process of Change, Outcome

ALLIANCE PATTERNS OVER THE COURSE OF SHORT-TERM DYNAMIC PSYCHOTHERAPY (STDP): THE SHAPE OF PRODUCTIVE RELATIONSHIPS

Introduction

Studies on therapeutic alliance are mainly based on evaluations of alliance level, usually measured at one particular point in time over the whole course of the psychotherapy. This is true for the studies included in the meta-analyses by Horvath and Symonds (1991) and Martin, Garske and Davis (2000). This focus on the *level* of the alliance yields a robust moderate relationship with outcome (Effect sizes varying between .22 and .26).

Alliance Phase, Shape and Patterns

A recent comprehensive review by Castonguay, Constantino and Grosse Holtforth (2006) suggests that in-depth understanding of alliance evolution over time and its link with outcome are important. Their conclusions are in line with the concept that alliance evolution processes are complex and follow non-linear logic (Hayes, Laurenceau, Feldman, Strauss, & Cardadiotto, 2007). In this perspective, Eaton, Abeles and Gutfreund (1988) suggest that the alliance should be monitored throughout different *phases* of the psychotherapy, with numerous assessment points so that the alliance can be studied at early, middle and late time points. The first studies of early alliance and their link with outcome conceptualize this process as a dyadic alliance construction process (de Roten, Fischer, Drapeau, Beretta, Kramer, Favre,& Despland, 2004; Gelso, & Hayes, 1998; Kramer, de Roten, Beretta, Michel, & Despland, 2008), whereas few conceptualizations exist as regards alliance at later time points (Eaton, Abeles, & Gutfreund, 1988). Horvath (2005; 2006) suggests that the concept of late alliance is different from early alliance, but does not give any empirical evidence. In the case of later alliance phases – in psychotherapies of up to 40 sessions -, Hentschel (2005) talks about a cubic evolution, i.e., a substantial increase in the beginning, less in the middle phase and another important increase at the end. This conception is consistent with the idea of

the importance of alliance construction processes in early sessions (de Roten et al., 2004). Quadratic U-shaped patterns are another way of formalizing the alliance evolution over the course of entire psychotherapies, i.e., high initial alliance, regression at mid-treatment and again high alliance at the end (Kivlighan, & Shaughnessy, 2000). These studies focus on alliance *shape* over the course of treatment and describe linear, quadratic or cubic evolutions (for a review of models of non-linear change, see Hayes, et al., 2007). While underscoring the importance of alliance monitoring over the course of psychotherapy, Henry, Strupp, Schacht and Gaston (1993) add that group means of alliance measures, overall or per process phase, "may be misleading" (Henry, Strupp, Schacht, & Gaston, 1993, p. 486). Kivlighan and Shaughnessy (2000) and Castonguay, Constantino and Grosse Holtforth (2006) argue in favor of the study of differential alliance patterns. Such hypotheses may be tested by using methods based on regression models and cluster analyses which produce sub-groups of patients grouped according to their parameters of shape (de Roten et al., 2004; Stiles, Glick, Osatuke, Hardy, Shapiro, Agnew-Davies, Rees, & Barkham, 2004). Patterns of alliance shape specific to sub-groups of patients are particularly interesting for clinical purposes, as they open up the possibility of taking into account between-subject variation of alliance scores throughout the psychotherapy and relating this variation to outcome (Stiles et al., 2004). Some authors think this variation is so high that it prevents any formalization of distinct patterns (Brossart, Wilson, Patton, Kivlighan, & Multon, 1998). Nevertheless, we think that process research on patterns needs to be carried further, especially in order to link these patterns differentially with patient characteristics, such as psychotherapy outcome (Kramer, Beretta, Michel, Despland, & de Roten, 2006). Furthermore, the limitations of such research need more discussion; thus, complementary analyses such as growth modeling (Laurenceau, Hayes, & Feldman, 2007; Bryk, & Raudenbush, 1987) need to be integrated into research on the shape of alliance evolution.

