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A Schema Therapy Based Milieu in Secure Residential Youth Care:Effects on Aggression, Group Climate, Repressive Staff Interventions, and Team Functioning

Marjolein Francisca van Wijk-Herbrink[a,b], Arnoud Arntz [c], Nick J Broers[d], Jeffrey Roelofs[b], and David P Bernstein[b]

[a]Conrisq Group, Zetten, Netherlands; [b]Faculty of Psychology and Neuroscience, Department of Clinical Psychological Science, Maastricht University, Maastricht, Netherlands; [c]Faculty of Social and Behavioural Sciences, Clinical Psychology, University of Amsterdam, Amsterdam, Netherlands; [d]Faculty of Psychology and Neuroscience, Department of Methodology and Statistics, Maastricht University, Maastricht, Netherlands

ABSTRACT

Group care workers of residential youth care settings face the challenge of creating a warm and involved treatment climate against the demands and restrictions of the treatment setting. We tested the effects of SafePath, a milieu-based intervention based on Schema Therapy principles, during the first year of implementation on two secure residential treatment units compared to two control units. Staff's daily reports on 139 individual patients were coded on use of schema mode language (implementation check), occurrences of aggression (primary outcome) and repressive staff interventions. In addition, repeated questionnaires were filled out by patients ($n = 87$) on group climate and by staff ($n = 50$) on team functioning. Compared to the control units, SafePath units showed higher improvements in group climate and repressive interventions. Both SafePath and control units showed decreased aggression over time. Team functioning was consistently better in the SafePath units compared to the care-as-usual units from baseline through 12 months. In conclusion, a Schema Therapy based milieu as implemented with SafePath may contribute to a warm and supportive group climate with less repressive interventions in secure residential youth care.

Introduction

Adolescent patients in court-mandated, secure residential youth care often display severe oppositional and aggressive behaviors, challenging youth care workers to balance a flexible, stimulating treatment approach with the need for control (Bastiaanssen et al., 2012; Scholte & van der Ploeg, 2000; van der Helm, Boekee, Stams, & van der Laan, 2011). In the Netherlands, a court may mandate residential treatment to adolescents who commit crimes, display behavior that is causing danger either to the self or to others, or behavior that is otherwise unmanageable

in society. Depending on the severity of behavior problems, secure residential treatment groups vary from very restrictive to less restrictive, providing 24-hour care with specialized, multidisciplinary treatment and residential school services. The adolescents live in groups of patients, supervised by youth care workers providing the daily therapeutic environment.

Youth care workers face the task of creating a therapeutic environment, also known as group climate, which is structured, safe, and rehabilitative. An 'open'[1] group climate is characterized by high support, responsivity to individual needs, opportunities for growth, and a good balance between flexibility and the organizational needs for control (Craig, 2004; van der Helm et al., 2011; van der Helm, Klapwijk, Stams, & van der Laan, 2009). On the contrary, a 'closed' group climate is characterized by lack of flexibility, coercion, boredom, mistrust among patients as well as between patients and care workers, and lack of mutual respect (van der Helm et al., 2011, 2009).

The importance of creating an open group climate is strongly supported by research. In youth, an open group climate has been shown to relate to greater treatment motivation and other positive patient characteristics (van der Helm, Beunk, Stams, & van der Laan, 2014; van der Helm et al., 2009; van der Helm, Stams, van der Stel, van Langen, & van der Laan, 2012; van der Helm, Stams, van Genabeek, & van der Laan, 2012), and to less criminal and externalizing behaviors after discharge (Schubert, Mulvey, Loughran, & Losoya, 2012). In adults, an open group climate has been associated with less institutional aggression (Ros, van der Helm, Wissink, Stams, & Schaftenaar, 2013).

Patients' behavior may sometimes interfere with staff's efforts to create an open and supportive group climate. For example, patients' aggression may induce feelings of fear, anger, and impotence in staff (Knorth, Klomp, Van den Bergh, & Noom, 2012), and may cause staff to increase their repressive reactions in order to keep control (Nijman, aCampo, Ravelli, & Merckelbach, 1999). Repressive reactions include threatening with sanctions or actually giving sanctions impulsively, humiliating patients by displaying authoritarian behavior, or coercing patients by using physical restraint. Such reactions, thwarting patients' needs of safety and autonomy, may heighten the risk of another aggressive incident, leading to vicious cycles of aggression (Patterson & Bank, 1989; Sameroff, 2009; van der Helm et al., 2011).

Thus, creating an open group climate starts with training staff how to adequately deal with problematic behaviors, or, in other words, how to de-escalate rather than escalate those behaviors. Ryan and Deci (2008) argue that, especially in compulsory treatment settings, it is important to focus on the unfolding treatment process and on satisfying patients' basic psychological needs rather than focusing primarily on problematic behaviors. They suggest that integrating new ways of being, perceiving, and behaving within the patient's personality increases the chances of long-lasting changes in behavior and well-being (Ryan & Deci, 2008).

