Schema Change Without Schema Therapy: The Role of Early Maladaptive Schemata for a Successful Treatment of Major Depression

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Early maladaptive schemata (EMS) have repeatedly been shown to be associated with several psychopathological conditions, including depression. Schema therapy proposes interventions that aim at altering EMS. In the present study, we examined the effect of an integrative psychodynamic inpatient therapy without explicit focus on EMS in a sample with major depression. Forty-seven (38 female, 9 male) patients filled out the Symptom Checklist (SCL-90-R) and the Young Schema Questionnaire (YSQ) at the beginning and end of the treatment. Results revealed that EMS were significantly reduced in three out of five schema domains. Strong endorsement of EMS at the beginning of treatment tended to predict symptom reduction. More importantly, the reduction of symptom distress during treatment was strongly associated with a reduction in EMS of the schema domain *Impaired Autonomy/Performance*. We discuss that changes in EMS are highly relevant for changes in symptom distress but that EMS can not only be changed by schema therapy but also by other approaches, like psychodynamic therapy.

Among all mental disorders, major depressive disorder is the most prevalent one. Approximately 5% of the population suffers from major depressive disorder (Murphy, Laird, Monson, Sobol, & Leighton, 2000), and about one of five individuals will experience at least one episode of major depression in their life (Kessler et al., 2005).

In his influential cognitive theory of depression, Beck (1967, 1987) introduced negative automatic thoughts, negative core beliefs, and negative self-schemata as key vulnerability factors for the development of depressive disorders. These cognitive structures predispose people toward more negative interpretations of life events, which in turn foster depressive behavior. Building on this work, Young, Klosko, and Weishaar (2003) proposed that *early maladaptive schemata* (EMS) play a causal role in the development of several psychopathological conditions, including depression (cf. Halvorson et al., 2009). According to Young (1994), EMS are built on the basis of a continuing adverse

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pattern of experience in childhood. Although these schemata are functional during the time of acquisition, they often become dysfunctional at later life stages or in other environments. Schemata may become dormant in a supportive surrounding, but the individual may stay vulnerable to psychiatric disorders if schemata are activated.[1]

To measure the endorsement of maladaptive schemata, Young and Brown (1990) developed the Young Schema Questionnaire (YSQ) with 16 schemata that are grouped in five schema domains. The first revision with 15 schema domains is available in a long (YSQ-L2) version with 205 items and a short form (YSQ-S2) with 75 items, whereas the second revision (YSQ-L3) consists of 18 schemata and 232 items. The German version of the YSQ used in the present study is described in more detail in the Method section.

As EMS are thought to emerge most likely automatically and are often accompanied by high levels of affect, it has been assumed that they are highly resistant to change (Schmidt, Joiner, Young, & Telch, 1995). To develop a therapeutic approach that aims at altering maladaptive schemata, Young integrated gestalt, object relation, and psychoanalytic principles into a cognitive-behavioral framework (Young, 1994). This schema therapy was, for example, successfully applied in the treatment of borderline personality disorder (Farrell, Shaw, & Webber, 2009; Giesen-Bloo et al., 2006), substance dependence with personality disorder (Ball, 2007), posttraumatic stress disorder (Cockram, Drummond, & Lee, 2010), and agoraphobia with personality disorder (Gude & Hoffart, 2008).

As the notion of self-schemata was introduced to psychotherapy by Beck in the 1960s (e.g., Beck, 1967), there is much more research on these earlier conceptualizations of schemata than on the more recent theory by Young (1994). Research on self-schemata

as proposed by Beck mainly used questionnaires like the Automatic Thoughts Questionnaire (ATQ, Hollon & Kendall, 1980) or the Dysfunctional Attitudes Scale (DAS, Weissman & Beck, 1978). These instruments are focused on depressive schemata like low self-esteem, helplessness, or negative expectations. In contrast, EMS are conceptualized to cover a broader range of maladaptive self-related thoughts. The YSQ version applied in the present study, for example, measures 19 EMS. Whereas in traditional cognitive behavior therapy (CBT), one focus among others is to change negative self-schemata of depression as conceptualized by Beck (1967, 1987; see also Padesky, 1994, for different techniques to change schemata), schema therapy addresses a broader range of schemata and further suggests more detailed treatment strategies concerning the schemata. These strategies include, for example, *limited reparenting*, *imagery*, and *chairwork* (cf. Young et al., 2003). As a consequence of the differences between the accounts by Beck and Young, it is unknown if results from research using narrower schema questionnaires like ATQ or DAS (as, for example, reviewed by Oei & Free, 1995) can be transferred to early maladaptive schemata.

In line with Young's account, early maladaptive schemata have been repeatedly demonstrated to be associated with depression. Using the Young Schema Questionnaire, Halvorsen and colleagues (2009) observed higher endorsement of EMS for depressed than for non-depressed participants on twelve of 16 schemata, whereas Shah and Waller (2000) obtained significant differences for all 16 schemata. Cooper, Rose, and Turner (2005) found differences of nine EMS between participants with low versus high BDI (Beck Depression Inventory; Beck & Steer, 1987) scores. In addition, several authors found significant positive correlations between YSQ scores and the BDI (Calvete,

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1. Let us note that this conceptualization shares some similarities to the work of Horowitz, Wilner, Marmar, and Krupnick (1980; see also Horowitz, 1991, for an overview on person schemata) on pathological grief, postulating that latent self-images resulting from earlier relationships can be activated by an experience of loss.

