The effectiveness of Schema Therapy within a clinical group setting

Early maladaptive schemas and psychological distress in clients with personality disorders

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Abstract

Objective: Literature shows that psychological treatments such as Schema Therapy (ST) achieve promising results for people with personality disorders (PDs). Considering the fact that research on ST for this treatment population is still scarce the current study aimed to investigate its effectiveness in a clinical group setting. More specifically, it was studied whether short- and long-term changes regarding early maladaptive schemas (EMSs) and psychological distress co-occur in clients with PDs over the course of ST. If this study finds remarkable results regarding certain schemas, interventions which aim to correct EMSs can be adjusted. This in turn might contribute to symptomatic relief as well. **Method**: The participants are clients who were treated for their PDs at the clinical facility "de Wieke" in Hengelo, the Netherlands. The Young Schema Questionnaire (YSQ-L3) and Brief Symptom Inventory (BSI) were administered to measure the prevalence of EMSs and symptoms of psychological distress. Participants were asked to fill in the YSQ-L3 (N=36) and BSI (N=30) at 4 points in time: pre- mid- end of treatment and post-treatment (follow up of 6 months). One sided Paired-Sample T Tests and correlational analyses were carried out in order to explore the data of participants who filled in all 4 measurements. **Results**: The degree of all EMSs (except for "emotional deprivation") and symptoms was significantly decreased by the end of treatment. These positive changes were maintained during a follow up period of 6 months. Furthermore, changes in EMSs were mainly positively related to modifications in symptoms such as depression, hostility, psychoticism, anxiety and paranoid thinking. **Discussion/Conclusion**: ST in a clinical group setting shows promising results regarding the decrease of EMSs and psychological distress. The fact that these positive outcomes are maintained until 6 months after treatment invalidates critics assuming that EMSs are stable over time. Several EMSs and symptoms improve at an early stage whereas other schemas and symptoms are more resistant to change. Schemas that decrease already during the first half of treatment are related to feelings of safety, self-respect, incompetence, negativity and focus on others. Regarding psychological distress, anxiety related symptoms, depression and cognitive problems improve during the first treatment period. Furthermore, changes in EMSs and symptoms seemed to be positively related to each other. This indicates that interventions aimed at schema change are important as well for improving psychological distress. These results raise new questions which should be further elaborated in future studies.

Samenvatting

Inleiding: Uit de literatuur blijkt dat psychologische behandelingen zoals Schematherapie (ST) tot belovende resultaten leiden voor mensen met persoonlijkheidsstoornissen (PS). Gezien het feit dat er weinig onderzoek is naar ST bij deze doelgroep richt de huidige studie zich op de effectiviteit van ST in een klinische groep setting. Er wordt onderzocht in hoeverre er op korte en lange termijn veranderingen optreden met betrekking tot vroeg onaangepaste schema's (VOS'en) en psychologische klachten bij cliënten met PS gedurende een ST behandeling. Wanneer uit het onderzoek opzichtigheden met betrekking tot bepaalde schema's naar voren komen kunnen interventies, die gericht zijn op het corrigeren van VOS'en, aangepast worden. Deze aanpassingen zouden ook kunnen bijdragen aan de verbetering van klachten. **Methode**: De participanten zijn cliënten die in behandeling waren voor hun PS bij "de Wieke" te Hengelo, Nederland. De Young Schema Vragenlijst (YSV-L3) en de Brief Symptom Inventory (BSI) zijn afgenomen om VOS'en en symptomen in kaart te brengen. Er werd aan de deelnemers gevraagd om de YSV-L3 (N=36) en de BSI (N=30) op 4 meetmomenten in te vullen: voor, tijdens, aan het eind van de behandeling, en 6 maanden later. Er is gebruik gemaakt van eenzijdige gepaarde t-toetsen en correlatie analyses om de data van de cliënten die alle 4 metingen hebben ingevuld te analyseren. **Resultaten**: Er is een significante afname van VOS'en (behalve voor "emotionele deprivatie") en van symptomen aan het eind van de behandeling. Deze positieve veranderingen blijven 6 maanden na de behandeling nog steeds behouden. Tevens zijn veranderingen in VOS'en vooral positief gerelateerd aan symptoomveranderingen zoals depressie, hostiliteit, psychoticisme, angst en paranoia. **Discussie/Conclusie**: ST in een klinische groep setting laat belovende resultaten zien met betrekking tot de vermindering van VOS'en en klachten. Het feit dat de verandering 6 maanden na de behandeling voortduurt, weerlegt het argument van tegenstanders dat schema's stabiel zijn. Bepaalde schema's en symptomen lijken al vroeg af te nemen, terwijl anderen resistenter voor verandering zijn. VOS'en die al vroeg afnemen zijn gerelateerd aan veiligheid, zelfwaardering, incompetentie, negativisme en gerichtheid op anderen. Met betrekking tot klachten lijkt gedurende de eerste helft van de behandeling verbetering op te treden in angst gerelateerde symptomen, depressie en cognitieve problemen. Daarnaast bleek verandering in schema's en klachten positief aan elkaar gerelateerd te zijn. Dit wijst op de mogelijkheid dat interventies gericht op verandering van schema's ook relevant zijn voor het verbeteren van psychische klachten. De gevonden resultaten roepen nieuwe vragen op die in toekomstige studies nader onderzocht kunnen worden.

Acknowledgements

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Contents

Introduction

For a long time personality pathology has been considered as "untreatable" and there were only a few professionals who believed that treatment could lead to positive changes (Arntz & Bernstein, 2006). Treatment which was based on traditional cognitive techniques did not seem to have sufficient benefits for people with personality disorders (PDs). This finding encouraged psychologists such as Jeffrey Young to develop a more intensive treatment approach called Schema Therapy (ST) (Arntz & Bernstein, 2006; Hawke & Provencher, 2011; Masley, Gillanders, Simpson & Taylor, 2012). Until now, positive effects of ST for the treatment of PDs have been found (Arntz & Bernstein, 2006; Bamelis, Evers, Spinhoven & Arntz, 2014; Masley et al., 2012; Nordahl & Nysæter, 2005; Renner, Van Goor, Huibers, Arntz & Butz, 2013). Regarding the fact that research on ST for personality pathology is still scarce there is enhanced interest to know more about its effects for this treatment group (Bamelis et al., 2014).

Based on that, the present study turns its attention to the short- and long-term effectiveness of ST for clients with PDs within a clinical group setting called "de Wieke". In order to get a richer picture of clients in clinical settings the population's characteristics within this facility were explored as well.

Personality disorders

The American Psychiatric Association (APA) (1994) defines a PD as:

> an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time and leads to distress or impairment (pp. 629)

Based on the criteria of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) this pattern is manifested in at least two of the following domains: cognition (perception of others/self), affectivity (emotional response), interpersonal functioning and impulse control. Furthermore, this pattern should not be caused by a substance (medication etc.) or medical condition and should not be explained better by another mental disorder (APA, 1994). In the DSM-IV the PDs are further subdivided into three clusters. Cluster A lists the paranoid, schizoid and schizotypal PDs. People with these disorders are often perceived as odd and eccentric. Cluster B contains the antisocial, borderline, histrionic and narcissistic PDs.

People who are diagnosed with these disorders are often very emotional, impulsive and dramatic. Cluster C describes the avoidant, dependent and obsessive-compulsive PDs. These people are mainly characterized by a fearful attitude. The last category "personality disorder not otherwise specified (PD NOS)" describes a condition in which a person meets the criteria for different clusters ("mixed") (APA, 1994; Derksen, 1993). Besides these criteria, an assessment of the individual's functioning throughout his/her life, information from acquaintances and diagnostic test material are required to diagnose a PD (APA, 1994).

Regarding the prevalence, PDs are one of the most common psychological disorders. Approximately 3 – 15 % in the general population, 40 – 50 % of the clients in health care settings and 60 – 80% in forensic settings meet the diagnostic criteria (Bamelis et al., 2014; Soeteman, Verheul & Van Busschbach, 2008). Regarding gender differences women are diagnosed more frequently with borderline, dependent and histrionic PDs whereas antisocial PD is more common in men. It is also known that a PD is likely to be recognized during early adulthood or adolescence. Antisocial and borderline PDs seem to become less recognizable as people grow old than obsessive-compulsive and schizotypal personalities (Derksen, 1993).

Having a PD has been linked to several negative consequences concerning the economy and someone's interpersonal relations (Soeteman et al., 2008). The prevalence of personality pathology has been associated with a high economic burden. This is supported by the fact that people with PDs make extensive use of mental/social health care and psychiatric services. It is also known that they receive more treatments than people with other mental disorders (for example depression). Furthermore, personality pathology is linked to reduced productivity such as impairment in work functioning (absence, inefficiency), unemployment and difficulties to function in daily life. (Skodol et al., 2005; Skodol et al., 2002; Soeteman et al., 2008, Soeteman, Hakkaart-van Roijen, Verheul & Busschbach, 2008). Another major consequence of personality pathology is poor social functioning in interpersonal relations. People with PDs are more likely to be separated, divorced or never married (Skodol et al., 2002). Besides that, different PDs are characterized by rigid and maladaptive behaviors and reactions towards others (Pincus & Wiggins, 1990). People who are diagnosed with a narcissistic PD show distrust, hostility and exploit others. They tend to behave defensive, cold and emotionally detached in social situations which can result in emotional and psychological distress for others (Ogrodniczuk, Piper, Joyce, Steinberg & Duggal, 2009). People with avoidant PD show mistrust and are detached whereas

people with an antisocial PD are more likely to act aggressive and manipulative (Vittengl, Clark & Jarrett, 2003). An obsessive compulsive PD is mainly characterized by the need to control one's environment, perfectionism and rigid behavior. These people also tend to be hostile, dominant, controlling, aggressive and cold in interactions with others and their work environment (Cain, Ansell, Simpson & Pintoc, 2015). These behavior patterns result in an impaired social functioning, making it difficult for the client to interact properly with his or her social environment (family, friends, co-workers etc.) (Skodol et al., 2005).Without prevention or treatment a PD is likely to become chronic and to affect the next generations (through abuse, mistreatment or neglect). Chronic PDs are also related to suicidal tendencies and reduced quality of life (Renner et al., 2013; Soeteman et al., 2008).

Considering these negative consequences there is great need to gain more knowledge of effective treatments available for PDs (Gude & Hoffart, 2008). One famous approach is Young's cognitive model in which early maladaptive schemas (EMSs) play a central role in the development of PDs (Eurelings-Bontekoe, Luyten, Ijssennagger, Van Vreeswijk & Koelen, 2010; Reeves & Taylor, 2007).

Early maladaptive schemas

The role and significance of EMSs regarding personality pathology can be best understood by literature based on Young's cognitive model (Jovev & Jackson, 2004). This cognitive approach assumes that schemas are present in every person. Furthermore, they form the core of an individual's beliefs, perceptions and interpretations regarding the self, others and the world (Saariaho, Saariaho, Karila & Joukamaa, 2009; Masley et al., 2012). Young also states that dysfunctional/maladaptive schemas play a central role in the development of PDs (Eurelings-Bontekoe et al., 2010; Reeves & Taylor, 2007). Thimm (2010) defines EMSs as "a broad, pervasive theme or pattern, comprised of memories, emotions, cognitions, and bodily sensations, regarding oneself and one's relationship with others, developed during childhood or adolescence, elaborated throughout one's lifetime and dysfunctional to a significant degree" (p.373). EMSs were once adaptive (functional), helping the person to survive, cope and adapt to "threatening" life circumstances (Saariaho et al., 2009). Early childhood experiences are crucial in the development of these schemas. Abuse, maltreatment, unfulfilled psychological needs (for example safety, autonomy, love, nurturing) and negative experiences with parents, siblings and

peers can lead to the development of EMSs (Saariaho et al., 2009). Due to the fact that EMSs are stable over time, function as core beliefs and influence perception, behavior and thinking they are likely to be overgeneralized to other situations later in life. They are then dysfunctional, because they result in inadequate or maladaptive behavior (Reeves & Taylor, 2007; Thimm, 2010). Furthermore, it seems that EMSs can operate outside awareness, making it difficult for the person to recognize their influence (Jovev & Jackson, 2004). In order to detect EMSs, instruments such as the Young Schema Questionnaire (YSQ) are commonly used. Young suggested 18 different EMSs which he further subdivided into 5 schema domains (Saariaho et al., 2009). An overview of the EMSs, schema domains and their meaning is given in table 1.

Table 1

Overview of Young's schema domains, early maladaptive schemas and meaning

Schema domains	Early maladaptive schemas	Meaning domain
Disconnection & Rejection	1. Emotional deprivation (ED) 2. Abandonment/instability (AB) 3. Mistrust/abuse (MA) 4. Social isolation/alienation (SI) 5. Defectiveness/shame (DS)	Expectation that basic emotional needs will not be met.
Impaired autonomy & performance	6. Failure (FA) 7. Dependence/incompetence (DI) 8. Vulnerability to harm or illness (VH) 9. Enmeshment/undeveloped self (EM)	Problems with independence and self-confidence.
Impaired limits	10. Entitlement/grandiosity (ET) 11. Insufficient self-control/discipline (IS)	Desire for superiority, lack of impulse control.
Other-directedness	12. Subjugation (SB) 13. Self-sacrifice (SS) 14. Approval-seeking (AS)	Focus on the needs of others at the cost of one's own well-being.
Overvigilance & inhibition	15. Negativity/pessimism (NP) 16. Emotional inhibition (EI) 17. Unrelenting standards/ hypercritical (US) 18. Punitiveness (PU)	Suppression of emotions, rigid rules, focus on negative experiences

Notes: Adapted from: Eurelings-Bontekoe et al., 2010; Saariaho et al., 2009.