What in alliance is productive? – Links with therapeutic outcome

Some debate has arisen as to which aspect of alliance is best related to therapeutic outcome (among others Horvath, 2005; Kivlighan, & Shaugnessy, 1995; Kramer et al., 2008).

With regard to the alliance phase over the course of psychotherapy, so far, only early alliance has been systematically linked to outcome. No studies seem to exist focussing on outcome-linkages based on late alliance phases (Castonguay, Constantino, & Grosse Holtforth, 2006 for a review; Horvath, & Bedi, 2002; de Roten et al., 2004). Our interest lies mainly in the shape of alliance change: we assume that the way the shape of alliance evolves during psychotherapy, as formalized by specific parameters of change, is important for a favorable outcome. Kivlighan and Shaughnessy (2000) showed in a four-session-therapeutic-process that U-shaped quadratic patterns predict outcome, a result consistent with Gelso and Carter's (1994) conception of productive alliance shape. Of course, the limited number of sessions per patient in this study means that its results cannot be applied to longer therapeutic processes. Focussing on alliance shape, Stiles et al.'s (2004) study on 8- or 16-session psychotherapies does not show any significant link with outcome, but it would seem that the therapist's appreciation of alliance shape is a better prediction of outcome than the patient's (Kivlighan & Shaughnessy, 1995; Kramer, et al., 2008). In addition, Stiles et al. (2004) suggest that the study of general patterns may hide momentary strains in alliance (local V-shape, or sequences of rupture-resolution, see also Safran, & Muran, 2000), which are, if produced early in the process, linked to positive therapeutic outcome (see also Hayes et al., 2007). Based on these studies, alliance shape over whole psychotherapies might be best described in linear, quadratic and cubic terms and it remains an open question as to which of these parameters of shape is the most productive.

Measuring Alliance Shape and Patterns

Stiles, Agnew-Davies, Hardy and Barkham (1998; Stiles, et al., 2004) have defined a systematic procedure for the computation of alliance patterns: the shape-of-change methodology, based on cluster analysis of within-subject regression coefficients predicting alliance ratings for each session (see Method section for details). In their study, this methodology was applied to interpersonal and cognitive psychotherapy and showed interesting results: in the eight initial sessions, four clusters were found - two linear growth patterns, one linear decrease and one inverted U-shaped quadratic growth pattern. As reported before, none of the patterns were related to outcome, but the linear decrease pattern was related to higher over-involvement (or high anxiety-ambivalence) in the patients' affective relationships (measured by a derived subscale of the Inventory of Interpersonal Problems).

Unfortunately, in Stiles et al.'s approach, the limitations of cluster analysis are not fully appreciated nor countered with complementary higher-order statistical analysis, such as hierarchical linear modeling (Bryk, & Raudenbush, 1987). The latter method aims at describing general growth tendencies across time while taking into account any missing data. This is particularly important the study of longer psychotherapies, because of the risk of early terminations or drop-outs (see Tasca, Balfour, Ritchie, & Bissada, 2007). Moreover, the dependency of the data points is best controlled for by using a nested design, as provided by HLM (Kenny, Kashy, & Bolger, 1998).

The present study aims at applying and extending Stiles et al.'s procedure to a sample of dynamic psychotherapies of up to 40 sessions. Moreover, it aims at conducting HLM on the same sample to complement cluster-analysis-based shape-of-change with higher-order methodology. This leads us to our specific research questions and hypotheses. We intend to (1) describe the shape of the alliance evolution in a sample of short-term dynamic psychotherapy by means of parameters of change; (2) describe the patterns found in the same sample (grouping of individuals as a function of parameters of change): our hypothesis is that

there are three kinds of patterns: stable pattern, linear and quadratic growth patterns; (3) to study potential links between alliance shape parameters, alliance patterns and outcome and we hypothesize that one of the shape parameters, or one of the patterns, relate to therapeutic outcome.