Estévez, López de Arroyabe, & Ruiz, 2005; Halford, Bernoth-Doolan, & Eadie, 2002; Specht, Chapman, & Celluci, 2009; Spinhoven, Bockting, Kremers, Schene, & Williams, 2007). Also, Stopa, Thorne, Waters, & Preston (2001) found significantly positive correlations of ten schemata of the YSQ-L2 and eight schemata of the YSQ-S2 with the depression scale of the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1977).

Although these studies demonstrate a reliable association of EMS and depression, little is known about the effects of schema therapy in depressed samples. However, there is a study by Halford and colleagues (2002) examining the effects of a traditional cognitive behavioral therapy setting without a specific schema focus on EMS in depressed and anxious patients. Halford and colleagues (2002) expected that maladaptive schemata do not change over the course of CBT. However, they found significant decreases in all three higher order factors although effect sizes were small. Moreover, they expected that a high endorsement of maladaptive schemata predicts poor response to treatment, because maladaptive schemata are conceptualized as deep-seated structures that are acquired during childhood and are not easy to change. Contrary to their hypothesis, the higher order factor labeled *Disconnection* predicted significantly larger reductions in BDI scores in a stepwise regression analysis, whereas the two other factors did not contribute significantly. In line with this, Welburn and colleagues (2000) found the schema *Abandonment* to predict reductions in symptom distress in a day treatment program.

If maladaptive schemata can be altered in a CBT that is not based on Young's schema therapeutic approach, as demonstrated by Halford and colleagues (2002; see also Welburn et al., 2000), one may also assume that other psychotherapeutic treatments can affect EMS. Indeed an analogous pattern has been observed by earlier studies that applied cognitive schema questionnaires in psychotherapeutic settings that were not focused on cognitive schemata. For example, Fleming and Thornton (1980) and McNamara and Horan (1986) showed that approaches like nondirective groups and Rogerian therapy, respectively, can reduce cognitive schemata relevant for depression as measured by the Dysfunctional Attitudes Scale or Automatic Thoughts Questionnaire. Thus, traditional cognitive schemata can be changed by psychotherapy without explicit schema focus.

In the present study, we apply the more comprehensive YSQ in an integrative predominantly psychodynamic therapy setting that was not explicitly focused on early maladaptive schemata. Such integrative programs, often based on a psychodynamic framework, are established in the majority of psychosomatic hospitals in Germany. Participants were inpatients suffering from affective disorder. Building on the work of Halford and colleagues (2002) who found that EMS are affected by cognitive therapy, our first hypothesis was that EMS are altered during the course of integrative psychotherapy. Second, we hypothesized that high scores in EMS were predictive for a positive therapy outcome, as observed by Halford and colleagues (2002; see also Welburn et al., 2000). If a high endorsement of EMS at the beginning of the treatment does not prevent therapeutic change, one may nevertheless assume that a change in schema structures during therapy facilitates symptom reduction. Hence, our third hypothesis claimed that reductions in EMS predict positive therapy outcome.

METHOD

Participants

A sample of 57 consecutive inpatients of the Psychosomatic University Hospital Bonn, Germany, with major depression participated in the present examination. Main criteria for hospitalization were insufficient improvement during outpatient treatment combined with limited functioning in everyday life. All had taken part in an approxi-

mately two-hour diagnostic and anamnestic interview by an experienced psychotherapist of the Psychosomatic University Hospital Outpatient Unit using DSM-IV-TR (American Psychiatric Association, 2000) diagnostic criteria. One patient had to be excluded from our sample because she met our first exclusion criterion, as she had a comorbid psychotic disorder. None of the patients was older than 65 years or did not speak German, which were our other exclusion criteria. Thus, 56 patients participated in our study at the beginning of the treatment. Patients were asked to fill out the German version of the YSQ (Young, Brown, Berbalk, & Grutschpalk, 2001) and the revised Symptom Checklist (SCL-90-R; Derogatis, 1977; Franke, 1995) for the first time during the first week and for a second time during the last week of their stay in the hospital. During the course of treatment, nine patients dropped out. In four cases, the treatment was discontinued by therapists for disciplinary reasons (e.g., repeatedly drinking alcohol or, for those patients with anorexia nervosa, not fulfilling the weight gain contract for more than three weeks). In three cases, the treatment was discontinued by the patients due to strong conflicts with other patients (e.g., difficulties in emotion regulation when confronted with annoying behavior of other patients). One patient had somatic complications, and one patient refused to fill out the questionnaires at the completion of the therapy and gave emotional distress caused by the upcoming discharge from hospital as reason. At the beginning of the treatment, there were no differences between dropouts and completers with respect to age ($t_{(54)}$ = 0.73, p = .47), gender ($\chi^2_{(1, 56)}$ = 0.5, p = .83), symptom distress measured with SCL-90-R GSI score ($t_{(47)}$ = 0.12, p = .90), or any of the five schema domain scores of the YSQ (all p's > .22). As a result, we obtained 47 complete data sets of patients who completed questionnaires at the beginning and end of treatment. The sample was comprised of 38 women and nine men, the average age was 35.47 years (SD = 12.06), 29 (63%) had