The prevalence of EMSs has been linked to several symptoms, clinical disorders, PDs and gender differences. EMSs are related to symptoms such as burn-out, romantic jealousy, depressive mood or low body satisfaction (Rijkeboer & Van den Bergh, 2006). Furthermore,

EMSs are often present in PDs, substance abuse, depression, panic disorders, eating disorders (anorexia, bulimia), alcohol dependency or social phobia (Rijkeboer & Van den Bergh, 2006; Thimm, 2010). Research also shows relationships between several EMSs, specific PDs and gender. To simplify the report of these relationships they are illustrated in table 2. Regarding the antisocial, schizoid and schizotypal PDs no significant relationships have been found (Reeves & Taylor, 2007; Jovev & Jackson, 2004; Nordahl, Holthe & Haugum, 2005; Welburn, Coristine, Dagg, Pontefract & Jordan, 2002).

Table 2

Relationships between PDs, EMSs and gender

Personality disorder	Early maladaptive schemas
Borderline	Emotional deprivation, Dependence/incompetence, Defectiveness/shame Abandonment/instability, Mistrust/abuse
Narcissistic	Mistrust/abuse, Vulnerability to harm or illness, Emotional inhibition, Insufficient self-control/self-discipline
Obsessive-compulsive	Unrelenting standards/ hypercriticalness, Enmeshment/undeveloped self, Entitlement/grandiosity, Insufficient self-control/self-discipline
Paranoid	Mistrust/abuse
Dependent	Dependence/incompetence
Avoidant	Emotional inhibition
Gender	
Male	Emotional deprivation, Social isolation/alienation, Defectiveness/shame Emotional inhibition
Female	Self-sacrifice, Enmeshment, Failure, Abandonment, Defectiveness/shame

Notes: Adapted from: Reeves & Taylor, 2007; Jovev & Jackson, 2004; Nordahl et al., 2005; Welburn et al., 2002

In conclusion, EMSs are core beliefs, play a crucial role in the development of PDs and show significant relationships to PD related symptoms. Increasing the knowledge about these core beliefs can lead to additional understanding of the development, maintenance and treatment of PDs (Reeves & Taylor, 2007). Here, it is also important to mention that longitudinal studies assessing the role of EMSs in personality pathology are scarce, which asks for more research in that field (Nordahl et al., 2005; Reeves & Taylor, 2007).

Regarding research about the seriousness of schemas it is found that EMS severity can increase a person's vulnerability to develop personality pathology or psychological distress. Besides that, activation ("triggered") of EMSs results in maladaptive reactions such as overcompensation, avoidance or surrender. These coping styles keep up the EMS (by confirming the core beliefs) which in turn can lead to psychological distress (for example depression, anxiety, loneliness), reduced functioning (work, daily life), interpersonal problems or psychosomatic disorders (Thimm, 2010; Nordahl et al., 2005). It is also known that EMSs intervene with a person's information processing fostering negative automatic thoughts towards the self and others. Over time these thoughts and EMSs become more resistant to change (Jovev & Jackson, 2004).

If changes in EMSs severity do occur, the schema theory suggests that modifications in schemas could also decrease the client's long-term psychological distress. Several studies support this assumption, because their outcomes indicate that modifications in EMS severity seem to predict symptomatic relief by the end of treatment (Hawke & Provencher, 2011; Nordahl et al., 2005; Van Vreeswijk, Spinhoven, Eurelings-Bontekoe & Broersen, 2014). However, research regarding the role of EMSs as a predictor for symptomatic relief is still scarce and needs to be elaborated (Van Vreeswijk et al., 2014; Nordahl et al., 2005). Research and assessment of EMSs is highly relevant for the clinical practice. By investigating EMSs researchers are able to detect possible conspicuous results regarding schemas. Based on that, suitable interventions to correct these schemas can be implemented, which in turn contributes to symptomatic relief (Rijkeboer, Van den Bergh & Van den Bout, 2005). One approach focusing on the modification of EMSs is called Schema Therapy (ST). By researching how ST affects EMSs and psychological distress, more knowledge can be gained about the relationship between schemas and symptomatic relief (Nordahl et al., 2005).

Schema Therapy

Jeffrey Young developed ST in the 1980's, because clients with PDs, complex and chronic disorders did not benefit sufficiently from traditional cognitive therapy. Young believed that their difficulty to change and to become aware of their emotions and cognitions requires a more intensive treatment approach (Hawke & Provencher, 2011; Masley et al., 2012). Young's adaption led to the evolvement of ST which is an integrative form of psychotherapy combining

cognitive, experiential, behavioral and psychodynamic elements (Arntz & Bernstein, 2006). ST is based on the idea that personality pathology is caused by negative childhood experiences and unfulfilled emotional needs (safety, care etc.). These experiences often result in the development of EMSs (Bamelis et al., 2014; Renner et al., 2013). The main goal of ST is to reduce the influence of present EMSs, to decrease maladaptive coping styles and to foster the development of healthy adaptive responses (Masley et al., 2012; Renner et al., 2013). ST includes 4 main concepts: EMSs, schema domains, schema modes and coping styles. In ST, EMSs form the core of this model and are the main target for treatment (Thimm, 2010). Based on that, EMSs were chosen as the focus point of this study. In order to give sufficient insight into ST the other 3 concepts will be explained briefly. Within ST, schema domains refer to basic emotional needs. Schema modes represent a mood state and behavior (in a specific moment) resulting from the activation of different coping styles and EMSs. People are likely to cope with their EMSs in three different ways: overcompensation (fighting the EMS and showing the opposite behavior), avoidance (avoid situations which might trigger the EMS) and surrender (showing behavior which fits to the EMS). These coping styles facilitate the maintenance of EMSs (Masley et al., 2012).

Within ST, EMSs can be invalidated by using cognitive, experiential and behavioral techniques. Cognitive techniques aim to identify a client's relevant EMSs and related core beliefs. If a client knows how his/her EMSs are triggered, the next step is to analyze the advantages and disadvantages of these schemas. One cognitive method is a flashcard which the clients carry always by their side. A flashcard includes confirming and alternative beliefs related to a specific EMS. When an EMS is triggered the flashcard reminds the clients of the so called "helpful or alternative beliefs" which enable them to respond in an adequate and healthy way. Experiential techniques focus on the experience and expression of emotions related to incidents in the past. The following experiential elements and techniques are mainly used within ST. The first technique, "imagery", enables clients to recall negative memories and to give them another meaning (cognitive and affective). The second technique, "role play", fosters the development of healthy/adaptive reactions. Clients play situations from the past and learn to recognize their and others experiences. The third technique "multiple chair", is used to help the clients recognize and cope with their schema modes. The fourth experiential element of ST is the therapeutic relationship which is characterized by a directive and personal attitude towards the client. ST

therapists use a technique called “limited re-parenting” which focuses on the fulfillment of unfulfilled basic needs of the client. For example, a client who (as a child) was never allowed to act angry can train/experience the expression of anger in the relationship with the therapist. Besides that, the therapeutic relationship is also characterized by frequent self-disclosure of the therapist (if it benefits the client). This demands that the therapist is open about his/her impressions evoked by the client. Another important element of the therapeutic relationship is psychoeducation where the therapist teaches the client about basic needs, functional/ dysfunctional behavior and explains the relevance of childhood experiences in the development of EMSs (Bamelis et al., 2014). Furthermore, ST includes also behavioral techniques such as relaxation exercises, learning alternative behavior (instead of destructive behavior) and social skills (Van Vreeswijk, Broersen & Nadort, 2008).

Until now ST has been mainly provided in an individual format, but recent literature suggests that group ST for people with PDs can have potential economic and therapeutic advantages (Masley et al., 2012). Considering the fact that individual ST has been found to be cost effective, treating more clients simultaneously could reduce health care costs even more. Besides that, group processes such as social interaction, social comparison, sense of belonging, vicarious learning, social support and exposure, contribute to the effectiveness of group ST (Farrell, Shaw & Webber, 2009). Furthermore, Farrell and Shaw (2012) state that groups create a safe environment in which the client can experience and experiment with emotions, new behavior, mutual attachment, empathy and role play. These new experiences facilitate the correction of dysfunctional schemas and the development of healthy coping styles.

The effectiveness of Schema Therapy

Several studies support the effectiveness of ST in treating personality pathology and related symptoms (Renner et al., 2013; Hawke & Provencher, 2011; Masley et al., 2012). ST in individual as well as group settings improves general psychopathology and psychological distress. Several studies have shown that ST decreases symptoms such as depression, anxiety, self-injury, loneliness and emotional impairment. Furthermore, ST also results in improved quality of life, interpersonal behavior and lower dropout rates compared to other treatment approaches such as transference-focused psychotherapy (psychodynamic) (Bamelis et al., 2014; Farrel et al., 2009; Masley et al., 2012; Renner et al., 2013, Van Vreeswijk et al., 2014). The

positive effects on overall psychological distress seem to be maintained after treatment with ST (follow up) (Nordahl & Nysæter, 2005; Skewes, Samson, Simpson & Van Vreeswijk, 2015).

Concerning the dysfunctional schemas research indicates that ST has indeed the potential to bring about changes in EMSs. Recent studies show that ST reduces EMS severity (Farrel et al., 2009; Leppänen, Kärki, Saariaho, Lindeman & Hakko, 2014; Skewes et al., 2015; Van Vreeswijk et al., 2014).

Regarding the effect of ST on the relationship between EMSs and psychological distress research shows that changes in EMSs severity over the course of ST seem to predict symptomatic relief by the end of treatment (Hawke & Provencher, 2011; Nordahl et al., 2005; Vreeswijk et al., 2014). Hawke and Provencher (2011) suggest that ST has indeed the potential to reduce the degree of EMSs which in turn contributes to symptomatic relief. However, Van Vreeswijk et al. (2014) found that changes in EMSs and psychological distress co-occur and mutually reinforce each other. They suggest that modifications in EMSs not necessarily precede changes in symptoms. The authors treat these results with caution and accentuate that there is still a lack of studies focusing on the role of schema changes in predicting or mediating overall psychological distress.

Despite the promising results ST is a relatively new approach and the evidence of its effectiveness is still at an early stage (Farrel et al., 2009). Especially the research regarding the role of EMSs as a predictor for symptomatic relief is scarce (Van Vreeswijk et al., 2014; Nordahl et al., 2005). Considering the fact that ST mainly aims to reduce the impact of EMSs more studies are needed to assess the process of schema modification during ST (Masley et al., 2012). Here, it is also important to mention that the main positive outcomes of ST have been found in the individual treatment of borderline PD. Until now just a few studies focused on the effect of ST for other PDs within a clinical setting. Therefore, more research is needed on the effectiveness of ST in treatment of other PDs (Bamelis et al., 2014; Skewes et al., 2015; Van Vreeswijk et al., 2014).

Focus of the study and research questions

The current study adds knowledge to existing research about the effectiveness of ST on EMSs and psychological distress in clients with PDs. Firstly, the study was conducted in a clinical group setting which provides more insight into the effects of ST in a group format. Secondly,

changes in EMSs and psychological distress were assessed during a treatment and follow up period (6 months). Thirdly, the design of this study made it possible to investigate in what way changes in EMSs and psychological distress are related to each other. The fact that longitudinal studies which assess the role of EMSs in personality pathology are scarce makes this study even more valuable (Nordahl et al., 2005; Reeves & Taylor, 2007). Based on former research and the literature mentioned above the key aim of the current study was to investigate *if changes regarding early maladaptive schemas and psychological distress co-occur in clients with personality disorders over the course of Schema Therapy*. In order to get a richer picture of client populations within a clinical group setting it was first explored which DSM-IV-axis-2 diagnoses, EMSs and symptoms of psychological distress were present in the research sample. Besides that, there were 4 objectives to the present study: (a) *Is there a significant decrease of EMSs and psychological distress by the end of ST in comparison to the beginning, (b) in what way do EMSs and symptoms change from pre- to mid-treatment and mid- to the end of treatment, (c) are the changes in EMSs and symptoms found by the end of treatment maintained until 6 months follow up and (d) how are modifications in EMSs related to changes in psychological distress over the course of treatment with ST?* Regarding the objectives (a), (c) and (d) the corresponding hypotheses were based on literature and supported by research conducted earlier. Due to the lack of comparably studies and literature objective (b) is an explorative question without specific hypotheses. It was hypothesized that (a) the degree of EMSs and psychological distress is decreased by the end of treatment in comparison to the beginning, (c) that these changes are maintained until 6 months later and (d) that changes in EMSs from pre- to mid-treatment and mid- to the end of treatment are positively related to modifications in symptoms of psychological distress.

Method

In this section the design of the study, the demographic characteristics of the participants, the measures and the procedure are outlined. Furthermore, information is given about the research setting and statistical tools which were used to analyze the data of the research sample.

Design

The current study is a within subjects design including 4 measurements at pre- (M1: measurement one), mid- (M2), end of treatment (M3) and a follow up (M4) period. Due to the circumstances of the research setting the design does not include a control group. The results of this study contribute to broader research taking place on the effectiveness of ST. The data were collected within a clinical setting where clients with PDs undergo 12 months of ST in a group format. In order to investigate if changes in EMSs and psychological distress occur over the course of ST and whether these changes are maintained during a follow up period of 6 months the M1, M2, M3 and M4 measurements were analyzed.

Participants

Clients by whom personality pathology might be the underlying problem, were referred to the clinical setting “de Wieke”. The participants were clients who have been treated with ST within “de Wieke”. The sample includes client data from 06.06.2011 until 26.06.2015. The clients who dropped out of treatment early (< 6 months) were not included in the analysis, because of two reasons. Firstly, these clients stopped their treatment within the first 6 months which indicates that they did not participate long enough in all crucial aspects of ST. This makes it difficult to assume that ST and its techniques led to changes in EMSs and psychological distress. Secondly, these clients did not fill in the questionnaires at all required points in time. This led to missing data, because not all scores of these clients were available for analysis and interpretation. Nevertheless, it is still important to research why people stopped their treatment early. The results can give more insight into reasons related to dropout and can be used to adapt ST in order to fit the needs of similar clients better. The study from Boerstal (2015) focused on the clients in this sample who dropped out of treatment.