Ideally, staff training on how to effectively deal with problematic behaviors builds on comprehensive theory, because clinical practice often involves new situations and unique configurations of problems that require flexibility in staff reactions (Ryan & Deci, 2008). SafePath (Bernstein, Kersten, van den Broek, & Gelissen, 2014) is an innovative, team-based intervention with a strong theoretical basis originating from Schema Therapy (Young, Klosko, & Weishaar, 2003). It supports staff to create and maintain an open group climate for adults and youth with aggression, addiction, and antisocial behavior. It promotes the development of healthier attitudes and behaviors, which may contribute to personality change, especially when it is provided as part of a multimodal treatment that also involves therapy.

With its foundation in Schema Therapy, SafePath provides a clear conceptual framework of understanding and managing (aggressive) behavior (Bernstein et al., 2014) in terms of schema modes. Schema modes are 'states' or 'sides of a patient' that dominate the patient's thoughts, feelings, and behavior at a certain moment. Schema modes can change rapidly, sometimes resulting in aggressive behavior (see Appendix A). One of the main goals of SafePath is that staff learns to use the schema mode 'language', which provides a non-punitive, accepting way of working with youth's challenging behaviors (Bernstein et al., 2014). These behaviors are reframed as 'sides of oneself', which are often triggered when youths' basic emotional needs (e.g., need for safety, predictability, connection, autonomy, and firm but fair limits) are threatened. Staff learns to recognize and meet these needs, increasing the chance of de-escalating problematic behaviors because the patient feels safe and understood, rather than criticized or rejected (Bernstein et al., 2014). SafePath makes extensive use of cards that represent schema modes with cartoon-images, to make the mode concept more comprehensible.

Evidence for the effectiveness of Schema Therapy is extensive with respect to adult patients with personality disorders and complex behaviors (Bamelis, Evers, Spinhoven, & Arntz, 2014; Bernstein et al., 2019; Farrell, Shaw, & Webber, 2009; Giesen-Bloo et al., 2006; Nadort et al., 2009; van Asselt et al., 2008), and scarce, but hopeful for adolescent patients (Roelofs et al., 2016; Van Wijk-Herbrink, Broers, Roelofs, & Bernstein, 2017). These positive effects may also be found when implementing a Schema Therapy based residential treatment milieu. The present study sought to investigate the effects of SafePath in court-mandated, secure residential treatment of adolescent patients with severe externalizing behaviors. We implemented SafePath at two treatment units, whereas two other treatment units of the same institution formed the control group providing care as usual (CAU). CAU entailed a cognitive-behavioral approach of stimulating positive behavior and social competences of the patients (Social Competence Model; Slot & Spanjaard, 1999). We hypothesized that, compared to CAU units, SafePath units would show greater reductions of aggressive incidents over time (primary outcome). We also hypothesized that, compared to CAU units, SafePath units

would show greater improvements in group climate, repressive interventions (i.e., physical interventions, seclusion, and transfer to a more restrictive unit), and team functioning over time (secondary outcomes).

Method

Participants and Procedure

This study was conducted in a secure residential treatment center where adolescents with severe externalizing behavior problems are treated on court order. At two treatment units, some patients received individual Schema Therapy, and approximately half of the ward staff had been previously trained (two days) and irregularly supervised (average of three times a year) in the use of Schema Therapy principles. To enhance the use of Schema Therapy principles at these treatment units, we implemented SafePath (see "*Intervention: SafePath*" for more details on the SafePath program).

Beside the two SafePath units, we included two control units at which care as usual was provided based on the Social Competence Model (SCM; Slot & Spanjaard, 1999). In this model, problem behavior is thought to be the consequence of an imbalance between developmental tasks on the one hand, and skills to complete these tasks on the other hand. Therefore, the main focus of treatment is on teaching the patients skills, and rewarding them for positive behaviors. In addition to the 24-hour group climate based on the SCM, group skills training may be provided, and psychotherapy (cognitive behavior therapy, EMDR) may be indicated to treat psychopathology that negatively influences the individual balance between developmental tasks and skills.

This study has a non-randomized design, but the allocation to treatment unit was natural and typically not related to patient characteristics. Rather, allocation was determined by availability of beds and ratio of boys and girls on a particular treatment unit.

To clinically evaluate the implementation of SafePath, all patients and youth care workers of the two Schema Therapy units and the two control units were asked to fill out questionnaires about either group climate (patients) or team functioning (youth care workers). Patients' (and their parents') consent for use of these questionnaires and other treatment data for research purposes was part of the consent for clinical treatment. To facilitate an honest response to the items of the questionnaires, a unique code was assigned to each patient and youth care worker. The residential treatment center assured the patients and youth care workers that the data would be evaluated anonymously, and that the unique respondent codes were used only to match questionnaires filled out by the same person at the various measurement points.