completed high school, and seven (15%) had a university degree. Fourteen (30%) received no psychotropic medication at the start of the treatment, 23 (49%) received antidepressants, 11 (23%) sedatives, and 5 (11%) antipsychotics. Psychiatric comorbidities were 20 personality disorders, 16 eating disorders, nine anxiety disorders, four somatoform disorders, and one posttraumatic stress disorder. Because all patients also filled out the SCL-90-R on a routine basis at the beginning of their waiting time before admission to the hospital, we also obtained data to define a waiting list control condition as a check of treatment effectiveness.

Measures

Young Schema Questionnaire – S2 – German Version (YSQ). The YSQ (Young et al., 2001) is a six-point Likert-scaled self-report questionnaire designed to measure the endorsement of early maladaptive schemata. Patients are requested to mark how well each statement might describe him or herself from 1 (*completely untrue*) to 6 (*completely true*). This German short version was originally based on the YSQ-L2, but includes additional schemata that partially overlap with the new schemata of the YSQ-L3. It comprises 95 items grouped in 19 schemata of five schema domains: (1) *Disconnection/Rejection* (schemata: *Emotional Deprivation, Abandonment/Instability, Mistrust/Abuse, Isolation, Defectiveness/Shame, Social Undesirability*); (2) *Impaired Autonomy/Performance* (schemata: *Failure to Achieve, Dependence/Incompetence, Vulnerability, Enmeshment/Undeveloped Self*); (3) *Impaired Limits* (schemata: *Entitlement/Grandiosity, Insufficient Self-Control/Self-Discipline*); (4) *Other-Directedness* (schemata: *Subjugation, Self-Sacrifice, Approval-Seeking*); and (5) *Overvigilance/Inhibition* (schemata: *Emotional Inhibition, Unrelenting Standards, Negativity/Vulnerability to Error, Punitiveness*). Sample items for the four schemata that constitute the schema domain *Impaired*

Autonomy/Performance and that are of particular importance for the present study are: "I'm not as talented as most people are at their work" (*Failure to Achieve*); "My judgment cannot be relied upon in everyday situations" (*Dependence/Incompetence*); "I can't seem to escape the feeling that something bad is about to happen" (*Vulnerability*); and "My parent(s) and I tend to be overinvolved in each other's lives and problems" (*Enmeshment/Undeveloped Self*). Based on a sample of over 200 participants, Grutschpalk (2008) reports reliabilities in terms of Cronbach's α of .72 to .93 for the 19 schema scales of the German version of the YSQ-S2 used in the present study. For the Finnish short form, the 18-factor structure has been confirmed (Saariaho, Saariaho, Karila, & Joukamaa, 2009), and for earlier English versions of the short form, the structure with 15 schemata has been replicated with acceptable internal consistencies of the scales (Hedley, Hoffart, & Sexton, 2001; Waller, Meyer, & Ohanian, 2001; Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002). In the present study, Cronbach's α for the YSQ domains were .72 (beginning of treatment) and .74 (end of treatment) for the domain *Impaired Limits* and ranged between .85 and .93 for the other four domains at both times of measurement.

Symptom Checklist – Revised (SCL-90-R). In the present study, we used Franke's (1995) German translation of the SCL-90-R (Derogatis, 1977). In this 90-item questionnaire, participants are asked to mark how much discomfort each of the items has caused during the past seven days on a five-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Items are grouped in nine scales (somatization, obsessive-compulsive, interpersonal sensitivity, hostility, phobic anxiety, depression, anxiety, paranoid ideation, and psychoticism), but the questionnaire also provides the Global Severity Index (GSI), which is the mean score of all responses. The GSI is viewed as a reliable reference score sensitive to change for evaluating results of psychotherapy on the level of subjectively experienced symptoms (cf. Schauenburg & Strack, 1999). Retest reliabilities of the nine scales fall between $r = 0.7$ and 0.9 in U.S. and German samples (Derogatis, 1977; Franke, 1995).

Treatment Conditions

The mean duration of the therapy for the present sample was 55.70 days (*SD* = 10.52). Patients participated four times a week in a psychodynamic group therapy lasting 1.5 hours per session. In addition, they had individual psychodynamic therapy sessions once a week. Twice a week, a 1.5-hour concentrative movement therapy session took place. Concentrative movement therapy is mainly based on psychodynamic and Gestalt theory and is very common in psychosomatic hospitals in Germany. One of its major aims is to use experiences emerging from movement work to make up biographic material. Patients also participated in a weekly psychodynamic art therapy group and a cognitive-behavioral role-play group lasting 1.5 hours each. Finally, they joined a progressive muscle relaxation group twice a week. The four patients with panic disorder and/or agoraphobia additionally received individual manualized cognitive-behavioral therapy, including exposure therapy focused on panic symptoms and avoidant behavior. The four patients with anorexia nervosa agreed to a weight gain contract and maintained a food diary. Comparable integrative treatment settings based on psychodynamic theory are common in German psychosomatic hospitals. It has repeatedly been demonstrated that these treatments have good effectiveness (Haase et al., 2008; Salzer et al., 2010), and the specific treatment conditions at the Psychosomatic University Hospital Bonn were shown to be effective (Geiser, Imbierowicz, Conrad, & Liedtke, 2005).