Method

Participants

The patients (N = 50) were self-referred university students at a French-speaking University Consultation Center, consulting for various psychiatric difficulties, such as Adjustment Disorder (28%), Depression (Major Depression; 46%) and Anxiety Disorder (Generalized Anxiety Disorder, Panic Disorder, Social Phobia; 38%), as well as 23% of Personality Disorders (clusters B & C). DSM-IV-diagnoses (APA, 1994) were established using the SCID I and II (Spitzer, Williams, Gibbon, 1997). Their mean age was 24 years (SD = 4.3; range = 18-39); 35 (70%) were female. They were recruited after their intake session by research staff proposing the study to the patients. Upon approval, they were referred to one of the therapists. All participating patients gave written informed consent for their data to be used for research; the present study obtained ethical clearance by the expert commission of the Department of Psychiatry involved.

The therapists (N = 13) were experienced psychiatrists and psychotherapists; all had over 10 years of clinical experience in the field of Psychodynamic Psychotherapy.

Treatment

Short-term psychodynamic psychotherapy (STDP) is a manual-based (Gilliéron, 1997), time-limited psychological form of therapy based on psychoanalytic theory and developed in order to respond to the increasing demand for short-term efficient treatments in psychotherapy (Malan, 1976; Sifneos, 1987; Gilliéron, 1997). The efficiency of STDP in

mood, anxiety and personality disorders has been established by a number of studies (see Leichsenring & Leibing, 2003; Crits-Christoph, 1992; Beretta, de Roten, Kramer, Michel, & Despland, in revision).

Measures

Helping Alliance questionnaire HAq – I (Alexander & Luborsky, 1986). This self-report 11-item questionnaire is rated by means of a 6-point-Likert scale (ranging from –3 "I strongly feel that this is not true" to +3 "I strongly feel that this is true"). Thus, the total score of HAq-I ranges theoretically from –33 to 33. According to Luborsky (2000), its psychometric properties are as valid as for other current alliance questionnaires. The French validation study was carried out by Bachelor et Salamé (2000) and yielded satisfactory coefficients. Internal consistency for the whole scale was alpha = .89.

Symptom Check List SCL-90-R (Derogatis, 1994). This questionnaire includes 90 items addressing various somatic and psychological signs of distress. These items are scored using a Likert-type scale from 0 (not at all) to 4 (very much). Our study used the General Symptomatic Index (GSI, score ranging from 0 to 4), which is a mean rated over all symptoms. The French validation study was carried out by Pariente & Guelfi (1990). Cronbach alpha for this sample was .96. Pre- and post-scores were used and analysed after computation of residual gains, using the same procedure as Stiles et al. (2004).

Procedure

At the end of each therapy session, the patient filled in the alliance questionnaire. A total of $N = 62$ were initially included in this naturalistic study; 10 did not start their treatment, two dropped out after a few sessions, thus, $N = 50$ patients were finally included in the study. The study includes psychotherapeutic treatments lasting up to 40 sessions, with a mean of 24 sessions ($SD = 10.0$, range 9 – 40). The specific duration of the treatment was negotiated between the patient and the therapist based on clinical criteria. However, the

treatment had to be completed by session 40 the latest. Alliance ratings were checked systematically and presented no missing data.

Data analyses

Hypotheses (1) and (2): We applied the shape-of-change procedure, performed cluster analysis (Borgen, & Barnett, 1987; Ward, 1963; Hair, & Black, 2000) yielding classification of the psychotherapies by their resemblance as regards the five shape-of-change parameters. The cubic term, not included in Stiles et al.'s (2004) study, was added to allow the formalization of variations occurring during longer therapeutic processes, as suggested by Hentschel (2005) and Westermann (1998). The shape-of-change methodology (Stiles et al., 2004) defines four basic parameters of change in alliance evolution over sessions: (1) Intercept I, measured at midtreatment (centered sessions), (2) Slope S, describing the positive or negative linear trend, (3) Curve C, representing the degree of quadratic U-shaped or inverted U-shaped trend, (4) Cubic term T and (5) variation ε, operationalized by the RMSE (the square root of the mean of the squares of the residuals from the regression equation). These parameters are calculated for each alliance evolution individually. They yield the following alliance curve estimation of y, where x represents the session:

$$y = I + Sx + Cx^2 + Tx^3 + \varepsilon.$$

The four parameters for each process, excluding I, are introduced into ascendant hierarchical cluster analysis (Ward's method, Squared Euclidian Distance). To determine the number of clusters found, we applied Hair and Black's stopping rule (2000; "sudden jumps"). As there were no missing data for the alliance measure, we did not apply any specific correction. However, the cluster approach does not take into account the specific length of the psychotherapy.