Regarding the fact that several data of the clients who completed their treatment successfully were missing it was not possible to include all clients in the analysis. The missing

data and huge data loss can be explained by postponed or forgotten measurements and refusal to participate. From the clients who completed their treatment in more than 6 months (N=62) the available data were subdivided into 3 groups/datasets (see figure 1). The data of these clients have been selected based on the fact that they completed their treatment successfully (including therapist judgment) in more than 6 months and that all required scores (M1 – M4) were available for the analysis. Therefore, their data were perceived as useful to answer the research questions. For an overview of the demographic characteristics of the whole clinical sample, the participants who completed their treatment and the three sample groups see table 3 on the next page.

Table 3

Characteristics of the whole clinical sample (N=115), participants who completed the treatment (N=62) and participants included in the 3 groups (N=30, 36, 26)

Category	N	%	M	R
All participants	115			
Gender				
Female	86	74,9 %		
Male	29	25,2 %		
Age (all)			27,2	17,7 – 43,9
Female			26,5	17,7 – 43,9
Male			29,1	21,3 – 43,2
Length of treatment (months)			8,3	0,1 – 19,9
Dropout	33	28,7 %		
Participants (completed treatment)	62			
Gender				
Female	45	72,6 %		
Male	17	27,4 %		
Age (all)			27,1	17,7 – 43,9
Female			26,9	17,7 – 43,9
Male			27,6	21,3 – 33,8
Length of treatment (months)			11,2	6,5 – 19,9
Group 1 (BSI sample)	30			
Gender				
Female	21	70,0 %		
Male	9	30,0%		
Age (all)			26,8	17,7 – 41,1
Female			26,1	17,7 – 41,1
Male			28,3	21,5 – 33,5
Length of treatment (months)			11,9	6,6 – 19,9
Group 2 (YSQ-L3 sample)	36			
Gender				
Female	26	72,2 %		
Male	10	27,8 %		
Age (all)			26,8	17,7 – 43,9
Female			26,7	17,7 – 43,9
Male			27,0	21,3 – 33,5
Length of treatment (months)			11,8	6,6 – 19,9
Group 3 (BSI/YSQ-L3 sample)	26			
Gender				
Female	19	73,1 %		
Male	7	26,9 %		
Age (all)			26,4	17,7 – 41,1
Female			25,7	17,7 – 41,1
Male			28,1	21,5 – 33,5
Length of treatment (months)			12,3	6,6 – 19,9

Notes: YSQ-L3= Young Schema Questionnaire Long Form 3, BSI= Brief Symptom Inventory

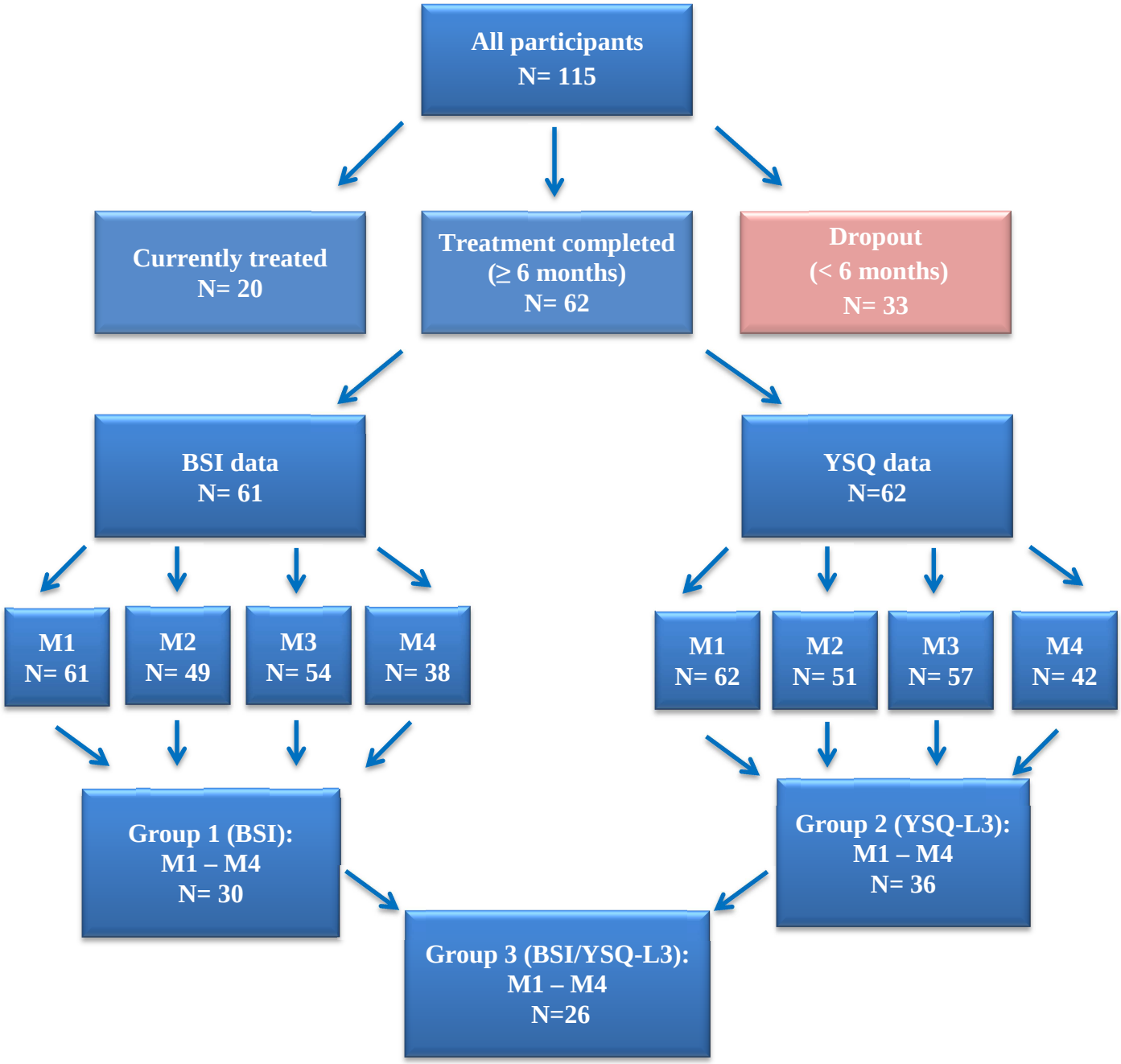

Figure 1. *Flow chart of the participants, corresponding measurements and datasets (3 groups) included in the analysis. YSQ-L3=Young Schema Questionnaire, BSI=Brief Symptom Inventory*

Research setting "De Wieke"

The participants of this study were clients within the clinical facility "de Wieke". "De Wieke" is a part of the center for PDs in the hospital in Hengelo, the Netherlands. Clients are referred to "de Wieke" by other health professionals, because of their assumed personality pathology. The

treatment at “de Wieke” mainly focuses on clients with PDs and is based on ST from Jeffrey Young. Clients receive ST in a clinical group format throughout the whole day. This intensive treatment demands that they stay at “de Wieke” from Monday till Friday afternoon and return on Sunday evening. The main goal of ST is to reduce the influence of present EMSs, to decrease maladaptive coping styles and to foster the development of healthy adaptive responses (Masley et al., 2012; Renner et al., 2013). In order to achieve this goal, the multidisciplinary team consisting of psychiatrists, clinical psychologists, psychotherapists, health psychologists, social therapists and specified therapists (drama, art and psychomothoric), applies cognitive, experiential and behavioral techniques. Normally, clients undergo a treatment period of 12 months, but are free to stop at any time. Depending on the time and circumstances of their leave some clients are considered as a dropout. Based on clinical experience (from therapists working at “de Wieke”) crucial improvement regarding a client’s psychological condition can be expected after a treatment period of at least 6 months. Currently, it is discussed whether future treatment should be reduced to 9 months.

Procedure

Regarding the fact that the current study was part of broader research taking place at “de Wieke” approval from the ethical commission was not needed. The clients who wanted to start their treatment at “de Wieke” went through an intake procedure, consisting of approximately 4 conversations with the responsible therapist. During this intake period the clients first received information about “de Wieke”, talked about their symptoms and life story and filled in several psychological questionnaires. These diagnostic questionnaires were part of this research and were used to detect EMSs, schema modes, avoidance strategies and to investigate overall psychological distress and wellbeing. The current study focused on EMSs and psychological distress and therefore the data from the YSQ-L3 and the BSI were analyzed. The clients were first made aware of the possibility to participate in the study and received general information about it. They were also informed that they could stop their participation at any time they wanted and that their data will be used anonymously. The participants were asked to sign an informed consent form if they agreed to participate. Participation required the clients to fill in the standard questionnaires before, during (6 months), at the end of treatment (12 months) and after a period of 6 months (follow up). All four measurements were included in the data analysis. The clients

filled in the questionnaires in a private room without being distracted. They received their test results and interpretation during a consultation at the end of the intake procedure and during their treatment. In the consultation it was decided whether "de Wieke" could offer a suitable treatment program for the client.

Measures

The electronic patient dossier (EPD) was used to collect demographic data and to get information about the client's diagnoses and test results. The questionnaires used in this study were Dutch versions of the YSQ-L3 and the BSI.

Young Schema Questionnaire - Long Form, Third Version (YSQ-L3). The YSQ-L3 is a self-report questionnaire which assesses all 18 EMSs proposed by Jeffrey Young (Saariaho et al., 2009; Shorey, Stuart, & Anderson, 2013). The YSQ-L3 is the most up to date version and consists of 232 items. Clients answer the questions on a 6-point Likert Scale (1= *completely untrue of me*; 6= *describes me perfectly*) where they have to decide whether a statement describes themselves (Shorey, Stuart & Anderson, 2014). The YSQ-L3 includes statements which are perceived as being representative for a specific belief or behavior belonging to a particular EMS. By summing up the scores of the items corresponding to a specific EMS total scores for each schema and schema domain were calculated. The score ranges for all schema domains and EMSs (18 subscales) are presented in table 4 (Shorey et al., 2013). The YSQ-L3 includes score categories that indicate the severity of each EMS. If the total score falls into the *high* or *very high* score category it is assumed that the particular schema causes problems (Shorey, Stuart & Anderson, 2012). For an overview of the score categories see appendix A.

Several studies have shown that the YSQ replicates 16 different factors (EMSs), has a good discriminative power, is a valid and reliable instrument to identify EMSs and useful to detect changes in EMSs due to therapeutic interventions (Waller, Meyer & Ohanian, 2001; Welburn et al., 2002; Schmidt, Joiner, Young & Telch, 1995; Rijkeboer et al., 2005; Rijkeboer & Van den Bergh, 2006; Saariaho et al., 2009; Hawke & Provencher, 2011). The YSQ is also sensitive to predict the presence of psychopathology and its subscales are related to the subscales of the BSI (Schmidt et al., 1995). Table 4 shows the Cronbach's alpha values (α) of the YSQ-L3 in this study.

Table 4

Score ranges and Chronbach's alphas (α) for each schema domain and EMSs

Schema domain	Score ranges	EMSs	Score ranges	α
Disconnection & Rejection	0-408	Emotional deprivation	0-54	0,93
		Abandonment	0-102	0,93
		Mistrust/abuse	0-102	0,94
		Social isolation	0-60	0,92
		Defectiveness	0-90	0,95
Impaired autonomy & performance	0-282	Failure	0-54	0,94
		Dependence	0-90	0,94
		Vulnerability	0-72	0,91
		Enmeshment	0-66	0,91
Other directedness	0-246	Subjugation	0-60	0,91
		Self-sacrifice	0-102	0,91
		Approval seeking	0-84	0,92
Impaired limits	0-155	Entitlement	0-66	0,87
		Insufficient self-control	0-90	0,91
Overvigilence & inhibition	0-306	Emotional inhibition	0-54	0,86
		Unrelenting standards	0-96	0,93
		Negativity/pessimism	0-66	0,92
		Punitiveness	0-90	0,91
YSQ-L3 (total)	0 - 1397			0,98

Notes: Retrieved from: Shorey et al., 2013. EMSs= Early maladaptive schemas, YSQ-L3 (total) = Young Schema Questionnaire Long Form, Third Version (all 18 EMSs summed up)

Brief Symptom Inventory (BSI). The BSI is a shortened version of the 90 Item Symptom Checklist and includes 53 items that measure symptoms of psychological distress in clinical and non-clinical populations. Participants judge whether they experienced certain problems during the last week on a 5 point Likert scale (0 = *not at all*; 4= *extremely*) (De Beurs, 2011; Van Dijk, Lucassen & Speckens, 2015). The BSI consists of nine subscales where high scores reflect a greater number and experience of symptoms (see table 5) (De Beurs, 2011; Welburn et al., 2002). Based on the total scores of each subscale the global severity index (GSI) can be calculated, which is the mean score of all 53 items and an indicator for overall psychological distress (De Beurs, 2011). The current study used the 9 subscales separately and the GSI as

outcome measures in order to verify whether ST led to changes in psychological distress. The score ranges and Chronbach's alpha values (α) of the BSI subscales are presented in table 5. The BSI data were compared to norm scores from a sample of female policlinic clients (N=4291). The female sample was chosen, because the current sample consisted of approximately 70% of women. Besides that, there are no norm scores available for mixed gender samples (De Beurs, 2011).

The BSI shows strong construct validity, measures reliably psychological distress over time, shows high sensitivity and registers changes in overall psychological distress as a consequence of therapeutic interventions (Derogatis & Melisaratos, 1983; Welburn et al., 2002; Van Dijk et al., 2015).