Procedure

All patients participated on a voluntary basis during the first and last week of their treatment at the Psychosomatic University Hospital, Bonn, Germany, and they signed informed consent forms. Permission to conduct the study was granted by the local ethics committee. Because the present results were obtained as a part of a larger study, patients were first administered an Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998) on a computer, and afterwards they were asked to fill out several questionnaires, including the Young Schema Questionnaire (Young et al., 2001) and the Symptom Checklist – Revised (Derogatis, 1977; Franke, 1995). These two sessions at the beginning and end of treatment took about 2 hours each.

Statistical Analysis

The statistical analyses were performed with PASW Statistics version 18 for Windows (SPSS Inc., Chicago, IL). Alpha error level was set to .05. Power analyses with G*Power (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007) for the matched *t*-tests used below with a sample size of 47 to test for large effects with bonferroni correction for five tests ($p_{corrected}$ = .05 / 5) resulted in a power of $(1-\beta)$ = .99.

RESULTS

Although we did not set up any hypotheses concerning treatment outcome, we will focus on it in the present paragraph, because the following analysis of schema change during treatment is based on the assumption that the treatment is effective. To analyze treatment outcome, SCL-90-R GSI scores were used as a measure of general symptom distress. Because SCL-90-R scores of the patients were routinely collected at the beginning of the waiting time in the run-up of the hospital admission, we were able to compile a control condition for treatment evaluation. Thereby, we do not only test if the reduction of SCL-90-R scores over the course of treatment was significant, but we also compare this reduction to changes during the waiting time. Unfortunately, four of the 47 patients for whom we obtained data at the beginning and the end of therapy had not completed the SCL-90-R at the beginning of the waiting time. Thus, our sample size for the analysis of symptom distress was reduced to 43. By coincidence, waiting time was exactly as long as treatment (55.70 days), although larger standard deviations were observed for waiting time (37.49 days) than for treatment duration (10.52 days). At the beginning of the waiting time, mean GSI scores were 1.59 (*SD* = 0.60); when therapy started, mean GSI scores had declined slightly to 1.47 (*SD* = 0.59); and at the end of therapy, mean GSI scores were further reduced to 0.86 (*SD* = 0.62). An ANOVA for repeated measurements revealed a significant linear effect, $F(1, 42) = 47.54$, $p < .001$, $\eta^2 = 0.53$, that was moderated by a significant quadratic effect, $F(1, 42) = 10.66$, $p < .01$, $\eta^2 = 0.20$, thereby confirming that the decline of symptom distress was substantially more pronounced during therapy than during waiting time. Bonferroni-corrected post hoc tests showed that the decline during waiting time was not statistically significant (*p* = .32), whereas the reduction during therapy was significant (*p* < .001).[2]

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2. To evaluate therapy outcome, we used a reliable change index of RCI = 0.43 to discriminate statistically significant GSI score changes on an individual basis (Schauenburg & Strack, 1999; see also Jacobson & Truax, 1991). During waiting time, 8 (19%) of the 43 patients improved statistically and 35 (81%) did not improve statistically (i.e., GSI score did not improve more than 0.43). During therapy, 26 (55%) of the 47 patients improved statistically, whereas 21 (45%) did not. A χ^2-test demonstrated that these frequencies differed significantly between waiting time and therapy ($\chi^2_{(1,90)} = 12.88$, $p < .001$).

TABLE 1. Means, Standard Deviations, Matched Pairs t-Statistics, and Effect Sizes of Schema Domain Scores

Schema domain	Beginning of treatment		End of treatment		t (df = 46)	Cohen's d
	Mean	SD	Mean	SD		
Disconnection/Rejection	49.29	19.41	43.97	19.00	2.12	0.28
Impaired Autonomy/Performance	37.50	18.28	28.04	16.87	3.90**	0.54
Impaired Limits	40.34	15.89	37.06	15.84	1.37	0.21
Other-Directedness	54.98	18.16	45.96	17.91	2.87*	0.50
Overvigilance/Inhibition	52.43	18.09	43.98	17.30	3.11*	0.48

Note. *$p < .05$; **$p < .01$; alpha levels were Bonferroni corrected.

Comparisons of schema domain means between beginning and completion of treatment revealed that the endorsement of early maladaptive schemata declined for all five schema domains. The means are presented in Table 1, and the changes were tested by matched pairs *t*-tests. After Bonferroni correction by dividing α-levels by five, the decline of schema endorsement was significant for the three schema domains *Impaired Autonomy/Performance, Other-Directedness,* and *Overvigilance/Inhibition.* Means and standard deviations for all schemata are given in the Appendix. We do not report significances for the single schemata, because after a Bonferroni correction for the 19 schemata, the test power would be too low.