The participants filled out the questionnaires on group climate or team functioning at four different time points. The baseline measurement (T_0) was

administered just prior to the first SafePath training day, and three measurements were administered two months (T_1), four months (T_2), and 12 months after the start of SafePath. Information on use of schema mode language, aggressive incidents and use of repressive interventions by staff were based on group care workers' daily reports about individual patients during the two months prior to first implementation of SafePath (two months prior to T_0), and every two months during the first year after start of SafePath.

The average stay of patients in this residential treatment center is eight months. During this study, patients entered and left the treatment units at various time points, causing missing data. Table 1 shows the number of patients residing at the CAU and SafePath treatment units during each period of two months, for either the full two months or some part of it. Some patients were temporarily placed in a more restrictive, maximum secure unit because of high-risk behaviors, and 16 of them did not return to their original treatment unit, but were placed on another treatment unit. To ensure independence of the data between treatment units, we decided to only include the data (questionnaires and daily report data) gathered on the treatment unit that the patient resided at the longest, and to exclude the information gathered on any other treatment unit. In total, we included data of 139 adolescent patients.

Table 2 shows the number of patients residing at the CAU and SafePath units at the specific time points when questionnaires on group climate were administered (T0, T1, and T2). These numbers are smaller than the numbers of patients reported in Table 1, because not every patient staying at the treatment units during a specific period of two months was still (or already) there at the moment of the measurement. In total, questionnaire data were included of 87 patients and 50 youth care workers.

Table 1. Descriptive statistics of percentages of mode language (implementation status), aggression, and repressive measures in daily reports.

Months		N	Mode language		Aggression		Repressive measures	
			m	sd	m	sd	m	sd
−2–0	CAU	32	0.42	0.96	7.89	8.79	1.75	2.66
	ST	24	4.04	8.12	5.08	6.79	4.00	8.39
0–2	CAU	29	0.28	0.85	8.10	10.72	3.00	6.68
	ST	24	8.66	10.35	6.32	7.35	4.64	10.07
2–4	CAU	30	0.28	1.11	6.80	8.54	1.21	2.30
	ST	26	8.20	11.24	5.58	6.43	3.20	6.40
4–6	CAU	27	0.29	1.04	5.92	7.70	2.77	4.16
	ST	28	5.11	6.74	6.64	6.78	1.67	2.84
6–8	CAU	32	0.05	0.29	5.92	9.06	4.15	10.88
	ST	23	15.64	14.74	4.12	6.41	1.01	2.65
8–10	CAU	28	0.06	0.31	6.00	7.12	1.13	2.46
	ST	27	13.63	12.82	3.94	5.70	0.91	2.01
10–12	CAU	26	0.00	0.00	2.77	3.82	1.37	3.35
	ST	26	19.40	18.90	4.41	6.86	1.22	2.88

Months = months of implementation; CAU = Care as usual; SP = SafePath.

Table 2. Descriptive statistics on group climate, positive team functioning, and negative team functioning.

Time		Patients			Youth care workers				
			Group climate			Positive team functioning		Negative team functioning	
		n(RR)	m	sd	N(RR)	m	sd	m	sd
T$_0$	CAU	12(72%)	2.88	0.46	15(94%)	3.80	0.33	2.69	0.46
	ST	13(81%)	3.24	0.47	15(88%)	4.17	0.63	2.34	0.43
T$_1$	CAU	18(95%)	2.85	0.75	17(89%)	3.73	0.50	2.97	0.60
	ST	17(90%)	3.03	0.57	17(100%)	4.18	0.56	2.39	0.48
T$_2$	CAU	18(90%)	3.06	0.64	16(94%)	3.77	0.39	2.57	0.44
	ST	11(65%)	3.12	0.44	17(94%)	4.22	0.48	2.33	0.26
T$_3$	CAU	14(74%)	2.94	0.52	15(83%)	3.86	0.25	2.67	0.28
	ST	16(89%)	3.73	0.66	17(100%)	4.29	0.38	2.28	0.48

T$_0$ = right before implementation; T$_1$ = two months after implementation; T$_2$ = four months after implementation; T$_3$ = 12 months after implementation; CAU = Care as usual; SP = SafePath; RR = response rate.

Intervention: SafePath

The SafePath intervention (Bernstein et al., 2014) is not a therapy, but rather a milieu-based intervention for youth care workers that facilitates high responsiveness to patients' emotional needs, and an open group climate. It entails a two-day training in how to recognize and respond to schema modes, and fortnightly one-hour coaching sessions with the whole team of group care workers during which patients' modes and staff's own reactions to patients' modes and behaviors are discussed. SafePath uses an active approach to learning, with a large focus on roleplaying and other exercises for the team to learn the schema mode language and Schema Therapy techniques. Team coaches were fortnightly supervised by the developer of the SafePath intervention.