Table 5
Score ranges and Chronbach's alphas (α) for the nine subscale of the BSI

Subscales BSI	Score ranges	α
1.Somatic complaints - 7 items (SOM)	0 – 28	0,84
2.Cognitive problems - 6 items (COG)	0 – 24	0,83
3.Interpersonal sensitivity - 4 items (INT)	0 – 16	0,84
4.Depression - 6 items (DEP)	0 – 24	0,91
5.Anxiety - 6 items (ANX)	0 – 24	0,86
6.Hostility - 5 items (HOS)	0 – 20	0,80
7.Phobic fear - 5 items (POB)	0 – 20	0,84
8.Paranoid thinking - 5 items (PAR)	0 – 20	0,82
9.Psychoticism - 5 items (PSY)	0 – 20	0,76
Other (4 items)	0 – 16	
GSI	0 – 4	
BSI (total)	0 –212	0,97

Notes: Retrieved from: De Beurs, 2011. BSI= Brief Symptom Inventory

Data analysis

The data were analyzed with the Statistical Program for Social Sciences (SPSS) version 22.0. The Shapiro Wilk's test shows that the majority of the research variables (BSI: 56% and YSQ-L3: 72%) are normally distributed (Shapiro & Wilk, 1965). Based on this outcome and the fact that the non-parametric and parametric tests resulted in the same conclusions, parametric tests were applied. The demographic variables age, gender and length of treatment are not normally distributed. An investigation of the box plots showed that the BSI and YSQ-L3 scores contain few outliers which were included in the analysis.

The data analysis includes 3 datasets consisting of participants who filled in all four measurements of the BSI and YSQ-L3 at pre- (M1), mid - (M2), the end of treatment (M3) and follow up (M4) (see figure 1). For the investigation of the psychological symptoms (BSI) the GSI, the total scores and mean values for each subscale (9) were analyzed. The analysis of the EMSs (YSQ-L3) was based on the total scores and mean values for each subscale (18), schema domain (5) and for all EMSs together. The dropouts were not included in the analysis. The consequences of this exclusion are discussed later on.

In order to answer the research question, the first step was to investigate the characteristics of the clients (N=62) within the clinical setting "de Wieke". For each participant, the diagnosis, the present EMSs and the BSI scores at pre-treatment (M1) were explored.

The second step was to verify whether the degree of EMSs and psychological distress is significantly decreased by the end of ST in comparison to the beginning. Here, it was also tested whether EMSs and psychological distress decreased from M1 to M2 and M2 to M3. After that, it was investigated whether the changes found by the end of treatment were maintained after a follow up period of 6 months (M4). The comparisons between M1, M2, M3 and M4 were conducted with 36 (YSQ-L3) and 30 (BSI) clients. One sided Paired-Sample T Tests were applied to analyze the second question. The Cohen's d (*d*) for within subject designs was used as an effect size in order to determine the standardized difference between the means. The values of *d* for small, medium and large effects are respectively .2, .5, and .8 (Rice & Harris, 2005; Lakens, 2013).

The third step was to investigate how modifications in EMSs were related to changes in psychological distress over the course of treatment with ST. The Pearson correlation coefficient (*r*) was used in order to test whether the differences scores M2 – M1 and M3 – M2 (EMSs) were positively related to the difference scores M2 – M1 and M3 – M2 (BSI). The values of *r* for the strength of association are .1 to .3 (small), .3 to .5 (medium) and .5 to 1.0 (large) (Moore & McCabe, 2011). The clients of whom the data was analyzed in sub question 2 and who filled in both the BSI and YSQ-L3 were included in this analysis (N=26). For all analyses the significance level was $p < 0.05$ (one sided).

Results

The characteristics of clients within the clinical setting „de Wieke"

In order to get a richer picture of the client population within a clinical group setting, it was first investigated which DSM-IV-axis-2 diagnoses, EMSs and symptoms of psychological distress were present in the research sample. Based on the YSQ-L3 scores, BSI scores and information from the EPD a descriptive analysis of M1 has been done. The data of clients who completed their treatment successfully in at least 6 months (N=62) were analyzed.

DSM-IV-axis-2 classification

The results show that the treatment population consists mainly of clients with the diagnosis PD NOS. This indicates that these clients have characteristics of various PD's. The second most common diagnoses were "postponed" and borderline PD which belongs to cluster B. Besides that, diagnoses in cluster C such as dependent and avoidant PD were present in the clinical sample. The least common were histrionic, obsessive-compulsive, narcissistic and antisocial PDs as well as diagnoses in cluster A. Table 6 gives an overview of the axis II diagnoses.

Table 6

Axis II diagnoses based on the EPD of clients who completed their treatment (N=62)

DSM-IV-classification	N=62	%
Axis II: Personality disorders		
Cluster A	0	0,0 %
Paranoid personality disorder	0	0,0 %
Schizoid personality disorder	0	0,0 %
Schizotypical personality disorder	0	0,0 %
Cluster B	15	24,1 %
Antisocial personality disorder	1	1,6 %
Borderline personality disorder	14	22,6 %
Histrionic personality disorder	0	0,0 %
Narcissistic personality disorder	0	0,0 %
Cluster C	5	8,1 %
Avoidant personality disorder	2	3,2 %
Dependent personality disorder	3	4,8 %
Obsessive-compulsive personality disorder	0	0,0 %
Personality disorder (NOS)	28	45,2 %
Diagnosis axis II postponed	14	22,6 %

Notes: EPD= Electronic patient dossier, PD NOS= Personality disorder not otherwise specified

Presence of EMS

Besides the DSM-IV-axis 2 diagnoses, it was also investigated which EMSs were present in the clinical population. These outcomes were based on the 18 EMSs total scores which fell into the score categories *high* or *very high*. The analysis shows that clients report on average 11 EMSs at the beginning of their treatment. In general, clients report a minimum of 2 and a maximum of 18 schemas. In conclusion it can be said that clients within the clinical setting “de Wieke” report many EMSs. The next step was to investigate which EMSs were present in the clinical sample. The 18 EMSs and corresponding average scores are presented in table 7. The average total scores of 62 clients are based on the score categories of each schema domain and EMS (see appendix a). Clients report most often schemas belonging to the domain “other directedness”. Schemas in the domains “overvigilence & inhibition” and “disconnection & rejection” are almost equally reported. The schemas included in the domains “impaired autonomy & performance” and “impaired limits” are the least present. A closer look on the EMSs shows that “self-sacrifice”, “negativity/pessimism”, “approval seeking” and “subjugation” were most often reported. The least often present are the schemas “entitlement/grandiosity” and “enmeshment/undeveloped self”.

Table 7

Presence of EMSs in the research sample (N=62) based on the total scores falling into the categories high and very high from the YSQ-L3

Domain and EMSs	N	%	M	Sd
Disconnection & Rejection			238,1	56,9
1.Emotional deprivation	43	69,4 %	33,0	11,8
2.Abandonment/instability	43	69,4 %	59,7	16,7
3.Mistrust/abuse	37	59,7 %	54,5	18,8
4.Social isolation/alienation	47	75,8 %	39,0	10,9
5.Defectiveness/shame	43	69,4 %	52,0	15,9
Impaired autonomy and performance			149,8	34,6
6.Failure	43	69,4 %	33,5	11,8
7.Dependence/incompetence	34	54,8 %	49,1	14,3
8.Vulnerability	29	46,8 %	35,2	11,8
9.Enmeshment/undeveloped self	27	43,5 %	32,0	13,2
Impaired limits			74,4	18,0
10.Entitlement/grandiosity	12	19,4 %	27,1	8,9
11.Insufficient self-control/discipline	34	54,8 %	47,3	12,6
Other directedness			161,6	32,4
12.Subjugation	48	77,4 %	37,2	9,9
13.Self-sacrifice	54	87,1 %	71,2	16,2
14.Approval seeking	50	80,6 %	53,1	14,5
Overvigilence & inhibition			180,4	32,1
15.Negativity/pessimism	51	82,3 %	41,7	9,6
16.Emotional inhibition	39	62,9 %	31,3	7,6
17.Unrelenting standards/hypercriticalness	40	64,5 %	57,9	16,5
18.Punitiveness	45	72,6 %	49,6	11,0
All EMSs (total score)			804,3	133,8

Notes: EMSs= Early maladaptive schemas, YSQ-L3=Young Schema Questionnaire Long, Third Version

Symptoms of psychological distress

The third aspect that was investigated in the clinical sample was symptoms of psychological distress. Here, the BSI subscale total scores and the GSI of 61 clients were analyzed. The BSI data of one client were missing. An overview of the average scores, standard deviations (Sd) and ranges of the BSI is given in table 8. All clients experience symptoms such as cognitive problems (attention, memory etc.), interpersonal sensitivity (social anxiety etc.), depression, anxiety (panic, nervous etc.) and psychoticism (loneliness, social isolation) at the beginning of their treatment. Furthermore, the majority of clients experience somatic complaints (headache,

stomach ache etc.), hostility (aggression etc.), phobic fear (fear of specific places) and paranoid thinking (mistrust etc.). When compared to the norm group of female policlinic clients (N=4291) the clients at "de Wieke" (N=61) show an above-average level of psychological distress (GSI).

Table 8

Presence of symptoms in the clinical sample (N=61) measured with the BSI

Symptoms	N	%	M	Sd	Range
1.Somatic complaints	59	96,7 %	9,7	5,5	0,0 – 21,0
2.Cognitive problems	61	100 %	12,3	5,2	2,0 – 24,0
3.Interpersonal sensitivity	61	100 %	8,0	3,7	0,0 – 16,0
4.Depression	61	100 %	14,0	4,9	4,0 – 24,0
5.Anxiety	61	100 %	11,4	5,2	2,0 – 24,0
6.Hostility	59	96,7 %	4,6	3,6	0,0 – 17,0
7.Phobic fear	60	98,4 %	8,0	4,5	0,0 – 19,0
8.Paranoid thinking	59	96,7 %	8,0	4,5	0,0 – 19,0
9.Psychoticism	61	100 %	10,1	3,6	2,0 – 18,0
GSI			1,7	0,6	0,6 – 3,3

Notes: BSI= Brief Symptom Inventory, GSI=Global severity index

Modifications of EMSs and psychological distress

The next step was to investigate if ST could lead to changes in EMSs and psychological distress. More specifically, it was tested whether the degree of EMSs and psychological distress was significantly decreased by the end of treatment in comparison to the beginning. Considering the fact that the data of some clients were missing, the analysis included 36 (YSQ-L3) and 30 (BSI) clients.

Modifications of EMSs by the end of treatment

A one sided Paired-Sample T Test was carried out for all schema domains and 18 EMSs separately. Table 9 shows the mean values (M), standard deviations (Sd), *t* (df) values and effect sizes (*d*) belonging to the EMSs and schema domains at pre-treatment (M1) and the end of treatment (M3). The analysis included the total scores of each of the 18 EMSs, schema domains and a total score of all 18 EMSs of 36 clients. The degree of all EMSs except for the schema "emotional deprivation" significantly decreases. There are large effects for the schemas "negativity/pessimism", "approval seeking", "dependence/incompetence", "insufficient self-control", "self-sacrifice", unrelenting standards", "subjugation" and "social isolation". The other schemas show medium effect sizes except for "mistrust/abuse" and "entitlement/grandiosity"

which show small effects. All schema domains except for “disconnection & rejection” show large effects. In conclusion, the hypothesis that the degree of EMSs is significantly decreased by the end of treatment in comparison to the beginning is partly confirmed. The schema “emotional deprivation” did not significantly decrease.

Table 9

Modification of EMSs and schema domains by the end of treatment (M3) in comparison to the beginning (M1) from participants who completed their treatment (N=36)

EMSs and schema domains	M1	Sd	M3	Sd	*t* (35)	*d*
Disconnection & Rejection	46,3	11,3	36,2	12,3	4.10**	0.68
1.Emotional deprivation	3,6	1,4	3,4	1,3	0.93	0.15
2.Abandonment/instability	3,4	0,9	2,5	0,9	4.51**	0.75
3.Mistrust/abuse	3,0	1,1	2,6	1,0	2.13*	0,35
4.Social isolation/alienation	3,7	1,1	2,6	1,2	5.12**	0.85
5.Defectiveness/shame	3,5	1,1	2,4	1,2	4.68**	0.78
Impaired autonomy & performance	37,0	7,5	25,8	8,2	5.89**	0.98
6.Failure	3,8	1,3	2,7	1,3	4.26**	0.71
7.Dependence/incompetence	3,3	1,0	2,2	0,8	5.99**	1.00
8.Vulnerability to harm/illness	2,9	1,0	2,1	0,8	4.50**	0.75
9.Enmeshment/undeveloped self	2,6	1,1	1,9	0,8	3.66**	0.61
Impaired limits	36,4	9,9	28,9	9,4	4.99**	0.83
10.Entitlement/grandiosity	2,4	0,9	2,2	0,8	2.35*	0.39
11.Insufficient self-control/discipline	3,1	0,8	2,3	0,7	5.59**	0.93
Other directedness	53,8	10,1	38,4	8,9	6.44**	1.07
12.Subjugation	3,7	0,9	2,5	0,8	5.30**	0.88
13.Self-sacrifice	4,2	0,9	3,1	0,9	5.44**	0.91
14.Approval seeking	3,8	1,1	2,7	0,8	6.21**	1.03
Overvigilance & inhibition	44,6	7,0	32,4	11,2	5.77**	0.96
15.Negativity/pessimism	3,7	0,8	2,5	1,1	6.60**	1.10
16.Emotional inhibition	3,3	0,7	2,4	1,0	4.86**	0.81
17.Unrelenting standards/hypercriticalness	3,6	0,9	2,6	1,0	5.26**	0.88
18.Punitiveness	3,6	0,8	2,7	1,1	3.86**	0.64
All early maladaptive schemas (total)	44,0	6,7	32,6	8,9	5.99**	1.00

Notes: EMSs= Early maladaptive schemas, t*= $p < 0.05$, t**= $p < 0.01$ (one sided)

Modifications of EMSs over the course of ST (pre- to mid-treatment)

Considering the fact that there are significant decreases in EMSs by the end of treatment a closer look was taken on changes in EMSs from pre-to mid-treatment (see table 10). The one sided

Paired-Sample T Test included the total scores of each of the 18 EMSs, schema domains and a total score of all 18 EMSs of 36 clients. There are significant decreases and small effect sizes only for the schemas "social isolation", "defectiveness", "dependence/incompetence", "subjugation", "self-sacrifice", "approval seeking" and "negativism/pessimism". The same conclusions hold for the schema domains "impaired autonomy & performance", "other directedness" and "impaired limits". In Sum, almost 50% of all EMSs decrease significantly during pre- to mid-treatment.