To analyze whether the endorsement of maladaptive schemata at the beginning of therapy can predict therapy outcome, we conducted linear regression analysis with the change of SCL-90-R GSI scores between beginning and completion of therapy as dependent variable. As predictors, age and gender were entered in a first block, and the patients' scores in the five schema domains at the beginning of therapy were entered in a second block. Age and gender alone explained no significant amount of variance, $R^2 = .01$, $F(2, 44) = 10.15$, $p = 0.77$. However, after the five schema domain scores were added, the model explained 17% of variance ($R^2 = .30$, adjusted $R^2 = .17$), and this change was significant, $\Delta R^2 = .30$, $\Delta F(5, 39) = 3.13$, $p < 0.05$. Thus, the schema domain

scores at the beginning of therapy generally predicted reduction of symptom distress. However, none of the predictors contributed significantly (all p's > .1; cf. Table 2). Negative regression coefficients of domains II to V indicate that higher schema endorsement was predominantly associated with more symptom reduction. Note that we used the inclusion method of linear regression, which is more conservative than, for example, stepwise regression. This method may sometimes be too conservative, because mainly predictors explaining unique variance become significant.

We conducted another linear regression to evaluate the relationship of schema change during therapy and therapy outcome. The dependent variable was again the difference of SCL-90-R GSI scores between beginning and end of therapy. As predictors, age and gender were entered in a first block, and the differences of the five schema domains between beginning and completion of treatment were entered in a second block. Age and gender alone explained no significant amount variance, $R^2 = .01$, $F(2, 44) = 10.15$, $p = 0.77$. When the five schema domain change scores were also entered, the model explained 58% of variance ($R^2 = .65$, adjusted $R^2 = .58$), and this change was significant, $\Delta R^2 = .63$, $\Delta F(5, 39) = 13.94$, $p < 0.001$. Thus, the changes in the five schema domains generally predicted reduction of symptom distress. More specifically, *Impaired Autonomy/Performance* was the only

TABLE 2. **Results of the Linear Regression Analysis with Schema Domain Scores at Therapy Onset as Predictors for Changes in SCL-90-R GSI Scores**

	β	*T*	*p*
Model 1			
Age	.10	.67	.51
Gender	.07	.46	.65
Model 2			
Age	.00	0.03	.98
Gender	.16	0.99	.33
Domain I: Disconnection/Rejection	.02	0.09	.93
Domain II: Impaired	-.07	-0.31	.76
Autonomy/Performance			
Domain III: Impaired Limits	-.18	-0.97	.34
Domain IV: Other-Directedness	-.15	-0.65	.52
Domain V: Overvigilance/Inhibition	-.30	-1.62	.11

Note. SCL-90-R GSI = Global Severity Index of the revised Symptom Checklist.

significant predictor (β = .49, p < .001), whereas all other predictors did not contribute significantly (all *p*'s > .08, cf. Table 3). Positive regression coefficients indicate that stronger schema change was associated with more symptom reduction.[3]

An explorative linear regression was conducted to find out whether the significance found for the domain *Impaired Autonomy/Performance* could be traced back to one or more of the four schemata that constitute this domain (*Failure to Achieve, Dependence/Incompetence, Vulnerability, Enmeshment/Undeveloped Self*). Consequently, the differences of the four schemata from beginning to the completion of therapy were entered as predictors to a linear regression after

age and gender had been entered in a first block. Again, the difference of SCL-90-R GSI scores between beginning and end of therapy was the dependent variable. Age and gender alone explained no significant amount of variance, $R^2 = .01$, $F(2, 44) = 10.15$, $p = 0.77$. When the four schema change scores were added, the model explained 44% of variance ($R^2 = .51$, adjusted $R^2 = .44$), and this change was significant, $\Delta R^2 = .50$, $\Delta F(4, 40) = 10.35$, $p < 0.001$. Thus, the schema change scores generally predicted reduction of symptom distress. However, only the EMS *Failure to Achieve* was a significant predictor, whereas the other three schemata did not contribute significantly (all *p*'s > .1, cf. Table 4). Positive regression coefficients indicate that stronger

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3. In this linear regression, the relationship of two difference scores (reduction of schema endorsement and reduction of symptom distress) is analyzed. Because difference scores can be problematic in some cases, we conducted another linear regression controlling for symptom distress at the beginning of treatment with symptom distress at the end of treatment as the dependent variable. In this analysis, age, gender, and symptom distress (SCL-90-R GSI) scores) at therapy onset were entered in the first block and changes in schema domain scores were entered as predictors in the second block, whereas symptom distress at the end of treatment was the dependent variable. This model explained 61% of variance, $R^2 = .68$, adjusted $R^2 = .61$; $\Delta R^2 = .57$, $\Delta F(5, 38) = 13.46$, $p < 0.001$, and apart from the new control variable symptom distress at therapy onset, only changes in the schema domain *Impaired Autonomy/Performance* contributed significantly. Thus, results of this reanalysis were qualitatively the same as the results using symptom distress reduction as the dependent variable that is reported in the body of the text. An analogous reanalysis was performed on the data presented in Table 4, and again this alternative statistical approach did not change the pattern of results obtained.