Finally, we performed hierarchical linear modeling (HLM; Bryk, & Raudenbush, 1987), a nested design where sessions (change across time) are modeled on level 1 ($Alliance_{ij} = \beta_{0i} + \beta_{1i}(session_{ij}) + \varepsilon_{ij}$) and patients (between-person change) on level 2 (Intercept: $\beta_{0i} = \gamma_{00} + u_{0i}$; Slope: $\beta_{1i} = \gamma_{10} + u_{1i}$) This analysis yields the general alliance progression, while controlling for the lengths of the psychotherapies. This is necessary, as the number of psychotherapies decreases over the course of 40 sessions, due to negotiated early terminations We used the program MixReg (Hedecker, & Gibbons, 1996).

Hypothesis (3): We performed a *t*-test (between-cluster-comparison, equality of the variance not assumed), Pearson correlational and hierarchical regression analyses linking alliance parameters and outcome (residual gain scores described above).

Results

Parameters of Shape

For each psychotherapy, all five parameters of change were computed, independently of the length of each treatment. These parameters were then clustered (see below; Figure 1); the parameters of the shape of the resulting three clusters are presented in table 1.

Hierarchical Linear Modeling (HLM) applied to the whole sample ($N = 50$) yields a significant average slope of .27 ($Z = 5.08$; $p < .001$), along with a significant residual variance coefficient (Estimate = 25.22; $Z = 23.86$; $p < .000$) and a significant intercept (Estimate = 11.48; $Z = 10.01$; $p < .000$).

Patterns of Alliance Shape

Based on cluster analysis (see Figure 1 for the result), two main patterns were observed, along with a third one (table 1): We named them (1) Stable, (2) Linear growth, and (3) Quadratic growth (which is underpowered). The stable ($n = 21$) is characterized by a high level of alliance and low parameters of change yielding the stability. The linear ($n = 20$)

growth is characterized by a medium level of alliance at the general mid-treatment (session 20) and medium parameters of change yielding a pattern where the linear growth (slope) prevails. Finally, the quadratic growth (n = 9) shows a low level of alliance at mid-treatment and high parameters of change yielding a pattern where the quadratic growth (curve) prevails, thus possibly approaching the U-shaped pattern or a quadratic evolution. Treatment duration (exact number of sessions) did not correlate with any alliance change parameter or outcome.

Alliance-Outcome

Outcome data was available for n = 46 of the cases; four cases did not fill in the questionnaire at the end of treatment. Clinically significant change on GSI (using the method defined by Jacobson, & Truax, 1991) occurred in at least 60% of the cases (Effect size = .99; see Beretta et al., in revision).

The stable pattern (n = 20) was compared to the two growing patterns taken together (n = 26), because of the insufficient number of observations in the third cluster. The comparison of growing alliance clusters with a non-growing (stable) cluster remains conceptually and empirically meaningful (see also the results by de Roten et al., 2004). Growing clusters yield a higher level of symptom reduction than the stable one ($t(43) = 2.46$; $p < .05$; $ES = 1.15$). Alliance mean, the level of alliance, does not correlate with outcome (r = .04, ns). In a hierarchical regression analysis which includes all five parameters of change (outcome as dependent variable), it appears that the slope parameter predicts outcome best (df = 44; $R^2 = .13$; $F = 6.33$; $p < .01$; see table 2; model 1).