The mode language becomes a shared medium of communication between staff members and patients. Youth care workers learn to interpret various (problematic) behaviors in terms of modes, and to respond to these modes in accordance with the underlying emotional needs of the patient. They help patients to recognize their own modes, facilitated by the use of cards on which the various schema modes are depicted ('iModes'; Bernstein, van Oorsouw, Candel, Clercx, & Alberts, 2017). Furthermore, youth care workers learn to focus on their own reactions to patients in an attempt to break vicious cycles. Appendix A describes how the aggressive incident with Brandon from Appendix A can be addressed during a SafePath coaching session.

Measures

Implementation Status

To check for success of SafePath implementation, daily reports of group care workers were coded for use of the schema mode language (e.g., reporting names of schema modes, reporting about "a side of the patient", or reporting Schema Therapy based interventions). All daily reports were scanned during

the two months prior to implementation of SafePath, and every two months until one year after implementation of SafePath. For each daily report, schema mode language was coded *1* when mode language was used, and *0* when it was not. The reports were coded by four raters. For each patient residing at the treatment units during the first four months of this study (n = 82), one randomly picked daily report was coded by all four raters. This resulted in good inter-rater reliability for ratings of schema mode language (Fleiss kappa = 0.74). As a measure of implementation status, we calculated the proportion of daily reports in which the mode language was used for each patient, and during each two-month time period of this study.

Aggressive Incidents by Patients

Incidents of aggression were also obtained from the daily reports written by youth care workers, and were coded in the same way as the use of schema mode language. Incidents of aggression were coded as *1* when the daily report described acts of damage to properties, or verbal or physical aggression (including sexual violence) against other persons (typically either fellow patients or staff), and as *0* when such incidents were not described in the daily report. The coding scheme was well defined, as supported by good inter-rater reliability (Fleiss kappa = 0.73). For each patient, within each time period, we calculated the proportion of daily reports including at least one aggressive incident.

Group Climate

Group climate was measured by the Group Climate Inventory (GCI; van der Helm, Stams, & van der Laan, 2011). All youth participants rated the 36 items of this self-report questionnaire on a five-point Likert scale, ranging from *1 = 'I do not agree'* to *5 = 'I totally agree'*. The items tap into four scales: Support (e.g., responsivity to the specific needs of the patient), Growth (e.g., hope for the future and giving meaning to the youth's stay in secure residential care), Group atmosphere (e.g. feelings of safety), and Repression (e.g., strictness and control). An overall score on group climate can be obtained by reversing the item scores on the Repression scale, and consequently adding these scores to the item scores on the other three scales. Then, the score is divided by the amount of items to create a mean overall score on group climate. A higher score on this overall group climate scale refers to an open and supportive group climate, and a lower score refers to a closed and repressive group climate. We used this overall scale as an outcome variable of our study. Confirmatory factor analysis has shown support for this higher-order model in a mixed sample of juvenile delinquents and adult prisoners, and Cronbach's alpha for the overall scale was 0.82 (van der Helm et al., 2011). In our sample, the median of Cronbach's alpha was 0.92 (ranging from 0.90 to 0.95 over time).

Repressive Interventions by Youth Care Workers

Incidents of repressive interventions were obtained from the daily reports in the same manner as use of schema mode language and incidents of patients' aggression. Staff's repressive interventions were coded as *1* when the daily reports described interventions involving physical coercion (varying from light physical contact to prevent him/her from risk-taking behaviors, to physical constraint), seclusion, or transfer to a more restrictive treatment group, and as 0 when such interventions were not described in the daily report. Because physical contact may also be used to communicate care, providing empathy and reassurance (Golder, 1993; Tommasini, 1990), it was rated as a repressive intervention only when the daily report provided evidence for the coercive character of the physical contact (e.g., describing patient's resistance to the intervention). The inter-rater reliability for repressive interventions in this study was substantial (Fleiss kappa = 0.69). For each patient, within each time period, we calculated the proportion of daily reports including at least one repressive intervention.

Team Functioning

To assess team functioning, group care workers filled out the 18 items belonging to the team functioning scale of the Living Group Work Climate Inventory (LGWCI; Dekker, van Miert, van der Helm, & Stams, 2015). The items of the team functioning scale tap into the scales of Positive team functioning (8 items; e.g., 'Team members are capable of dealing with unexpected situations') and Negative team functioning (10 items; e.g., 'The team is in the daily grind, and relations and positions (roles) are stuck'). We used mean scores on Positive team functioning and Negative team functioning as outcomes of this study. In our sample, the median of Cronbach's alpha for Positive team functioning across the various time points was 0.79 (ranging from 0.76 to 0.85). For Negative team functioning, the median of Cronbach's alpha was 0.62 (ranging from 0.39 to 0.74).