TABLE 3. *Results of the Linear Regression Analysis with Changes in Schema Domains as Predictors for Changes in SCL-90-R GSI Scores*

	β	T	p
Model 1			
Age	.10	.67	.51
Gender	.07	.46	.65
Model 2			
Age	.08	0.75	.46
Gender	-.09	-0.85	.40
Domain I: Disconnection/Rejection	.06	0.48	.64
Domain II: Impaired	.49	4.02	<.001
Autonomy/Performance			
Domain III: Impaired Limits	.11	0.79	.43
Domain IV: Other-Directedness	.06	0.38	.71
Domain V: Overvigilance/Inhibition	.29	1.77	.08

Note. SCL-90-R GSI = Global Severity Index of the revised Symptom Checklist.

schema change was associated with more symptom reduction.[4]

DISCUSSION

The present study examines the effects of an integrative psychotherapeutic inpatient treatment frequently applied in psychosomatic hospitals in Germany on early maladaptive schemata in a sample of patients with major depression. Although the therapeutic approach did not include specific elements of schema therapy as proposed by Young and colleagues (2003), we expected that EMS do not stay unaffected during the course of therapy. To ensure that changes in symptom distress during therapy are indeed caused by the treatment, a post hoc waiting list control condition was used. Waiting time and treatment phase both lasted 56 days. Results revealed that there was no significant reduction of symptom distress throughout waiting time, but during treatment, symptom distress was reduced significantly. Comparing the non-significant reduction during waiting time with the significant reduction during treatment, the reduction of symptom distress was significantly more pronounced in treatment than in waiting time and yielded a significantly higher proportion of patients that improved statistically as specified by reliable change index (cf. footnote 2). Of course, a post hoc waiting list control does not allow causal inferences such as, for ex-

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4. Because of comorbidities in our sample, we used general symptom distress measured by SCL-90-R GSI score as the dependent variable. However, one may argue that in a study on the treatment of depression, a measure more specific for depressive symptoms may be more adequate. Thus, we also conducted the three linear regression analyses reported above using the depression subscale of the SCL-90-R. The changes in R^2 when including the YSQ domains as predictors were significant in all three cases. Again, none of the predictors contributed significantly in the first regression, whereas the only significant predictor was the reduction of the domain *Impaired Autonomy/Performance* in the second regression and the reduction of the schema *Failure to Achieve* in the third (i.e., explorative) regression analysis. Thus, the results for the depression subscale showed an analogous pattern compared to GSI scores of the SCL-90-R. However, the amount of explained variance was smaller but still substantial in all three analyses, as one would expect for a measure with lower reliability. Adjusted R^2's were .14, .42, and .36 for the first, second, and third regression analyses, respectively.

TABLE 4. **Results of the Linear Regression Analysis with Changes in the Four Schemata of Domain II as Predictors for Changes in SCL-90-R GSI Scores**

	β	*T*	*p*
Model 1			
Age	.10	.67	.51
Gender	.07	.46	.65
Model 2			
Age	-.06	-0.53	.60
Gender	.10	0.87	.39
Failure to Achieve	.40	2.96	<.01
Dependence/Incompetence	.16	1.11	.27
Vulnerability	.21	1.50	.14
Enmeshment/Undeveloped Self	.16	1.26	.22

Note. SCL-90-R GSI = Global Severity Index of the revised Symptom Checklist.

ample, a randomized controlled trial. Nevertheless, in the present study, it provides additional support for the assumption that changes during treatment are indeed grounded on the treatment and do not only mirror spontaneous remission. Because the present study is mainly focused on the role of early maladaptive schemata in symptom reduction and not on treatment effectiveness, the waiting list control has merely the character of a manipulation check.

Comparisons of schema endorsement between beginning and completion of therapy yielded three significantly reduced schema domains, namely *Impaired Autonomy/Performance*, *Other-Directedness*, and *Overvigilance/Inhibition*. The integrative therapy without any schema-specific elements not only reduced symptom distress but also had a distinct impact on core cognitive structures, as three out of five early maladaptive schema domains were changed. At first view, it may be surprising that a treatment which does not aim at EMS in fact does change them. However, various treatment strategies have been proposed to change cognitive schemata (cf. Padesky, 1994). The present results support the view that not only can various cognitive interventions affect negative schemata, but psychodynamic therapy may also affect the same cognitive structures to a large extent.

Although not specifically aiming at cognitive schemata, for example in the psychodynamic group therapy, maladaptive schemata can be put into perspective by the commentaries of other patients, or disconfirming evidence is provided through the biographic history of other patients. It has been proposed that cognitive schemata have to be activated to be changed (Freeman & Eig, 2006; Greenberg & Safran, 1990; Young et al., 2003). We assume that schemata are frequently activated in a psychodynamic therapy setting. We give an example concerning the schema *Failure to Achieve* that plays an important role for the reduction of symptom distress in the present study and which will be discussed in more detail below. During group therapy, when some inpatients report what they regard as failures in their lives or in their current behavior, processes of social comparison related to failure may be triggered. In contrast to everyday situations that may also activate schemata due to processes of social comparison, the classification of a certain behavior as "failure" may be scrutinized, questioned, and finally modified during psychodynamic group therapy.