Discussion

Our results indicate that the shape-of-change methodology yields a limited number of alliance patterns over the course of psychodynamic psychotherapy. These patterns can be described in clinically meaningful terms. Thus, by taking into account between-subject

variation, we confirm the importance of cluster analysis in clinical data (see also for a discussion Morral, Iguchi, Belding, & Lamb; 1997). Consistent with our hypothesis and relevant literature, two growing patterns - quadratic and linear - and one stable alliance pattern appear (see also de Roten et al., 2004; Kivlighan et al., 1995; Kramer, et al., 2008; Stiles et al., 2004). According to Hair and Black (2000), the results based on cluster analyses vary as a function of several methodological criteria, *i.e*., input variables, measures, standardization of scores, clustering procedures, the presence of outliers. As all criteria were the same when comparing Stiles et al.'s (2004) and our studies, apart from alliance measure, length of therapeutic process and other sample-specific characteristics, we can be confident that there are two alliance patterns which can be generalized over the course of time-limited psychotherapy: linear-growing and stable. We would add, as a hypothesis, quadratic growth – or U-shaped - as a third option of alliance shape over time-limited psychotherapies (Kivlighan, & Shaughnessy, 2000).

The importance of the linear term is underscored by its link with outcome: (1) taken together, the growing alliance patterns yield a better outcome than the stable one; (2) of all five parameters of shape-of-change (intercept, slope, curve, cubic term and variation), it is the slope that predicts the therapeutic result best. Thus, the more progress the alliance makes during psychotherapy - in a steady manner - , the better the outcome. In the case of our sample, the shape of the alliance evolution over the course of entire therapies is of more importance for a positive outcome than the level of alliance (mean alliance), for which we found no significant link with outcome. This result is even more compelling, if we consider that the stable alliance pattern – related to the lower outcome - has the highest intercept at mid-treatment.

In our study, alliance patterns do have some relevance with regard to outcome, whereas in Stiles et al. (2004), this was not the case. Variations in the length of the therapeutic

processes might account for the divergent results between the two studies; the fact that the alliance patterns were based on processes of up to 40 sessions may explain a higher outcome variance than in patterns based on processes of up to 8 or 16 sessions. If the focus is laid on longer psychotherapies, as in our case, the linear growth is more relevant for outcome than in shorter psychotherapies, as in Stiles' study, where no linear growing pattern was found. This result indicates that dyadic alliance construction processes are not limited to very early sessions (see de Roten et al., 2004), but may need to continue until the very last session of the treatment, in order to result in a productive outcome.

Our data suggest that the level of alliance imports little with regard to outcome. This complements the literature on alliance phase suggesting that early high alliance is related to outcome (Gelso & Hayes, 1998; de Roten, et al., 2004). We might hypothesize that alliance level matters in the early phase, whereas alliance shape matters for the whole duration of the psychotherapy. The importance of the linear term partially contradicts Hentschel's (2005) and Westermann's (1998) more complex models underlining the importance of the cubic term in alliance development over the course of time-limited psychoanalytic treatments (see also the methodological discussion of this point by Hayes et al., 2007). The operationalization of alliance in terms of coordination by Westermann (1998) might account for the divergent results, whereas in Hentschel's (2005) research, the procedure for single-case study is more liable to render the cubic shape of alliance, a term less likely to be prevalent in agglomerated data based on means per sub-group, as is the case in our study. What is more, we were able to confirm tentatively the presence of a quadratic pattern, *i.e.* in the form of a U-shaped pattern, implying high level at the beginning, low at mid-treatment and high at the end (Kivlighan et al., 2000; Gelso, & Carter, 1994). This pattern is consistent with our hypothesis and is characterized, together with the linear pattern, by a positive effect in symptom reduction. Finally, we did neither find any cubic pattern, nor high coefficients for this change parameter

(see table 1). This result might indicate that in the case of longer psychotherapies, it is not necessary to include a cubic term in the shape-of-change equation. The simpler equation presented by Stiles et al. (2004) and Kramer et al. (2008) might suffice.