Table 10
Modification of EMSs and schema domains from pre- (M1) to mid- (M2) treatment (N=36)

EMSs and schema domains	M1	Sd	M2	Sd	*t* (35)	*d*
Disconnection & Rejection	46,3	11,3	43,7	12,6	1.23	0.20
1.Emotional deprivation	3,6	1,4	3,7	1,3	-0.47	-0.08
2.Abandonment/instability	3,4	0,9	3,3	0,9	0.45	0.08
3.Mistrust/abuse	3,0	1,1	3,0	1,1	0.55	0.09
4.Social isolation/alienation	3,7	1,1	3,3	1,3	1.91*	0.32
5.Defectiveness/shame	3,5	1,1	3,0	1,2	2.44*	0.41
Impaired autonomy & performance	37,0	7,5	33,4	11,2	1.92*	0.32
6.Failure	3,8	1,3	3,5	1,5	1.66	0.28
7.Dependence/incompetence	3,3	1,0	2,9	1,2	2.03*	0.34
8.Vulnerability to harm/illness	2,9	1,0	2,6	1,2	1.50	0.25
9.Enmeshment/undeveloped self	2,6	1,1	2,4	1,1	1.23	0.20
Impaired limits	36,4	9,9	34,5	9,6	1.26*	0.21
10.Entitlement/grandiosity	2,4	0,9	2,4	0,8	0.23	0.04
11.Insufficient self-control/discipline	3,1	0,8	2,8	0,9	1.53	0.25
Other directedness	53,8	10,1	48,3	9,6	2.89**	0.48
12.Subjugation	3,7	0,9	3,4	1,0	2.13*	0.35
13.Self-sacrifice	4,2	0,9	3,8	0,9	2.32*	0.39
14.Approval seeking	3,8	1,1	3,4	0,9	2.94**	0.49
Overvigilance & inhibition	44,6	7,0	41,9	11,3	1.40	0.23
15.Negativity/pessimism	3,7	0,8	3,2	1,2	2.95**	0.49
16.Emotional inhibition	3,3	0,7	3,3	1,1	0.18	0.03
17.Unrelenting standards/hypercriticalness	3,6	0,9	3,5	1,1	0.84	0.14
18.Punitiveness	3,6	0,8	3,3	1,1	1.06	0.18
All early maladaptive schemas (total)	44,0	6,7	40,7	9,4	1.90*	0.32

Notes: EMSs= Early maladaptive schemas, t*= $p < 0.05$, t**= $p < 0.01$ (one sided)

Modifications of EMSs over the course of ST (mid- to the end of treatment)

A closer look was also taken on changes in EMSs from mid- to the end of treatment (see table 11). The one sided Paired-Sample T Test included the total scores of each of the 18 EMSs,

schema domains and a total score of all 18 EMSs of 36 clients. All EMSs are significantly decreased. There are large effects for the schemas “emotional inhibition”, “unrelenting standards”, “approval seeking”, “dependence/incompetence”, “abandonment”, “social isolation” and “self-sacrifice”. The other schemas show medium effect sizes except for “mistrust/abuse”, “enmeshment” and “entitlement” which show small effects. All schema domains show medium effects except for the domains “overvigilence & inhibition” and “other directedness” which have large effect sizes. In Sum, the degree of all EMSs decreases significantly from mid- to the end of treatment.

Table 11

Modification of EMSs and schema domains from mid- (M2) to the end of (M3) treatment from participants who completed their treatment (N=36)

EMSs and schema domains	M2	Sd	M3	Sd	*t* (35)	*d*
Disconnection & Rejection	43,7	12,6	36,2	12,3	4.05**	0.68
1.Emotional deprivation	3,7	1,3	3,4	1,3	1.76*	0.29
2.Abandonment/instability	3,3	0,9	2,5	0,9	4.95**	0.83
3.Mistrust/abuse	3,0	1,1	2,6	1,0	2.42*	0.37
4.Social isolation/alienation	3,3	1,3	2,6	1,2	4.89**	0.82
5.Defectiveness/shame	3,0	1,2	2,4	1,2	3.50**	0.58
Impaired autonomy & performance	33,4	11,2	25,8	8,2	4.77**	0.79
6.Failure	3,5	1,5	2,7	1,3	3.34**	0.56
7.Dependence/incompetence	2,9	1,2	2,2	0,8	5.04**	0.84
8.Vulnerability to harm/illness	2,6	1,2	2,1	0,8	3.97**	0.66
9.Enmeshment/undeveloped self	2,4	1,1	1,9	0,8	2.81**	0.47
Impaired limits	34,5	9,6	28,9	9,4	4.65**	0.77
10.Entitlement/grandiosity	2,4	0,8	2,2	0,8	2.55*	0.42
11.Insufficient self-control/discipline	2,8	0,9	2,3	0,7	4.37**	0.73
Other directedness	48,3	9,6	38,4	8,9	5.73**	0.96
12.Subjugation	3,4	1,0	2,5	0,8	4.32**	0.72
13.Self-sacrifice	3,8	0,9	3,1	0,9	4.84**	0.81
14.Approval seeking	3,4	0,9	2,7	0,8	5.38**	0.90
Overvigilance & inhibition	41,9	11,3	32,4	11,2	6.25**	1.04
15.Negativity/pessimism	3,2	1,2	2,5	1,1	4.59**	0.76
16.Emotional inhibition	3,3	1,1	2,4	1,0	7.69**	1.28
17.Unrelenting standards/hypercriticalness	3,5	1,1	2,6	1,0	5.47**	0.91
18.Punitiveness	3,3	1,1	2,7	1,1	3.91**	0.65
All early maladaptive schemas (total)	40,7	9,4	32,6	8,9	5.64**	0.94

Notes: EMSs= Early maladaptive schemas, t*= $p < 0.05$; t**= $p < 0.01$ (one sided)

Modifications of EMSs after a follow up period of 6 months

The next step was to investigate whether ST had long term effects on EMSs. It was analyzed whether the decrease of EMSs found by the end of treatment would be maintained during a follow up period of 6 months. The results are presented in table 12. The one sided Paired-Sample T Test reveals that the decreases in all EMSs at the end of treatment are maintained after a follow up period except for the schema "entitlement/grandiosity". Here, the degree decreases even further with a medium effect size. In conclusion, the hypothesis that the significant decrease in EMSs found by the end of treatment is maintained after a follow up period of 6 months is confirmed.

Table 12

Modification of EMSs and schema domains after a follow up period of 6 months (M4) in comparison to the end of treatment (M3) (N=36)

EMSs and schema domains	M3	Sd	M4	Sd	*t* (35)	*d*
Disconnection & Rejection	36,2	12,3	36,4	10,5	-0.17	-0.03
1.Emotional deprivation	3,4	1,3	3,5	1,3	-0.29	-0.05
2.Abandonment/instability	2,5	0,9	2,7	1,0	-1.13	-0.19
3.Mistrust/abuse	2,6	1,0	2,5	0,9	0.54	0.09
4.Social isolation/alienation	2,6	1,2	2,6	1,0	0.53	0.09
5.Defectiveness/shame	2,4	1,2	2,4	1,0	-0.19	-0.03
Impaired autonomy & performance	25,8	8,2	26,9	8,9	-0.86	-0.14
6.Failure	2,7	1,3	2,9	1,2	-1.11	-0.18
7.Dependence/incompetence	2,2	0,8	2,3	1,0	-1.13	-0.19
8.Vulnerability to harm/illness	2,1	0,8	2,1	0,8	0.30	0.05
9.Enmeshment/undeveloped self	1,9	0,8	2,0	0,8	-0.38	-0.06
Impaired limits	28,9	9,4	27,7	10,3	1.00	0.17
10.Entitlement/grandiosity	2,2	0,8	2,0	0,8	2.50*	0.42
11.Insufficient self-control/discipline	2,3	0,7	2,3	0,9	0.04	0.01
Other directedness	38,4	8,9	40,0	11,6	-0.98	-0.16
12.Subjugation	2,5	0,8	2,6	1,0	-0.39	-0.07
13.Self-sacrifice	3,1	0,9	3,2	1,0	-0.55	-0.09
14.Approval seeking	2,7	0,8	2,9	1,0	-1.49	-0.25
Overvigilance & inhibition	32,4	11,2	32,5	10,7	-0.09	-0.01
15.Negativity/pessimism	2,5	1,1	2,7	1,0	-0.74	-0.12
16.Emotional inhibition	2,4	1,0	2,4	1,0	-0.37	-0.06
17.Unrelenting standards/hypercriticalness	2,6	1,0	2,7	1,0	-0.40	-0.07
18.Punitiveness	2,7	1,1	2,6	1,0	1.15	0.19
All early maladaptive schemas (total)	32,6	8,9	33,1	9,0	-0.39	-0.06

Notes: EMSs= Early maladaptive schemas, t*= $p < 0.05$ (one sided)

Modifications of psychological distress by the end of treatment

A one sided Paired-Sample T Test was carried out for all 9 subscales separately and the GSI. Table 13 shows the mean values (M), standard deviations (Sd,) *t* (df) values and effect sizes (*d*) belonging to the 9 symptoms at pre-treatment (M1) and at the end of treatment (M3). The analysis included the total scores for the nine subscales and a total score for all symptoms (GSI). There is a significant decrease in all symptoms of psychological distress at the end of treatment. Phobic fear, depression, somatic complaints, psychoticism, anxiety, cognitive problems and interpersonal sensitivity show large effect sizes. Paranoid thinking and hostility show medium effect sizes. In conclusion, the hypothesis that a there is a significant decrease in symptoms of psychological distress by the end of treatment in comparison to the beginning is confirmed.

Table 13

Modifications of symptoms of psychological distress from pre-(M1) to the end of (M3) treatment from participants who completed their treatment (N=30)

Symptoms of psychological distress	M1	Sd	M3	Sd	*t* (29)	*d*
1.Somatic complaints	1,5	0,8	0,7	0,6	5.93**	1.08
2.Cognitive problems	2,0	0,9	1,2	0,8	5.06**	0.92
3.Interpersonal sensitivity	2,0	0,9	1,1	0,8	4.76**	0.87
4.Depression	2,2	0,7	1,2	0,8	6.17**	1.13
5.Anxiety	2,0	0,9	1,1	0,6	5.09**	0.93
6.Hostility	0,8	0,5	0,5	0,5	2.72**	0.50
7.Phobic fear	1,7	1,0	0,8	0,8	7.15**	1.31
8.Paranoid thinking	1,5	0,9	0,9	0,7	3.78**	0.69
9.Psychoticism	1,8	0,7	1,0	0,8	5.57**	1.02
GSI (total score)	1,7	0,6	0,9	0,5	7.17**	1.31

Notes: GSI= Global severity index, t*= $p < 0.05$; t**= $p < 0.01$ (one sided)

Modifications of psychological distress over the course of ST (pre- to mid-treatment)

Considering the fact that there is a significant decrease in psychological distress by the end of treatment a closer look was taken on changes in symptoms from pre-to mid-treatment. Table 14 shows the results of this analysis. The one sided Paired-Sample T Test included the total scores for the nine subscales and a total score for all symptoms (GSI) of 30 clients. The analysis shows a significant decrease in all symptoms of psychological distress except for “interpersonal sensitivity”, “hostility”, “paranoid thinking” and “psychoticism”. All decreased symptoms show small effects except for “somatic complaints” and “phobic fear” which show medium effect sizes.

Table 14

Modifications of symptoms of psychological distress from pre-(M1) to mid-(M2) treatment from participants who completed their treatment (N=30)

Symptoms of psychological distress	M1	Sd	M2	Sd	*t* (29)	*d*
1.Somatic complaints	1,5	0,8	1,1	0,7	3.95**	0.72
2.Cognitive problems	2,0	0,9	1,7	0,9	2.19*	0.40
3.Interpersonal sensitivity	2,0	0,9	1,9	1,1	0.74	0.13
4.Depression	2,2	0,7	1,9	1,1	1.90*	0.35
5.Anxiety	2,0	0,9	1,6	0,9	1.96*	0.36
6.Hostility	0,8	0,5	0,9	0,7	-0.34	-0.06
7.Phobic fear	1,7	1,0	1,3	1,1	3.18**	0.58
8.Paranoid thinking	1,5	0,9	1,3	1,0	1.12	0.21
9.Psychoticism	1,8	0,7	1,7	0,9	0.86	0.16
GSI (total score)	1,7	0,6	1,5	0,7	2.27*	0.41

Notes: GSI= Global severity index, t*= $p < 0.05$, t**= $p < 0.01$ (one sided)

Modifications of psychological distress over the course of ST (mid- to the end of treatment)

A closer look was also taken on changes in psychological distress from mid- to the end of treatment. The results are presented in table 15. The one sided Paired-Sample T Test included the total scores for the nine subscales and a total score for all symptoms (GSI) of 30 clients. The analysis shows a significant decrease in all symptoms of psychological distress. There are medium effect sizes for all symptoms except for “psychoticism” which shows a large effect size.