The present results demonstrating EMS reduction in an integrative psychodynamic therapy setting are in line with earlier work that found nondirective groups

(Fleming & Thornton, 1980) and Rogerian therapy (McNamara & Horan, 1986) to affect traditional cognitive schemata (as measured by DAS or ATQ). Clark, Beck, and Alford (1999) proposed a common pathway to depression that is "located within the meaning-making structures and processes of the information processing system" (p. 34). This view is supported by evidence for the mediating role of cognitive schemata in the cognitive-behavioral treatment of depression (see Garratt & Ingram, 2007, for a review). Moreover, there is evidence that psychosocial treatments and even pharmacological treatment can also affect cognitive schemata, thereby demonstrating treatment non-specificity for the modification of cognitive structures (see Garratt & Ingram, 2007; note, however, that these studies do not refer to early maladaptive schemata, as proposed by Young et al., 2003, but rather to the traditional self-schemata of depression introduced by Beck, 1967). As different interventions can result in schema change, cognitive schemata may indeed be a common pathway, mediating symptom reduction across different interventions. The present results comply with this view, demonstrating the strong association of integrative psychodynamic therapy with early maladaptive schemata.

To examine whether the endorsement of maladaptive schemata at therapy onset predicts therapy outcome, a linear regression with schema domains as predictors and change in symptom distress as dependent variable was conducted. Although a significant amount of variance (17%) was explained by schema domain scores, none of the single predictors reached significance. The negative weights of schema domains II to V indicate that a stronger schema endorsement in these domains tended to be associated with stronger symptom reduction. This observed pattern would be expected on the basis of the notion that strong schema endorsement mirrors a low functional level, and starting on a lower level allows for greater improvements. Thus, our results point in the same direction as those by Hal-

ford and colleagues (2002) who found that the endorsement of EMS associated with a factor labeled *Disconnection* predicted therapy outcome of a cognitive therapy without explicit focus on EMS. Also, Welburn and colleagues (2000) found high scores in the schema *Abandonment* to predict symptom reduction during a day treatment program. However, Halford and colleageus (2002) as well as Welburn and colleagues (2000) used a stepwise regression approach that usually yields different results than simultaneous inclusion of predictors. Stepwise regression has repeatedly been criticized as liberal (e.g., Hays, 1988). The present study therefore used the more conservative simultaneous inclusion of predictors.

Looking at the role of schema change for symptom distress reduction across the course of therapy, we conducted a linear regression with changes in the five schema domains as predictors for changes in symptom distress. Together, the five schema domain change scores explained a large proportion (58%) of the variance. However, only decreases in the domain *Impaired Autonomy/ Performance* significantly predicted symptom reduction. This domain is thus of particular importance for therapy outcome. To further understand this relation, we conducted an explorative analysis of the four schemata that constitute the domain *Impaired Autonomy/Performance*. The regression revealed that the reductions in these four schemata still accounted for 44% of the variance. The reduction in the schema *Failure to Achieve* was the only significant predictor for symptom distress reduction. The schema *Failure to Achieve* has been shown to be among the five schemata that explained unique variance in depression severity in previous studies (Glaser, Campbell, Calhoun, Bates, & Petrocelli, 2002; Petrocelli, Glaser, Calhoun, & Campbell, 2001a; Petrocelli, Glaser, Calhoun, & Campbell, 2001b). The experience of failure and the expectation of future failure are highly relevant for the development and maintenance of depression. Experiencing failure affects one's mood (Gerrards-

Hesse, Spies, & Hesse, 1994), and attributing low performance internally, for example, as consequences of incompetence, is associated with depression (Sweeney, Anderson, & Bailey, 1986). Conversely, when depressed patients attribute their low performance to the difficulty of a problem and not to their own incompetence, their performance can rise significantly (Klein, Fencil-Morse, & Seligman, 1976). Repeated failures that cannot be controlled can result in learned helplessness that has been proposed to play a key role in depression (Maier & Seligman, 1976). Changing the schema *Failure to Achieve* may consequently be particularly promising for optimizing psychotherapy of depression. Because it will not always be possible to implement all elements of schema therapy in a given treatment, selecting the most effective interventions may be an option for further improvements. On the basis of the present results, it seems most auspicious to select interventions that aim at changing the schema *Failure to Achieve* when treating depressed individuals.

Research Limitations

One limitation of the present study concerns the generalizability of results to other treatment systems. Although an integrative psychodynamic inpatient treatment of depressed individuals for eight weeks may be common for the German health care system, treatment conditions in the United States differ with respect to various aspects, for example, length of hospitalization and criteria for hospitalization. This also implies that other effects on early maladaptive schemata may be observed if conditions differ from the treatment setting of the present study. But as results of outpatient therapy are often generalized to inpatient treatments, results of inpatient therapy, although more complex, may vice versa provide helpful suggestions for outpatient treatment. These suggestions should, of course, be reappraised under the particular treatment conditions. Further, psy-

chotherapeutic inpatient treatment may be an interesting model, as its cost-effectiveness has been demonstrated within the German health care system (Rische, 2004; Zielke et al., 2004).