We included HLM methodology to avoid problems arising due to the missing values – resulting from the differences in the length of the psychotherapies involved - and to control for the effect of data dependency, for such factors obviously limit the shape-of-change methodology. The overall (linear) growth in these data is significantly positive, as is the mean intercept at intake. Once again, this result indicates that the positive slope is an overall characteristic of alliance evolution over time-limited psychotherapy and underscores the previous results (see also the results presented by Tasca et al., 2007). In addition, it confirms our hypothesis from a different methodological vantage point: construction processes are not limited to early sessions but may be observed over the entire course of treatment. The therapist, mindful of this result, should continually foster alliance construction processes and not just limit such efforts to very early sessions.

Hence, the shape of alliance evolution – depictable in the form of patterns representing different groups of patients over the course of treatment – is an important ingredient in the therapeutic outcome. This importance is not diminished by any awareness of the abstract and somewhat *idealized* status of these patterns, which are unlikely to be observed in clinical reality, where more fluctuations are prevalent. In a fine piece of music, many factors if taken individually are dissonant, yet, together they contribute to what we perceive and enjoy as a harmoniously-evolving pattern of sound. In more or less the same way, the patient's alliance evolves steadily over time, with underlying single fluctuations and at times leaps, short stops, ruptures and resolutions. Several factors enter a complex interplay producing the "shape" , similarly to a pattern of music.

Using this metaphor of music in understanding the organization of alliance change parameters leads us to the main challenge for further studies aiming at formalizing alliance shape: how underlying fluctuations should be managed, investigated and their role understood. Some might be the result of the presence of local V-shaped patterns. Our methods are based on aggregated data on mean scores limiting session-to-session within-subject variations and do not take into account singular rupture-resolution sequences between one session and another (Castonguay, Constantino, & Grosse Holtforth, 2006; Stiles et al., 2004). Moreover, it is important, when applying shape-of-change, not to forget the subjective aspect of the interpretation of cluster solutions (Hair, & Black, 2000) and the possibility of a decreasing number of observations per point in time over the course of psychotherapy. On the other hand, when applying HLM, it is essential to be aware of the between-subject variation in alliance evolutions over time, based on assumptions of growth modeling (see also the critique by Henry, Strupp, Schacht, & Gaston, 1993). Such sources of variation might partially explain high residuals in our analyses. Finally, in this study, the therapist's and independent judge's views have not been included. Yet the study indicates that the approach using alliance monitoring and its formalization is promising; it contributes to a more detailed understanding of the nature and role of shape of alliance processes over time, underscores the importance of the slope parameter and its productive relationship with outcome.

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Table 1

The five parameters of change yielded by the adapted shape-of change procedure as a function of pattern

Patterns	Intercept[a]	Slope	Curve	Cubic	Residuals
Stable (n = 21)	18.18	.13	.02	.00	19.74
Linear (n = 20)	12.69	.34	.06	.02	21.70
Quadratic (n = 9)	5.20	1.43	.14	.09	51.86

[a]Intercept at mid-treatment

Note. Raw mean scores for each cluster reported. See Method section for details of computation.