Table 15

Modifications of symptoms of psychological distress from mid-(M2) to the end of (M3) treatment from participants who completed their treatment (N=30)

Symptoms of psychological distress	M2	Sd	M3	Sd	t (29)	*d*
1.Somatic complaints	1,1	0,7	0,7	0,6	4.10**	0.75
2.Cognitive problems	1,7	0,9	1,2	0,8	3.58**	0.65
3.Interpersonal sensitivity	1,9	1,1	1,1	0,8	4.31**	0.77
4.Depression	1,9	1,1	1,2	0,8	3.73**	0.68
5.Anxiety	1,6	0,9	1,1	0,6	3.71**	0.68
6.Hostility	0,9	0,7	0,5	0,5	3.21**	0.59
7.Phobic fear	1,3	1,1	0,8	0,8	4.34**	0.79

8.Paranoid thinking	1,3	1,0	0,9	0,7	3.98**	0.73
9.Psychoticism	1,7	0,9	1,0	0,8	5.67**	1.04
GSI (total score)	1,5	0,7	0,9	0,5	5.72**	1.04

Notes: GSI= Global severity index, t*= $p < 0.05$; t**= $p < 0.01$ (one sided)

Modifications of psychological distress after a follow up period of 6 months

The next step was to investigate whether ST had long term effects on symptoms of psychological distress. It was analyzed whether the decrease in psychological symptoms by the end of treatment is maintained after a follow up period of 6 months. Table 16 shows the results of the follow up analysis. The one sided Paired-Sample T Test reveals that the decrease in the nine symptoms at the end of treatment is maintained until a follow up period of 6 months. In conclusion, the hypothesis that the significant decrease in psychological distress by the end of treatment is maintained after a follow up period of 6 months is confirmed.

Table 16

Modification of symptoms of psychological distress after a follow up period of 6 months (M4) in comparison to the end of treatment (M3) (N=30)

Symptoms of psychological distress	M3	Sd	M4	Sd	*t* (29)	*d*
1.Somatic complaints	0,7	0,6	0,8	0,6	-0.43	-0.08
2.Cognitive problems	1,2	0,8	1,4	0,5	-1.25	-0.23
3.Interpersonal sensitivity	1,1	0,8	1,4	0,8	-1.27	-0.23
4.Depression	1,2	0,8	1,5	0,9	-1.47	-0.27
5.Anxiety	1,1	0,6	1,1	0,6	-0.26	-0.05
6.Hostility	0,5	0,5	0,5	0,4	0.26	0.05
7.Phobic fear	0,8	0,8	0,9	0,7	-1.26	-0.23
8.Paranoid thinking	0,9	0,7	0,9	0,6	0.00	0
9.Psychoticism	1,0	0,8	1,1	0,7	-0.58	-0.11
GSI (total score)	0,9	0,5	1,1	0,4	-1.16	-0.21

Notes: GSI= Global severity index, t*= $p < 0.05$ (one sided)

The relationship between changes in EMSs and psychological distress

The earlier analyses show a significant decrease in EMSs and symptoms of psychological distress over the course and at the end of treatment. Therefore, the next step was to investigate whether the changes in EMSs were positively related to modifications in psychological distress over the course of ST. The earlier pre-post analysis included 36 (YSQ-L3) and 30 (BSI) participants. From these participants there were only 26 of whom data was available from both

questionnaires which was needed for the following correlation analysis. With a one sided Paired-Sample T Test it was investigated whether the results of the pre-post analysis of the N=36 and N=26 sample were different. The only difference that was found was that the schema "mistrust/abuse", was not significantly decreased in the N=26 sample but in the N=36 sample. Earlier pre-post analyses showed that the schema "mistrust/abuse" had a smaller effect size when compared to other EMSs. By excluding 10 clients (due to their missing BSI data) the power of the schema analysis decreased. Besides other unknown factors this might explain why in the N=26 sample no significant decrease in the schema "mistrust/abuse" was found. For the symptoms of psychological distress no difference in the results (pre-post) was found. Therefore, 26 participants out of the N=36 sample were included in the following analysis. A correlational analysis (Pearson: *r*) was carried out with the difference scores regarding the EMSs (M2-M1 and M3-M2) and symptoms of psychological distress (M2-M1 and M3-M2).

The relationship between changes in EMSs and psychological distress from pre- to mid-treatment

The correlation coefficients *r* regarding changes in EMSs and symptoms of psychological distress from pre- to mid-treatment are presented in table 17. The analysis was based on the difference scores (M2-M1) of the YSQ-L3 and BSI which indicate the amount of change in EMSs and symptoms between pre- and mid-treatment. The analysis shows no positive correlation between overall psychological distress (GSI) and total schema change. Regarding the GSI and the EMS total score (all schemas summed up), it is important to mention that these are general indicators of psychological distress and EMSs that do not give detailed information about changes of specific symptoms or schemas. Based on that, significant positive correlations for changes in several schemas and schema domains except for "emotional deprivation", "mistrust/abuse", insufficient self-control", "dependence/incompetence" (r= -.37), "entitlement/grandiosity" (r= -.40) and "impaired limits" were found. Mainly changes in the schemas "approval seeking", "enmeshment", "unrelenting standards" and the schema domain "other directedness" correlate positively with changes in many symptoms ranging from 4 to 6. Regarding the symptoms it is noticeable that mainly changes in "hostility", "psychoticism" and "depression" correlated positively with changes in several EMSs. The least related to changes in EMSs were modifications in "somatic complaints", "anxiety" and "phobic fear". The majority of significant positive correlations between changes in EMSs and psychological distress from pre-

to mid-treatment are of medium strength. There are large positive correlations between changes in several EMSs and “hostility”. In conclusion, the hypothesis that changes in the degree of EMSs from pre- to mid- treatment are positively related to modifications in psychological distress is partly confirmed. Changes in several (but not all) schemas seemed to be positively related to modifications in various symptoms of psychological distress.

Table 17

Correlation coefficients between the difference scores of early maladaptive schemas and symptoms from pre- (M1) to mid- (M2) treatment from clients who filled in both the YSQ-L3 and BSI (N=26)

Early maladaptive schemas and schema domains	SOM	COG	INT	DEP	ANX	HOS	POB	PAR	PSY	GSI
Disconnection & Rejection	-.01	.16	.12	.24	.27	.38*	.20	.02	.23	.25
1.Emotional deprivation	.04	-.01	-.09	-.02	.16	.11	.00	-.04	-.12	.02
2.Abandonment/instability	.07	.15	.08	.18	.36*	.23	.20	-.13	.17	.21
3.Mistrust/abuse	-.12	.05	-.02	.18	.11	.30	.07	.02	.14	.11
4.Social isolation/alienation	.07	.30	.26	.29	.24	.44*	.33	.24	.41*	.38*
5.Defectiveness/shame	-.08	.16	.25	.34*	.23	.50**	.23	.07	.30	.30
Impaired autonomy & performance	-.19	.14	.22	.28	.06	.25	.24	.04	.39*	.21
6.Failure	.01	.11	.21	.35*	.27	.22	.20	.04	.37*	.28
7.Dependence/incompetence	-.37*	-.03	.10	.06	-.17	-.02	.10	-.09	.22	-.03
8.Vulnerability to harm/illness	-.25	.15	.26	.26	-.03	.39*	.20	.26	.37*	.25
9.Enmeshment/undeveloped self	.07	.30	.23	.37*	.26	.36*	.32	.02	.42*	.34*
Impaired limits	.02	.12	.01	-.08	.08	-.02	.24	-.13	.14	.05
10.Entitlement/grandiosity	-.24	-.13	-.01	-.12	-.02	-.14	.07	-.40*	.07	-.16
11.Insufficient self-control/discipline	.14	.23	.01	-.04	.11	.05	.27	.04	.15	.14
Other directedness	-.05	.35*	.35*	.27	.19	.41*	.19	.36*	.25	.34*
12.Subjugation	-.13	.17	.24	.16	.11	.36*	.26	.15	.14	.20
13.Self-sacrifice	.04	.30	.29	.19	.19	.25	.07	.45*	.08	.28
14.Approval seeking	-.06	.37*	.36*	.34*	.18	.43*	.16	.25	.42*	.37*
Overvigilence & inhibition	-.02	.25	.31	.22	.24	.50**	.28	.17	.39*	.34*
15.Negativity/pessimism	-.11	.10	.25	.25	.12	.24	.17	-.05	.40*	.20
16.Emotional inhibition	-.20	.14	.33	.22	.10	.51**	.12	.08	.23	.22
17.Unrelenting standards/hypercriticalness	.01	.21	.27	.13	.22	.51**	.39*	.21	.41*	.36*
18.Punitiveness	.12	.31	.22	.19	.27	.40*	.21	.23	.28	.32
All early maladaptive schemas (total)	-.06	.24	.25	.26	.22	.40*	.26	.12	.34*	.30

Notes: YSQ-L3=Young Schema Questionnaire (Long, Third Version), BSI=Brief Symptom Inventory: SOM=Somatic complaints, COG=Cognitive problems, INT: Interpersonal sensitivity, DEP=Depression, ANX=Anxiety, HOS=Hostility, POB=Phobic fear, PAR=Paranoid thinking, PSY=Psychoticism, GSI=overall psychological distress; *p <0.05, **p<0.01

The relationship between changes in EMSs and psychological distress from mid- to the end of treatment

The correlation coefficients *r* regarding changes in EMSs and symptoms of psychological distress from mid- to the end of treatment are presented in table 18. The analysis was based on the difference scores (M3-M2) of the YSQ-L3 and BSI. The results show a positive correlation between overall psychological distress (GSI) and the EMS total score. There are significant positive correlations for changes in all schemas and schema domains except for “emotional deprivation”, “vulnerability”, “enmeshment” and “approval seeking”. Changes in the schemas “negativism/pessimism”, “punitiveness” and the schema domain “overvigilence & inhibition” correlate positively with changes in many symptoms ranging from 4 to 6. Regarding the symptoms it is noticeable that mainly changes in “paranoid thinking”, “anxiety”, “hostility”, “phobic fear” and “depression” correlate positively with changes in several EMSs. The least related to changes in EMSs are “somatic complaints”, “cognitive problems” and “interpersonal sensitivity”. There are large positive correlations between changes in several EMSs and “depression”, “anxiety”, “phobic fear” and “paranoid thinking”. The majority of significant positive correlations between changes in EMSs and psychological distress from mid- to the end of treatment are of medium strength. In conclusion, the hypothesis that changes in the degree of EMSs from mid- to the end of treatment are positively related to modifications in psychological distress is partly confirmed. Changes in several (but not all) schemas seemed to be positively related to modifications in various symptoms of psychological distress.

Table 18

Correlation coefficients between the difference scores of early maladaptive schemas and symptoms from mid- (M2) to the end of (M3) treatment from clients who filled in both the YSQ-L3 and BSI (N=26)

Early maladaptive schemas and schema domains	SOM	COG	INT	DEP	ANX	HOS	POB	PAR	PSY	GSI
Disconnection & Rejection	.12	.08	.19	.36*	.40*	.38*	.09	.36*	.29	.36*
1.Emotional deprivation	-.07	.01	-.10	.13	.27	.08	-.12	.22	.16	.12
2.Abandonment/instability	.16	.32	.21	.31	.49**	.37*	.21	.41*	.28	.44*
3.Mistrust/abuse	.18	-.00	.19	.28	.25	.26	-.00	.33*	.25	.27
4.Social isolation/alienation	.09	-.01	.19	.37*	.39*	.43*	.18	.24	.26	.33*
5.Defectiveness/shame	.07	-.00	.22	.40*	.34*	.42*	.06	.31	.28	.33
Impaired autonomy & performance	-.04	.31	.14	.33	.47**	.44*	.20	.48**	.30	.42*
6.Failure	-.02	.11	.13	.55**	.32	.27	.11	.26	.42*	.38*
7.Dependence/incompetence	-.13	.32	.13	.32	.44*	.43*	.21	.61**	.31	.41*
8.Vulnerability to harm/illness	.04	.14	-.04	-.25	.32	.26	.26	.22	-.12	.08
9.Enmeshment/undeveloped self	.04	.31	.15	.15	.27	.30	.00	.24	.14	.26
Impaired limits	-.00	.22	.03	-.01	.47**	.14	.56**	.34*	-.16	.23
10.Entitlement/grandiosity	.10	-.02	-.07	-.26	.24	-.05	.35*	.07	-.33	-.01
11.Insufficient self-control/discipline	-.07	.28	.08	.16	.44*	.20	.48**	.38*	.02	.30
Other directedness	.00	.26	.19	.24	.30	.36*	.16	.38*	.25	.35*
12.Subjugation	.09	.13	.16	.22	.31	.38*	.19	.34*	.13	.31
13.Self-sacrifice	.02	.33	.27	.29	.33	.28	.22	.34*	.30	.40*
14.Approval seeking	-.10	.10	-.01	.02	.05	.19	-.06	.19	.12	.09
Overvigilence & inhibition	.30	.26	.34*	.33	.37*	.37*	.34*	.44*	.35*	.50**
15.Negativity/pessimism	.06	.36*	.23	.38*	.51**	.31	.30	.36*	.46**	.50**
16.Emotional inhibition	.20	.01	.16	.15	.29	.49**	.16	.23	.12	.27
17.Unrelenting standards/hypercriticalness	.38*	.17	.27	.10	.16	.25	.40*	.34*	.15	.34*
18.Punitiveness	.20	.24	.34*	.40*	.30	.26	.15	.39*	.36*	.44*
All early maladaptive schemas (total)	.11	.24	.23	.35*	.46**	.43*	.25	.47**	.31	.45*

Notes: YSQ-L3= Young Schema Questionnaire (Long, Third Version), BSI= Brief Symptom Inventory: SOM=Somatic complaints, COG=Cognitive problems, INT: Interpersonal sensitivity, DEP=Depression, ANX=Anxiety, HOS=Hostility, POB=Phobic fear, PAR=Paranoid thinking, PSY=Psychoticism, GSI=overall psychological distress; *p <0.05, **p<0.01

Conclusion/discussion

Research shows that psychological treatments such as ST achieve promising results for people with PDs (Arntz & Bernstein, 2006; Bamelis et al., 2014; Masley et al., 2012; Nordahl & Nysæter, 2005; Renner et al., 2013). Considering the fact that research on ST for this treatment population is still scarce, the current study aimed to investigate its effectiveness in a clinical group setting (Bamelis et al., 2014). More specifically, it was studied whether changes regarding EMSs and psychological distress co-occur in clients with PDs over the course of ST. It was investigated if EMSs and psychological distress were significantly decreased by the end of treatment and how schemas and symptoms might change over the course of ST. Besides that, it was verified whether changes in schemas and symptoms found by the end of treatment are maintained during a follow up period of 6 months. Furthermore, a positive relationship between changes in EMSs and psychological distress is assumed. The results of this study are of clinical relevance, because remarkable observations of EMSs and psychological distress can be used to improve ST interventions regarding certain schemas or symptoms. Promising results support the integration of ST in a clinical context where it might benefit future clients as well. In the following paragraphs the results of this study are discussed.