A more methodological limitation of the present study is the missing randomized control condition. A waiting list control condition enabled us to collect data supporting the assumption that the treatment was effective. However, unequivocal causal inferences cannot be drawn from the present study. Also, it would have been informative to know about possible changes of schema endorsement during waiting time. But given the strong relation of schema reduction and reduction of symptom distress during treatment, it is rather unlikely that there was a strong reduction of schema endorsement during waiting time without reduction of symptom distress. In addition, a measure of functioning could have contributed to the relevance of the results.

Another limitation results from the number of dropouts during therapy, although there were no differences between dropouts and completers with respect to age, gender, symptom distress, or YSQ schema domain scores. Dropouts are a common phenomenon in clinical settings, and only one patient refused to fill out the questionnaires at the completion of treatment. The reason she gave was great emotional distress regarding her planned discharge from the hospital. The reasons for all other dropouts were not related to our study, but rather reflect clinical reality. Of course, dropouts can always bias the results of a study, but the conclusions drawn from this study are nevertheless valid for those patients that attended therapy until completed. Examining the role of EMS in an integrative psychodynamic treatment with multiple components further implies the problem that contribution of single intervention components on schema endorsement cannot be differentiated. However, we learned that schemata are changed during a treatment without schema therapy and that

schema reduction is strongly associated with reduction of symptom distress.

Research Implications

The present study has some significant implications for the treatment of depression. First, because maladaptive schemata are generally highly relevant for the process of therapeutic change, schema change should be a core issue in any form of psychotherapy. Second, it seems promising to focus on cognitive and emotional processes related to *Failure to Achieve* in the treatment of depression. For example, interventions questioning a depressed individual's belief that he or she is incompetent with respect to achievement goals may help to change relevant schemata. Third, maladaptive schemata can be substantially changed by approaches other than schema therapy, like integrative psychodynamic therapy. However, this does not imply that psychodynamic therapy changes EMS as effectively as schema therapy. Giesen-Bloo and colleagues (2006), in comparing transference-focused therapy and schema therapy in borderline patients, demonstrated that schema therapy was more effective in reducing borderline symptoms. However, YSQ data were not reported in this study.

Although integrative psychodynamic therapy can change EMS as revealed by the present study, stronger emphasis on maladaptive schemata may be even more effective.

Future Directions

Future research should aim at disentangling causalities of maladaptive schemata and clinical symptoms. EMS are often conceptualized as mediating structures between adverse experiences during childhood and psychopathology, and there is also some research supporting this notion (Harris & Curtin, 2002; Lumley & Harkness, 2007; Petrocelli et al., 2001a; Wright, Crawford, & Del Castillo, 2009). However, further unequivocal data are needed to confirm this relation and to evaluate if this causality is unidirectional, because it is also conceivable that changes in symptom distress affect maladaptive schemata. Moreover, future research is needed to clarify which maladaptive schemata are associated with which psychiatric disorders and if changes in these schemata can help to reduce symptom distress. The present study gives some insight and suggests that the reductions in the schema *Failure to Achieve* are associated with reduced distress for patients with major depression.

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APPENDIX

In the appendix, we report means and standard deviations for all early maladaptive schemata of the Germtan version of the Young Schema Quesionnaire – S2 (Young et al., 2003). We did not conduct tests for significances, because after a Bonferroni correction test, power would be too low. As can be seen, apart from the two schemata *Abandonment/Instability* and *Entitlement,* all other schema scores declined during treatment.

Table A1. **Means and standard deviations of early maladaptive schema scores.**

Schema domains/Schemata	Beginning of treatment		End of treatment	
	Mean	SD	Mean	SD
Domain I: Disconnection/Rejection	49.29	19.41	43.97	19.00
Emotional Deprivation	53.19	29.94	49.79	25.93
Abandonment/Instability	53.45	28.34	61.53	36.24
Mistrust/Abuse	46.47	22.04	38.81	19.61
Isolation	44.60	26.36	38.81	23.19
Defectiveness/Shame	47.66	27.11	32.94	24.76
Social Undesirability	50.38	27.41	41.96	25.89
Domain II: Impaired Autonomy/Performance	37.50	18.28	28.04	16.87
Failure to Achieve	48.43	24.59	36.34	22.82
Dependence/Incompetence	34.04	23.02	22.72	19.11
Vulnerability	31.74	23.35	24.09	19.43
Enmeshment/Undeveloped Self	35.74	27.74	29.02	23.76
Domain III: Impaired Limits	40.34	15.89	37.06	15.84
Entitlement/Grandiosity	28.60	14.87	28.94	18.41
Insufficient Self-Control/Self-Discipline	52.09	25.00	45.19	22.49
Domain IV: Other-Directedness	54.98	18.16	45.96	17.91
Subjugation	48.00	25.78	40.77	22.48
Self-Sacrifice	57.62	23.59	50.98	21.26
Approval-Seeking	59.32	22.60	46.13	23.54
Domain V: Overvigilance/Inhibition	52.43	18.09	43.98	17.30
Emotional Inhibition	44.94	25.15	39.06	25.60
Unrelenting Standards	63.49	24.98	49.79	23.79
Negativity/Vulnerability to Error	59.83	23.96	51.15	23.83
Punitiveness	41.45	22.07	35.91	19.96