Statistical Analyses

Most patients had missing data, because they could be admitted to, or be discharged from, a treatment unit at any time during the study. To handle the missing data, we used Mixed Models analyses in SPSS (version 24), analyzing the full data set using maximum likelihood estimation.

Daily Report Data: Staff's Use of Mode Language (Implementation Status), Aggressive Incidents (Primary Outcome), and Repressive Interventions

Because staff's use of mode language, aggressive incidents, and staff's repressive interventions were represented by occurrence data within trials (e.g., proportion of daily reports including an aggressive incident), we used binary logistic regression,

using Generalized Linear Mixed Models in SPSS, to model these data at the CAU and SafePath units over time. We analyzed three models, representing the three different outcome variables (i.e., number of daily reports with mode language, with incidents, and with repressive interventions) with the number of days residing at the treatment unit (i.e., the number of observed days) as trials. In all three models, we specified time, treatment condition (CAU versus SafePath), interaction of time * treatment condition, and treatment unit nested within treatment condition as predictors. The Compound Symmetry covariance structure led to the best fit. The unbalanced design of our study required us to specify the Satterthwaite approximation for the degrees of freedom.

Questionnaire Data: Group Climate and Team Functioning

We used Linear Mixed Models with the restricted maximum likelihood approach to model group climate and team functioning of the CAU and SafePath units over time. We analyzed three models: one with group climate as the dependent variable, one with positive team functioning as the dependent variable, and one with negative team functioning as the dependent variable. In all three models, we specified time, treatment condition (CAU versus SafePath), interaction of time * treatment condition, and treatment unit nested within treatment condition as predictors. For the analysis of team functioning, the first-order autoregressive (AR1) covariance structure showed the best fit.

For the measurement of group climate, the long time period between T2 and T3 (four versus 12 months after implementation) led to substantial attrition: Only two participants who filled out the questionnaire at T2 still resided at the treatment unit at T3. Since there was also considerable attrition at T2, the correlations between the residuals of the repeated measures were consistently low and non-significant. Likelihood ratio testing of nested models led to the choice of linear mixed models with a scaled identity covariance structure for the repeated measures, effectively treating the time variable as a between-subjects variable in the analysis of group climate.

Results

Descriptive statistics of report data (implementation status, aggression, and repressive measures) are displayed in Table 1. Descriptive statistics of questionnaire data (group climate and team functioning) are displayed in Table 2.

Baseline Differences

For most variables, the mixed model analyses showed condition effects at baseline. Staff of SafePath units used significantly more mode language than CAU staff, $F(1,317) = 15.88$, $p < .001$. Their use of repressive measures was also higher at baseline, $F(1,253) = 8.36$, $p = .004$. At the same time, patients

from the SafePath units rated group climate as better than patients from CAU units, $F(1,108) = 11.59$, $p = .001$. The conditions did not differ with respect to patients' aggressive incidents, $F(1,320) = 0.14$, $p = .706$. SafePath staff had higher positive team functioning, $F(1,72) = 10.34$, $p = .002$, and lower negative team functioning, $F(1,77) = 11.77$, $p = .001$.