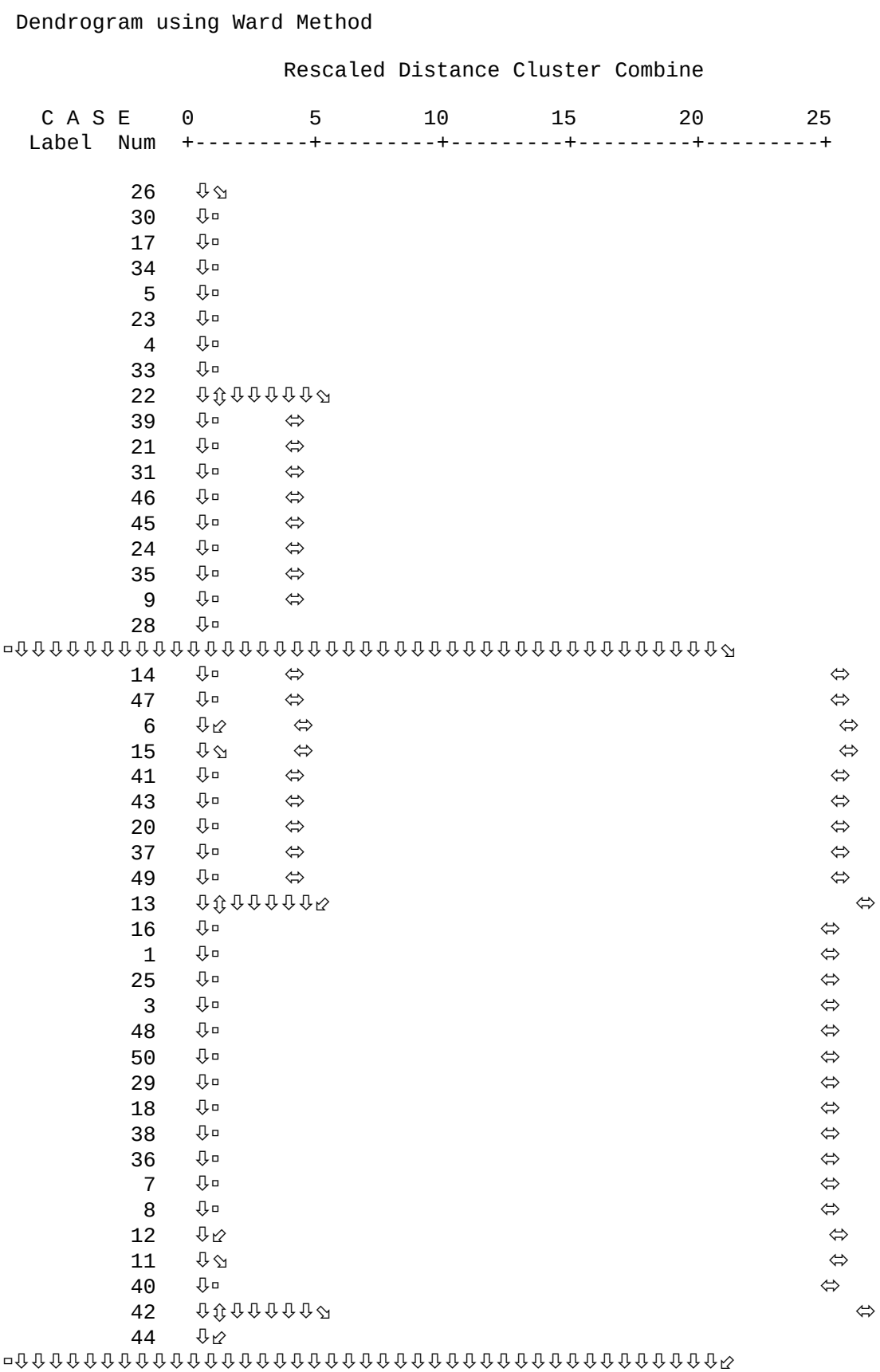
Table 2

Hierarchical Regression on the five parameters of change predicting therapeutic outcome

Model	*B*	*SE B*	β
Model 1			
Slope	.14	.06	.36**
Model 2			
Slope	.16	.06	.39**
Curve	.33	.49	.10
Model 3			
Slope	.11	.07	.27
Curve	.66	.57	.21
Cubic	-1.08	.98	-.24
Model 4			
Slope	.10	.08	.26
Curve	.78	.63	.24
Cubic	-1.17	1.00	-.26
Intercept	.00	.01	.08
Model 5			
Slope	.08	.08	.21
Curve	.89	.64	.28
Cubic	-1.35	1.02	-.30
Intercept	.01	.01	.19
Residuals	.00	.00	.17

** $p < .01$

Figure 1


Dendrogram using Ward Method
Rescaled Distance Cluster Combine
C A S E
Label Num
0
5
10
15
20
25
26
30
17
34
5
23
4
33
22
39
21
31
46
45
24
35
9
28
14
47
6
15
41
43
20
37
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1
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42
44

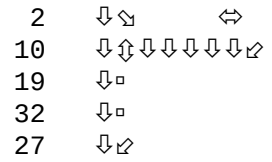

Figure Captions

Figure 1. Dendrogram from the Cluster Analysis as a basis for the Shape-of-Change procedure