The characteristics of clients within the clinical setting “de Wieke”

The analysis of the client population included the DSM-IV-axis 2 diagnoses, EMSs and symptoms of psychological distress. The present diagnoses are respectively PD NOS, diagnosis postponed, borderline, dependent, avoidant and antisocial. The high prevalence of the diagnosis PD NOS and “postponed” can be explained by the fact that a precise diagnosis about someone’s personality is often difficult during a short intake procedure. Most traits can only be observed in various situations over time and not easily during a short period. The number of borderline PDs in this setting (22.6 %) is comparable with the literature showing a high prevalence of 25 % in clinical populations as well (Farrell et al., 2009). The absence of cluster A diagnoses is related to the fact that treatment at “de Wieke” cannot fit the needs of these clients sufficiently. Group treatment with these clients has proven to be difficult. Therefore, they are referred to other institutions for treatment.

Regarding EMSs all 18 schemas are present in the clinical sample and clients report on average 11 schemas. As well as in the study from Fitzsimmons, Gallagher, Blayone, Chan,

Leaitch, Veals and Wilkinson (2008) the schema "self-sacrifice" is most often reported. The authors explain this outcome by the fact that many clients suffered from neglect during their childhood or had to take care of one of their parents. Regarding the fact that the researcher had insight in the clinical setting it could be observed that this finding is true for clients in the current sample as well. Fitzsimmons et al. (2008) further assume that these neglect experiences facilitate the attitude to sacrifice your own needs for others. This might also explain why the schema "entitlement/grandiosity" which is associated with superior thinking is the least common in this sample. The high prevalence of EMSs in this population corresponds with Jeffrey Young's theory, assuming that dysfunctional schemas play a central role in personality pathology (Eurelings-Bontekoe et al., 2010). The results also reflect the link between the prevalence/severity of EMSs and PDs found by other studies (Rijkeboer & Van den Bergh, 2006; Thimm, 2010) (see table 2).

With respect to psychological distress the majority of clients report that they suffer from all measured symptoms. The fact that most clients experience all symptoms is in conformity with literature suggesting that behavior patterns associated with PDs are linked to psychological distress. For example, people with avoidant PD tend to mistrust people. This corresponds with symptoms of psychoticism (Vittengl et al., 2003; Skodol et al., 2005). As in the current study symptoms of depression, anxiety, panic, social anxiety and burn-out are associated with personality pathology (Rijkeboer & van den Bergh, 2006; Thimm, 2010).

Modifications of EMSs during and after Schema Therapy

Based on the results the hypothesis regarding changes in EMSs is for the most part confirmed. The degree of all EMSs except for "emotional deprivation" decreases from pre- to the end of treatment. The results correspond to earlier studies that report a significant decrease in EMSs by the end of treatment as well (Farrel et al., 2009; Leppänen et al., 2014; Skewes et al., 2015; Van Vreeswijk et al., 2014). The current study shows large effects regarding decreases in EMSs. Literature and research about group characteristics and techniques included in ST might explain this outcome. For example, Farrel and Shaw (2012) state that groups enable clients to experiment with new behaviors, emotions, empathy or role play. They also suggest that these new experiences facilitate the correction of dysfunctional schemas. Furthermore, Farrel et al. (2009) assume that group processes such as social interaction/comparison, social support or sense of

belonging enhance the effectiveness of ST. Considering the fact that "de Wieke" offers ST in a group format it is likely that these group factors contributed to the positive outcomes. Furthermore, several techniques which focus on the invalidation of EMSs might have facilitated a decrease as well. For example, cognitive techniques have the potential to change rigid and general assumptions by questioning someone's beliefs about him/herself, others and the world (Bamelis et al., 2014). Besides that, Nordahl and Nysæter (2005) state that especially experiential techniques and healthy coping behaviors contribute to the effectiveness of ST on EMSs. Another explanation for the positive results might be the therapeutic relationship unique to ST (Bamelis et al., 2014). The "limited" fulfillment of unfulfilled basic needs, disclosure of emotions and psychoeducation may have facilitated the client's acceptance of his/her needs, a healthy expression of emotions and new experiences. This in turn may have weakened negative beliefs associated with certain EMSs (for example: "others are more important" – subjugation), resulting in a decrease of these dysfunctional schemas. Due to the fact that it could not be investigated which element of ST exactly led to decreases of EMSs, these interpretations should be considered with caution.

Regarding the schema "emotional deprivation" remarkable results have been found. As in the study from Fitzsimmons et al. (2008) "emotional deprivation" did not significantly decrease at the end of treatment. The authors explain this outcome as follows: the experience of emotional neglect, often, is linked to relationships in the past, whereas therapy focuses on the here and now. During ST clients learn how this deprivation affected them and how they can cope with it. There is less focus on the neglect experiences themselves which might be necessary to reduce the influence of this schema. Another explanation might be the formulation of the YSQ-L3 items measuring the EMSs "emotional deprivation". It is conspicuous that only these questions are written in past tense and refer to events in the past. The fact that these items measure past events and experiences that are irreversible might make it impossible to detect any changes. A study conducted by Morrison (2000) showed that when these items are formulated in present tense changes in the schema "emotional deprivation" could be detected at a follow up measurement. Therefore, the results regarding that schema are likely to be influenced by the formulation of the questions measuring it.

A closer look was taken on the changes of EMSs from pre-to mid-treatment and mid- to the end of treatment. This study shows large effect sizes during mid- to the end of treatment

which indicates that schemas decrease even more during the second half of treatment. Regarding the two treatment periods it seems that schemas related to feelings of safety, self-respect, incompetence, focus on others and negativity decrease already during the first half of treatment. Schemas related to safety and self-respect may decrease early, because the setting creates a sense of safety (no harms/threats), there is close contact with other clients and attachment with someone's group facilitates positive attitudes towards oneself ("others like me"). Incompetence is likely to decrease early, because clients have to take on domestic tasks (finances, groceries etc.) at the beginning of their treatment. With this they learn at an early stage that they are capable of handling daily things. Schemas which include a focus on others probably decrease early in treatment, because clients are early encouraged to perceive their own issues as relevant and important as well which facilitates a self-focus. The schemas which show changes only during mid- to the end of treatment are probably related to issues which need more time to change such as abandonment, undeveloped self, limits and self-acceptance. The longer clients are attached to a group the more they built trust and are less afraid of being abandoned. The separation from the home environment also facilitates a sense of self and makes room for the development of autonomy (capabilities, own opinions, self-acceptance, limits) (Muste, Weertman & Claassen, 2009).

This study shows that the changes in EMSs at the end of treatment are maintained during a follow up period of 6 months. These results correspond well with the study from Nordahl and Nysæter (2005) who found a 12 month follow up effect for clients with borderline PD. It is surprising that only the schema "entitlement/grandiosity" decreases even further after treatment. Within "de Wieke", therapists accentuate the importance of equivalence. Based on that, clients are likely to be encouraged to apply this new view of themselves and others outside of their treatment setting as well.

Modifications of psychological distress during and after Schema Therapy

Based on the results the hypothesis regarding changes in psychological distress is confirmed. The degree of all symptoms decreases from pre- to the end of treatment. These results correspond to several studies showing a significant decrease in symptoms of psychological distress by the end of treatment with ST (Bamelis et al., 2014; Farrel et al., 2009; Masley et al., 2012; Renner et al., 2013, Van Vreeswijk et al., 2014). This study shows large effects regarding decreases in

psychological distress. One possible explanation might be that ST techniques and group processes have a positive effect on symptoms as well. For example, cognitive and experiential techniques help clients to contradict negative convictions and to give negative memories another meaning. Given that psychological distress is often related to negative beliefs and experiences, positive changes in these might contribute to symptomatic relief. Furthermore, behavioral techniques such as relaxation may have contributed to the decrease of symptoms related to fear (somatic complaints, anxiety, phobia etc.) (Bamelis et al., 2014). Group processes which have been already mentioned are likely to play an important role in the decrease of psychological distress as well (Farrel et al., 2009). Another possible explanation for the decrease of symptoms might be their association with EMSs. Research shows that severity and presence of EMSs is linked to symptoms of psychological distress and that decreases in EMSs go together with symptomatic relief (Hawke & Provencher, 2011; Nordahl et al., 2005; Van Vreeswijk et al., 2014; Rijkeboer & Van den Bergh, 2006; Thimm, 2010). These findings gave good reason to investigate the relationship between changes in EMSs and symptoms (see sub question 3).

A closer look was taken on the changes of psychological distress from pre-to mid-treatment and mid- to the end of treatment. This study shows large effect sizes during mid- to the end of treatment which indicates that symptoms decrease even more during the second half of treatment. Regarding the two treatment periods it seems that symptoms related to anxiety, depression and cognitive problems decrease already during the first half of treatment. Anxiety related symptoms (somatic, anxiety, phobic fear) may decrease early, because clients experience their new environment as safe ("nothing can harm me here") and begin to express their feelings and relevant issues (reduces body tension). Feelings of depression may decrease during the first period, because clients learn early to be critical towards their negative beliefs (about themselves, others, world) and receive social support. Social support in turn minimizes feelings of loneliness and worthlessness, which are related to depression. Cognitive problems occur often together with depression and their decrease might consequently co-occur with reduced depressive feelings (Hermans & Van de Putte, 2004). The symptoms which change only during mid- to the end of treatment are probably related to more difficult issues which need more time to change such as control of rage, mistrust and punitiveness. Many clients report that they always have experienced outbursts of rage, difficulty to control emotions, mistrust and punitiveness. Therefore, longer

treatment time is maybe needed in order to change these structural behavior patterns (Paris, 2003).

This study shows that the changes in symptoms at the end of treatment are maintained during a follow up period of 6 months. These results correspond with research conducted earlier, confirming long term effects of ST ranging from 6 to 12 months on various symptoms of psychological distress (Farrell et al., 2009; Nordahl & Nysæter, 2005; Skewes et al., 2015; Weertman & Arntz, 2007).

The relationship between changes in EMSs and psychological distress

The hypotheses about a positive relationship between changes in EMSs and symptoms over the course of ST are partly confirmed. The change of several EMSs is positively related to the modification of various symptoms of psychological distress. This finding corresponds with what the schema theory suggests, that changes in EMSs severity are related to symptomatic relief. Besides that, there are several studies that found similar results, reporting that decreases in EMSs are related to improved symptom severity by the end of treatment with ST (Hawke & Provencher, 2011; Nordahl et al., 2005; Van Vreeswijk et al., 2014). Vreeswijk et al. (2014) explain this outcome by suggesting that positive changes in EMSs and improvement in symptom severity might mutually reinforce each other and that positive relationships indicate that changes in several EMSs might also co-occur with modifications in symptoms. These explanations are supported by literature linking the severity of EMSs to various psychological symptoms (Rijkeboer & Van den Bergh, 2006; Thimm, 2010).

A closer look was taken on how changes in schemas might be positively related to modifications in symptoms from pre-to mid-treatment and mid- to the end of treatment. This study shows more positive relationships between modifications in schemas and symptoms during the second half of treatment. In contrast to the current study, Vreeswijk et al. (2014) found changes in EMSs (total score) and symptoms (GSI) to be positively related also during pre- to mid-treatment. The sample size, content of therapy sessions and materials might explain the difference in the outcomes between the two studies. For example, Vreeswijk et al. (2014) included 63 clients, used specific methods differently (more intensive use of roleplays etc.) and measured symptoms and schemas with the Symptom Checklist 90 and an older version of the YSQ (measures 16 out of 18 EMSs). The fact that more positive relationships between schema

change and symptom improvement are found during the second half of treatment might be related to the large decreases in EMSs and symptoms during mid-to the end of treatment. Another explanation why positive changes in EMSs and symptoms seem to co-occur mainly during this time period might be the shift in the treatment program. The first months of the treatment focus on psychoeducation, awareness and understanding of EMSs and symptoms. Based on that, clients gradually (as the therapy goes on) learn how to change their dysfunctional beliefs and behavior patterns which is likely to affect related symptoms as well (Vreeswijk et al., 2008).

Regarding the different treatment periods exceptional positive relationships between changes in specific symptoms and several EMSs can be observed. Before zooming in, a focus on the entire treatment period shows that, except for "anxiety" and "psychoticism", symptoms such as hostility and depression seem to be most related to changes in several EMSs. The positive relationship between changes in hostility/depression and changes in most of the schemas can be explained by the fact that the majority of EMSs reflect strong negative beliefs towards the self and others (Jovev & Jackson, 2004). These cognitive aspects are also key characteristics of depression (especially negativism) and hostility (negative towards others). Modifications in somatic, cognitive and interpersonal symptoms are the least related to changes in EMSs over the course of treatment. One explanation might be that the items measuring somatic and cognitive complaints focus more on bodily experiences (pain, lack of energy, difficulty to remember things) whereas changes in EMSs require invalidation of certain beliefs instead of physical experiences. The items measuring interpersonal sensitivity focus on social interactions in the here & now instead on general assumptions related to someone's past.