Interaction Effects Showing Differences between Conditions in Changes over Time

Implementation Status

Figure 1a shows that the proportion of mode language in daily reports of CAU units was practically zero at all time points, whereas it increased in SafePath units over time. We found a significant interaction effect of condition*time, $F(1,351) = 4.83$, $p = .029$. Thus, SafePath succeeded in its aim to introduce a common language, the language of schema modes, in the SafePath units.
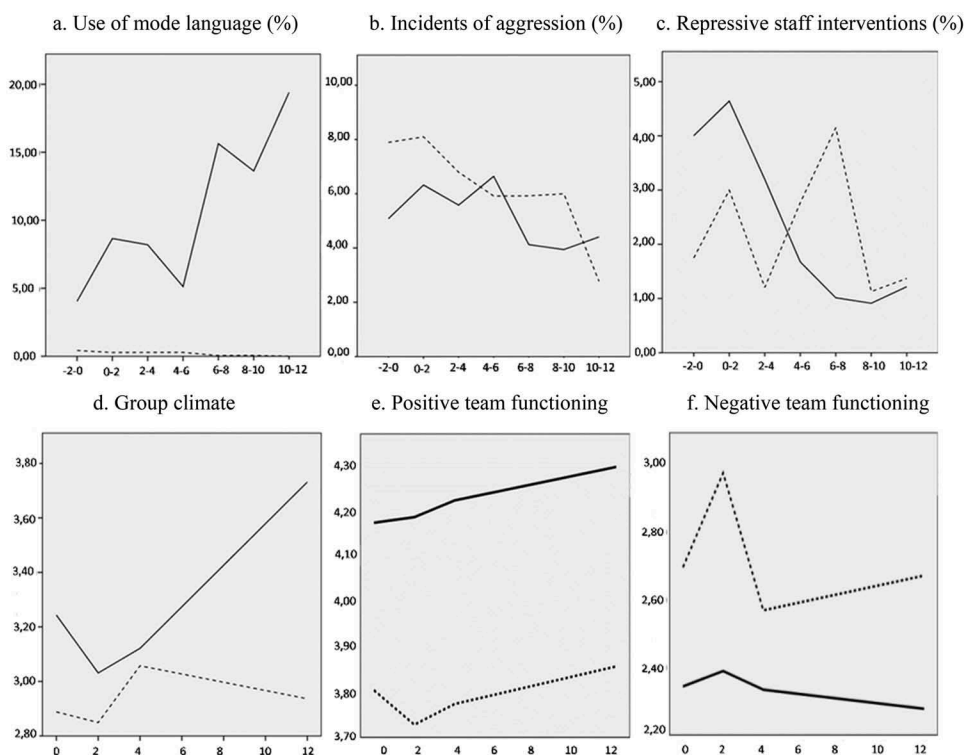
Figure 1. Graphs of percentages of mode language (1a), incidents of aggression (1b), repressive staff interventions (1c), group climate (1d), positive (1e) and negative team functioning (1f) over time (x-axis = months of implementation) in SafePath units (– –) and CAU units (——).

Aggressive Incidents (Primary Outcome)

The proportion of aggressive incidents in both conditions over time is depicted in Figure 1b. The interaction effect of condition*time was not significant, $F(1,372) = 0.03$, $p = .868$, suggesting that the changes in aggression in both conditions did not differ. Adding a squared time variable to the model also did not reveal a significant interaction effect of condition*$time^2$, $F(3,271) = 1.46$, $p = .227$. When testing the effect of time on aggressive incidents in separate analyses for patients in the SafePath and CAU conditions, we found that aggression decreased on the SafePath units, $F(1,173) = 4.96$, $p = .027$, as well as on the CAU units, $F(1,199) = 5.49$; $p = .020$.

Group Climate

Figure 1d suggests that the effect of time on group climate may be quadratic, so we added a squared time variable ($time^2$) and an additional interaction term (condition*$time^2$) to the model. Indeed, we found no significant interaction effect of condition*time, $F(3,108) = 2.48$, $p = .065$, but after adding the squared time variables we found a significant interaction effect of condition*$time^2$, $F(1,110) = 4.23$, $p = .042$. This indicates that, after an initial dip, group climate improved significantly more in SafePath units compared to CAU units.

Repressive Staff Interventions

The proportion of repressive staff interventions over time is depicted in Figure 1c. We found a significant interaction effect of condition*time, $F(1,347) = 6.19$, $p = .013$, indicating that repressive staff interventions decreased significantly more in SafePath units than in CAU units. It should be noted that at baseline, staff of SafePath units were using significantly more repressive staff interventions than CAU staff.

Team Functioning

Figure 1e shows the means of positive team functioning for each condition over time. The interaction effect of condition*time was not significant, $F(1,123) = 0.10$, $p = .919$. Thus, the baseline difference between the SafePath and CAU condition was maintained over time. Figure 1f shows the means of negative team functioning for each condition over time. The interaction effect of condition*time was not significant, $F(2,123) = 0.00$, $p = .950$. Thus, the baseline difference between the SafePath and CAU condition was maintained over time.

Discussion

This study is the first to investigate the effects of SafePath (Bernstein et al., 2014) in secure residential youth care during the first year after implementation. With its strong theoretical basis originating from Schema Therapy, one of the key

elements of the SafePath approach is the use of a common language of schema modes. The steadily increasing use of mode language on the SafePath units suggests a continuous process of learning to use these concepts. Although both SafePath and CAU units showed equal decreases in aggression (primary outcome), SafePath units showed greater improvements in group climate and repressive interventions compared to CAU units. Team functioning of SafePath staff was better than of CAU staff throughout the year. However, this difference already existed at baseline and may have been due to the fact that about half of the SafePath staff had already received some Schema Therapy training prior to baseline.

During the first year, the use of mode language by staff increased up to 20% of the daily reports of a patient. Although this is a significant change, there is still room for improvement. The use of mode language is a central feature of a Schema Therapy based milieu in residential care (Bernstein et al., 2014). It is essential for understanding problematic behavior as a response to unmet emotional needs (i.e., safety and attachment, autonomy, self-esteem, self-expression, and firm but fair boundaries). Because problematic behaviors may induce feelings of fear, anger, and impotence in staff (Knorth et al., 2012), and therefore trigger repressive reactions in order to keep control (Nijman et al., 1999), it is important that staff learns to observe and control their own emotional reactions or schema modes before being able to choose an intervention that meets the patient's needs. To support the use of mode language, visual material such as the iModes may be used. Appendix B shows how staff and patients may reflect on an incident of aggression using the iModes.

Patients are inclined to show less, and less severe, aggressive incidents when they perceive the group climate as open (Ros et al., 2013), in other words when staff is responsive to patients' (emotional) needs, when patients have hope for the future, and when staff helps the patients to give meaning to their stay in court-mandated treatment (de Decker et al., 2017). Also, repressive staff interventions to problematic behaviors are thought to heighten the risk of another aggressive incident, leading to vicious cycles of aggression (Patterson & Bank, 1989; Sameroff, 2009; van der Helm et al., 2011). As both group climate and the use of repressive staff interventions improved in the SafePath units of our study, this could pave the way for a decrease in aggression (primary outcome of our study). Nonetheless, we did not find any differences in changes over time with respect to aggressive incidents. We measured aggression as a binomial variable, either occurring during a particular day or not, without consideration of the intensity or frequency of aggression. Thus, from our data we can only conclude that SafePath did not have an influence on whether or not a patient showed aggression during a day, but we cannot say anything about the severity of the incident and whether an aggressive incident was followed by another aggressive incident (from either the same or another patient) on the unit. In other words, based

on this study we do not know whether SafePath staff has learned to reduce the severity, or further escalation, of aggression.

There are some strengths and limitations to this study. The most important limitation is probably the non-randomized study design, which is reflected in the baseline differences on most variables between the conditions. Besides the previous training in Schema Therapy principles delivered to half of the SafePath staff in the years before implementing SafePath, we are not aware of other ways that the two units might have differed from each other at baseline. Patients were referred to the treatment units based on available beds and ratio of boys and girls in a treatment unit, and the allocation to treatment unit (and therefore treatment condition) was typically not related to other characteristics of the individual patient. Baseline differences in favor of the SafePath condition may make it more difficult to find further improvement, whereas baseline differences in favor of the CAU condition may make it more likely to find significantly more improvement in SafePath conditions. Another limitation is the low number of patients (at some measurement occasions) who completed the questionnaires on group climate. This is, however, inherent to performing research within these complex treatment settings. The low number may make missing data a more acute problem, but the mixed models approach that we employed mitigates the missing data problem by making use of all available data.

Strengths of this study are the inclusion of a control condition, and the use of several sources measuring improvement in variables. We used data based on questionnaires completed by patients and by staff, and we also used daily report data that was coded using a coding scheme (which, in general, resulted in substantial inter-rater reliability).

Future research should include studies using randomization of treatment units to either the control or SafePath condition. To optimize the research design, patients (and perhaps even staff) could also be allocated to the treatment units at random. We recommend a focus on both severity and frequency of aggression, taking into consideration the buildup to (severe) aggression. It would be interesting to investigate whether group climate and repressive staff interventions may be mediators of the relationship between the SafePath intervention and aggression.

It can be concluded that the two-year intervention of SafePath already shows hopeful results after one year. Staff increasingly make use of the schema mode language, and there are positive effects on group climate and repressive functioning. More research is needed to draw conclusions on whether SafePath increases staff's ability to de-escalate aggressive behaviors, reducing the severity of aggression or preventing the build up to repeated, severe aggression.

Note

1. The distinction between an open and a closed group climate should not be confused with open and closed treatment groups, which refer to the level of restrictiveness of the residential setting.

Funding

ORCID

Arnoud Arntz 🔘 http://orcid.org/0000-0002-7992-2272

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Appendix A. Aggressive incident with Brandon

Brandon is a 16-year-old boy with a history of neglect and abuse by his parents. He is admitted to secure residential youth care because of severe aggressive behaviors toward family members, teachers, and peers. Brandon repeatedly refused treatment and his aggressive behaviors were unmanageable in society. He is diagnosed with conduct disorder and cluster B personality disorder traits. One day at the treatment unit, he wants to smoke a cigarette but is instructed to wait until a youth care worker has time to accompany him. Brandon feels nervous because he has to take a school exam later that day, and interprets the instruction to wait as a disregard for his anxiety (Vulnerable Child mode). He reacts with anger, screaming that it is unfair that the care worker is letting him wait (Angry Child mode). When the care worker tells him to stop screaming and sends him away from the office, Brandon feels criticized and misunderstood (increase of Vulnerable Child mode). In response, he keeps screaming and starts banging on the office door (Enraged Child mode). The care worker, who is now annoyed, comes out of the office to send Bryan to his room. Brandon interprets the annoyed look on his face as threatening, and when the care worker approaches him he reacts by attacking the care worker (Bully and Attack mode). The care worker presses the alarm button, and three other group care workers come in to physically restrain Brandon. Because Brandon continues to fight back, they bring him to a seclusion room.