With respect to the first half of treatment improvements in psychoticism are mainly related to modifications in schemas that include topics such as social anxiety, thoughts of inadequacy and negativism. The other way around, if schemas associated with these topics change it is more likely that related symptoms such as loneliness, feeling detached, punitiveness and negative self-evaluation (PSY scale) improve as well.

Regarding the second half of treatment changes in anxiety seem to be positively related to modifications in schemas associated with different types of fear such as abandonment, social anxiety, defectiveness or incompetence (Muste et al., 2009). Despite the fact that anxiety decreases already during pre- to mid-treatment positive relationships with schema change only

occur during the second half of treatment. A possible explanation might be that physiological symptoms of anxiety (tension, panic feelings) measured by the BSI items already decrease during the first half of treatment, but that anxiety related beliefs ("people will let me down") measured by the YSQ-L3 take more time to change (Muste et al., 2009). This suggestion is in conformity with what Jovev and Jackson (2004) state that cognitions related to EMSs are more resistant to change. The second symptom that shows mainly positive relationships with changes in schemas during the second half of treatment is paranoid thinking. More specifically, improvements in paranoid thinking are positively related to modifications in schemas associated with mistrust, abuse, incompetence, punishment and passive aggressive behavior. Decreases in the symptom "psychoticism" also show an exceptional positive relationship with changes in EMSs during the second half of treatment. Modifications in "psychoticism" are related to schemas that represent similar cognitive aspects that are more difficult to change (general distrust and hostility). This might explain why changes in both occur during later periods of treatment (Muste et al., 2009).

Concerning the literature about relationships between specific schemas and symptoms Hawke & Provencher (2011) list several results which have been observed in the current study as well. As in their review, changes in depression are positively related to modifications in the EMSs defectiveness/shame, social isolation and enmeshment. These schemas include beliefs about self-worth, being different and dependence that are also common in depression (Muste et al., 2009). Improvement in anxiety related symptoms (ANX, POB, SOM, INT) is, as it is suggested in the literature review from Hawke & Provencher (2011), associated with a change in the schemas abandonment, social isolation, dependence/incompetence, defectiveness/shame and unrelenting standards. An explanation might be that these schemas reflect anxiety related topics such as being left alone, criticism, being independent, inadequacy and fear to fail (Muste et al., 2009). Changes in symptoms regarding someone's trust towards others (PAR) are positively related to modifications in mistrust/abuse, self-sacrifice and insufficient self-control. This relationship can be explained by the fact that these schemas are related to distrust, avoiding harm by sacrificing your own needs and lack of impulse control (Muste et al., 2009). Modifications in cognitive problems seem to be positively related to changes in the EMSs negativism/pessimism. Both are related to lack of concentration, which is caused by constant worries that something negative might happen (Muste et al., 2009). The current study shows also new results. Changes

in hostility and psychoticism are positively related to modifications in several EMSs in all schema domains except “impaired limits”.

Strengths and limitations

The first and most important strong point of this study is that it is conducted in a clinical setting. In contrast to highly controlled laboratory/experimental settings it was possible to observe the integration of ST in a natural environment (the “practice”). Therefore, the results of the current study can be perceived as having a higher external validity than the ones of an artificial research. Furthermore, the insight in this clinical environment opened the possibility to observe phenomena such as drop out, response to therapy and relevant external factors as well. A second advantage of the research design is that it includes 4 measurements (pre-mid-end of treatment, follow up) covering the course of therapy and a post-treatment period. The use of repeated measurements gave detailed insight into changes in EMSs and symptoms over the course of treatment and how these might be related to each other. Besides that, the use of follow up data was valuable information in order to investigate the long-term effectiveness of ST. A third strong point is the clinical judgment that was used to determine whether clients completed their treatment successfully. Based on clinical experience, therapy response can be expected after a treatment period of at least 6 months. Therefore, clients who were in therapy for at least 6 months, but who requested to stop their therapy before the end of the official treatment period (12 months) were included in this study. However, the clinical experience is also somewhat arbitrary, because it is not based on theory and other therapists are likely to judge treatment success differently. It is important to keep in mind that another cut-off judgement (minimum treatment period) could have resulted in other conclusions. A fourth strong point was the involvement of the researcher in the treatment setting. By working in the clinical environment where ST was applied, the researcher got insight into the actual data collection, therapy process, drop out, response to therapy and more unique setting characteristics. The observed biases and possible influences on the results were included in the interpretation and discussion of the outcomes. Furthermore, several recommendations are based on these observations.

The results should be also interpreted in the context of several limitations. The first and most crucial limitation is the loss of data due to forgotten or postponed measurements and refusal to continue participation. These aspects resulted in small sample sizes for the analyzed data sets.

Regarding the follow up measurements many former clients simply refused to fill in the questionnaires. The reason why people refused is open to speculation, but it might have impacted the results, because just a few clients decided to fill in the follow up questionnaires. It is possible that clients who still felt good after their treatment were more motivated to participate than people who might have experienced a relapse. The follow up sample thus might be prone to a selective bias which could have distorted the results. Therefore, the outcomes must be interpreted with caution. A second disadvantage is the lack of a control group. Without a comparison to other treatments (for example transference-focused therapy) it is unclear whether specific elements of ST led to the positive results. Other factors such as the therapist's expertise or personal factors could have influenced the results as well. A third weak point is the exclusion of clients who did not complete their treatment in at least 6 months (dropouts). By doing so, schemas and symptoms were only investigated in clients who completed their treatment successfully. Therefore, the results about the effectiveness of ST on EMSs and symptoms cannot be generalized to the whole clinical sample. In fact, conclusions can be drawn only about the "successful" clients from the clinical population. A fourth limitation is the uneven distribution of men and women in the sample. Considering the fact that gender differences regarding EMSs and symptoms have been found the huge number of females in the sample (on average 71%) is likely to have influenced the outcomes. For example, women tend to have specific schemas and symptoms more often/severe than men and are thus likely to react different to treatment interventions (see table 2). A fifth weak aspect of the current study has to do with the possible bias regarding the YSQ-L3. It is known that EMSs can operate outside of someone's awareness and that the YSQ-L3 is based on self-report and self-insight. Therefore, it cannot be assumed with certainty that all schemas were detected by the questionnaire. It is likely that a client's awareness of certain schemas differed between the four measurements. For example, if clients were less aware of a schema the scores were consequently lower which might gave the wrong impression of improvement.

Recommendations for future research and implications for therapy

Based on observations in the research setting, the limitations and results, there are several recommendations for future research. Regarding the fact that forgotten, lost or postponed measurements might have distorted the results it is recommended that researchers apply a strict

data collection schedule. An overview should be created that shows when clients have to fill in the next measurement. This list needs to be updated continuously. Furthermore, collected scores should be immediately transferred to the statistical data set in order to avoid data loss. Concerning the missing follow up measurements it is recommended to put more effort into contacting former clients personally. This increases the chance of participation and gives the opportunity to discover reasons for refusal. With this it can be investigated whether only specific clients respond to the follow up measurement. Regarding the research design it is of importance to include a control group that receives another treatment (for example transference-focused therapy) in order to support that ST indeed has positive effects on EMSs and symptoms. A comparison between the experimental and control group enables researchers to investigate the added value of techniques unique to ST. A third point of interest is the underrepresented number of men. Future research in clinical settings should include approximately the same number of women and men in order to study gender differences regarding the effectiveness of ST. Furthermore, it is possible to investigate whether schema and symptom change differs between men and women. Regarding the instruments, procedures to identify schemas with more certainty are needed. Based on Welburn et al. (2002) it is recommended to apply self-report (YSQ-L3) as well as non-self-report measures (projective tests etc.). Regarding the fact that EMSs can also operate outside of awareness, methods based on the unconscious can add a great deal to the detection of schemas. In the current study, the follow up period was limited to 6 months post-treatment. Considering the fact that EMSs and symptom scores after treatment show a tendency to increase it is advised to extend the follow up period. Even though the increase in scores was not statistically significant it should be verified in the future whether treatment effects last even longer than 6 months.

Regarding the results there are several points of interest for future research. In this study, relationships between changes in schemas and symptoms have been found. Therefore, future studies should further elaborate the possible mediating or moderating role of EMSs. Furthermore, it should be verified whether repetition leads to similar results. The fact that no significant decrease in the schema “emotional deprivation” was found might not only be related to the therapeutic methods, but also the formulation of the YSQ-L3 items representing that schema. Therefore, future studies should take a closer look at that schema and investigate whether changes in techniques or adjustments in the formulation of the items (for example in

present tense) might lead to different results. Regarding the fact that studies focusing on ST are mainly of a quantitative nature it is interesting to do qualitative research in this field as well. This opens the possibility to study other factors which might influence the outcomes such as interpersonal problems, experience of therapist-client relationship, benefits from therapy or family issues. A combination of qualitative and quantitative research has the potential to enrich existing knowledge on the effectiveness of ST in clinical group settings.

The outcomes of the recent study are also of relevance for the use of ST in therapeutic settings. As well as other research that has been conducted in clinical group settings, the current study also shows positive outcomes in a group context. In comparison to individual ST, groups can offer extra opportunities to invalidate and cope with certain core beliefs, experiences and feelings (through social support, sense of belonging, role play etc.). Therefore, the use of ST in a group format could contribute to a great deal to the successful treatment of PDs and related EMSs and symptoms. Regarding the fact that larger effects were found during the second half of treatment, it is recommended to take a closer look into which techniques are applied during that time period. By applying these methods earlier in therapy EMSs and symptoms might improve more during the first half of treatment as well. As in other studies, ST did not have sufficient effects on the schema "emotional deprivation". Besides the concerns about the items representing that schema attention should be paid to its content as well. The schema includes the expectation that emotional needs such as love or care will never be fulfilled by others. These beliefs are often related to relationships in the past, which asks for more attention to these unsatisfying experiences. Intensive use of experiential techniques (imagery or role play) might be necessary to give negative experiences another meaning, develop healthy reactions and to facilitate the awareness that relationships in the future do not have to be emotionally unfulfilling. Furthermore, "limited re-parenting" should facilitate the experience that own needs are important and that there is interest and understanding. Nevertheless, more research is needed to find out which technique might be the most effective. Issues that seem to be more difficult to treat such as abandonment, undeveloped self, limits and self-acceptance should be addressed as early as possible to increase the success at the end of treatment. With respect to the relationship between EMSs and symptoms it seems that changes in both are positively related to each other. Several symptoms seem to overlap with beliefs related to specific EMSs. For example, in this study changes in worthlessness (DEP) are positive related with changes in the EMS

defectiveness/shame. This schema represents beliefs such as “I count for naught” and low self-esteem, too. This indicates that techniques used to invalidate EMSs can be effective as well to relieve related symptoms. Whether decreases in schemas and symptoms indeed co-occur or mutually reinforce each other, needs to be further elaborated.

In Sum, ST in this clinical group setting shows promising results regarding the decrease of EMSs and symptoms of psychological distress. The fact that these positive outcomes are maintained until 6 months after treatment invalidates critics such as Thimm (2010) assuming that EMSs are stable over time. Over the course of therapy several schemas and symptoms show improvements mainly during the second half of treatment. This indicates that they are more difficult to change, which speaks for the added value of long treatment periods. Besides that, it is recommended to adjust the present treatment by using more intensive interventions on the schema “emotional deprivation” as well as on schemas and symptoms that are more resistant to change. Regarding the EMS “emotional deprivation” it is also recommended that future studies take a closer look at the items representing that schema in order to investigate whether their formulation influenced the results. Furthermore, interventions aimed at schema change seem to be important as well for decreasing psychological distress. On account of this study it can be concluded that ST in this clinical group sample seems to be effective in decreasing EMSs and psychological distress.

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Appendix A. Score categories of the Young Schema Questionnaire Long Form Third Version

EMS	Score category	EMS	Score category
1.Emotional deprivation	0-18 low	10.Subjugation	0-20 low
	19-27 average		21-30 average
	28-36 high		31-45 high
	37-54 very high		46-60 very high
2.Abandonment	0-34 low	11.Self-sacrifice	0-34 low
	35-52 average		35-52 average
	53-68 high		53-68 high
	69-102 very high		69-102 very high
3.Mistrust/abuse	0-34 low	12.Approval seeking	0-28 low
	35-52 average		29-42 average
	53-68 high		43-56 high
	69-102 very high		57-84 very high
4.Social isolation	0-20 low	13.Entitlement	0-22 low
	21-30 average		23-33 average
	31-45 high		34-44 high
	46-60 very high		45-66 very high
5.Defectiveness	0-30 low	14.Insufficient self-control	0-30 low
	31-45 average		31-45 average
	46-60 high		46-60 high
	61-90 very high		61-90 very high
6.Failure	0-18 low	15.Emotional inhibition	0-18 low
	19-27 average		19-27 average
	28-36 high		28-36 high
	37-54 very high		37-54 very high
7.Dependence	0-30 low	16.Unrelenting standards	0-32 low
	31-45 average		33-48 average
	46-60 high		49-64 high
	61-90 very high		65-96 very high
8.Vulnerability	0-24 low	17.Negativity/pessimism	0-22 low
	25-36 average		23-33 average
	37-48 high		34-44 high
	49-72 very high		45-66 very high
9.Enmeshment	0-22 low	18.Punitiveness	0-28 low
	23-33 average		29-42 average
	34-44 high		43-56 high
	45-66 very high		57-84 very high

Notes: Score categories of the Young Schema Questionnaire Long Form Third Version (YSQ-L3), EMS= Early maladaptive schema.