During the next SafePath coaching session, the sequence of Brandon's schema modes (which were activated during the incident) is reconstructed with the iModes. Then, the coach asked the youth care worker, who was involved in this particular incident, to lay down the

sequence of his own schema modes during this incident. Looking at the combination of the youth care worker's and Brandon's modes, the team starts to see the interaction between these modes: Brandon's impatient and angry behavior induced a critical side of the youth care worker, which increased Brandon's response with anger, which, in turn, activated a state in the youth care worker that wanted to show Brandon who is in charge, which, in turn, made Brandon furious and activated an aggressive state in which he physically attacked the youth care worker. Consequently, during the coaching session, the team is encouraged to think of the emotional needs underlying Brandon's schema modes, and to share their ideas of how to meet these needs and de-escalate the situation. Roleplay may be used to practice alternative responses or interventions of the youth care worker.

Appendix B. Discussing the aggressive incident with Brandon using the iModes

The group care worker asks Brandon to come see him in the office. Brandon is still angry with the group care worker, and is unwilling to discuss the aggressive incident with him. He sits across the group care worker with a grumpy expression on his face (Angry Protector mode). He does not respond to the care worker's efforts to start a conversation, so the care worker hands him the iModes. (This often helps the patient to express his feelings, without having to explicitly describe them.)

Care worker: "Could you show me the card that depicts the side of you that is sitting here in the office with me?"

Brandon: (looks through the cards and lays down the Angry Child, the Angry Protector, and the Bully and Attack modes.)

Care worker: "Wow, there is a lot of anger on the table. You know what? I have been thinking about what happened, and I understand your anger. I think I may have made some mistakes."

Brandon: (shrugs, but is starting to make eye contact.)

Care worker: "I would really like to find out what exactly made you so angry that your aggressive side was activated earlier. I would like to know what I could have done to prevent this from happening, and maybe you could also have done things differently. If we talk about this, then maybe we understand each other better and we can prevent this from happening again. I am happy to tell you about the sides of me that were triggered during the incident. Are you willing to share with me the different sides of you that were involved, so we can understand it better?"

Brandon: "Okay".

Group care worker: "Great! So which side of you came to me to ask me for a cigarette?"

Brandon: "I guess that was just my normal, healthy side". (He lays down the Healthy Adolescent card.)

Care worker: "Okay, so you were feeling alright?"

Brandon: "Well, I was feeling a little nervous about the exam I had to take later that day, and I wanted to calm myself with a cigarette. So maybe it was my self-soothing side" (lays down the card of the Self-Soother mode)

Care worker: "Right. And what happened when I asked you to wait?"

Brandon: "To me, that was really unfair. When I'm nervous, I really need a cigarette. I got really angry because you wouldn't let me smoke, and I wanted to let you know that you were treating me unfairly. I guess that was my angry side (lays down the Angry Child mode).

Care worker: "I see. So maybe you felt like I didn't care about your needs or your feelings?" (lays down the card of the Lonely Child, right before the card of the Angry Child mode.) "And perhaps that is what made you so angry?"

Brandon: "Yes, I guess so."

Care worker: "And because I didn't know about your anxiety, I thought you were just being impatient and impulsive. That triggered a side of me that wanted to stop you from shouting without really hearing you. I bet that you felt as if I was punishing you for being angry, which made you even more angry. Is that right?" (lays down the card of the Punitive Parent above the Angry Child mode).

Brandon: "Yes, I really thought you were picking on me, that you just didn't care about my feelings at all. And when you came out of the office, I thought you were going to physically bring me to my room for not listening to you. That made me so angry that I wanted to attack you." (lays down the card of the Bully and Attack mode.) "When you pressed the alarm and the other group care workers arrived, I was outrageous because I knew they would hurt me while restraining me. It turned black before my eyes, all I remember is that I was shouting and fighting as hard as I could."

Care worker: "That must have been a really bad experience for you. I do not want this to happen to you again. Now I understand why you got so angry with me. You thought I don't care about you and your feelings. I guess that is what you've come to believe in your past: that people don't think you're important enough to care. Well, I do think you're important and I do care about you and your feelings. I should have asked you about your anger, I am sorry I didn't. However, it is possible that this kind of situation will happen again in the future. If that is the case, then please remember that this doesn't mean that I don't care about you: it only means that I'm caught up doing something else or talking to somebody else. I really am interested in your feelings."

Brandon: "Okay. And I am sorry for attacking you, it wasn't personal."