The Interplay of Youth and Care Characteristics with a Positive Social Climate in Therapeutic Residential Youth Care

Leipoldt, Jonathan; Harder, Annemiek T.; Kayed, Nanna S.; Grietens, Hans; Rimehaug, Tormod

Published in:
Children and Youth Services Review

DOI:
10.1016/j.childyouth.2021.106348

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2022

Children and Youth Services Review 134 (2022) 106348

Contents lists available at ScienceDirect

Children and Youth Services Review

journal homepage: www.elsevier.com/locate/childyouth

The interplay of youth and care characteristics with a positive social climate in therapeutic residential youth care

Jonathan D. Leipoldt [a,b,*], Annemiek T. Harder [c], Nanna S. Kayed [b], Hans Grietens [e], Tormod Rimehaug [b,d]

[a] Faculty of Behavioural and Social Sciences, Department of Pedagogical and Educational Sciences, Child and Family Welfare, University of Groningen, Groningen, the Netherlands
[b] Regional Centre for Child and Youth Mental Health and Child Welfare, Department of Mental Health, Norwegian University of Science and Technology, Trondheim, Norway
[c] Department of Psychology, Education and Child Studies, Erasmus School of Behavioural and Social Sciences, Erasmus University Rotterdam, Rotterdam, the Netherlands
[d] Child Psychiatry Department, Nord-Trøndelag Hospital Trust, Levanger, Norway
[e] Faculty of Psychology and Educational Sciences, Parenting and Special Education, KU Leuven, Leuven, Belgium

ARTICLE INFO

Keywords:
Social climate
Therapeutic residential youth care
Youth characteristics
Organizational characteristics
Latent class analysis

ABSTRACT

Background: Limited research exists on how therapeutic residential youth care (TRC) achieves treatment outcomes. More specifically, little is known about the association between contextual factors such as treatment organization, youth characteristics, and experienced social climate in TRC. Therefore, this study aims to investigate differences between latent classes of TRC and youth characteristics and their association with a positive perceived social TRC climate.

Method: We applied a person-centered approach in a cross-sectional design with a sample of 400 adolescents and 142 staff leaders. We analyzed youth and TRC characteristics in a latent class analysis and established associations with social climate for these two groupings.

Results: The two types of TRC settings we found, i.e., larger TRC settings and family-style TRC settings, show small differences in social climate. These settings only differed on youth activities and staff shifts type (more cohabitation and unorganized activities outside TRC in family-style TRC). We identified four adolescent classes: A severe problems group, youth with incidental problems, family problems, and a migrant background group. The migrant background group showed the most positive perceptions of social climate, followed by youth with incidental problems, family problems, and severe problems.

Conclusions: TRC staff should acknowledge how perceived social climate is connected to TRC characteristics and the heterogeneity of adolescents in care. As social climate is subjective and dynamic, a continuous dialogue about TRC social climate between staff and youth is recommended. Future research should investigate how these aspects are associated with treatment outcomes to increase our understanding of achieving positive outcomes in TRC.

1. Introduction

Norwegian Therapeutic Residential Youth Care (TRC) offers treatment and care in an open setting for young people (temporarily) living outside their family environment. TRC "… involves the planful use of a purposefully constructed, multidimensional living environment designed to enhance or provide treatment, education, socialization, support, and protection to children and youth with identified mental health or behavioral needs in partnership with their families and in collaboration with a full spectrum of community based formal and informal helping resources" (Whittaker et al., 2015, p. 24). In most countries, including Norway, TRC is seen as a last resort and considered to be the treatment of choice mainly if outpatient treatment and foster care placement have been unsuccessful (Backe-Hansen et al., 2011; Frensch & Cameron, 2002; Knorth et al., 2008).

Meta-analyses on TRC outcomes (e.g. De Swart et al., 2012; Grietens, 2002; Knorth et al., 2008; Scherrer, 1994) show small to moderate effects in terms of, for example, decreasing externalizing behavior

* Corresponding author at: University of Amsterdam, Department of Developmental Psychology, Postbox 15916, 1001 NK Amsterdam, the Netherlands.
E-mail address: j.d.leipoldt@uva.nl (J.D. Leipoldt).

https://doi.org/10.1016/j.childyouth.2021.106348
Received 8 April 2021; Received in revised form 22 November 2021; Accepted 17 December 2021
Available online 22 December 2021

problems of adolescents. There is even evidence that non-residential youth care may be more effective in reducing mental health problems than residential youth care (Gutterswijk et al., 2020; Strijbosch et al., 2015). Furthermore, the longer the follow-up period, the less convincing the effect of the intervention is (Frensch & Cameron, 2002; Harder & Knorth, 2015; Knekt et al., 2016; Scherrer, 1994).

Moreover, there is limited evidence for how TRC actually achieves treatment goals: TRC remains too much of a "black box" (Harder & Knorth, 2015; Knorth, 2003; Libby et al., 2005). In order to gain more durable positive treatment results we need to know more about *how* results are achieved, rather than investigating *the achieved* results (Harder & Knorth, 2015). One of the factors associated with this process of change is how the living environment within TRC settings is experienced by young people (e.g., Lanctôt et al., 2016; Leipoldt et al., 2019; Mathys, 2017), hereafter denoted as *social climate* or *perceived social climate*.

Social climate can be defined as the discrete, and consistent continuity of events containing collective elements in environmental demands (Murray, 1938; Stern, 1970; Theunissen, 1986; Van der Ploeg, 1982). These 'environmental demands' are shared among individuals in the same environment (Moos, 2003). For example, when staff members always make sure they leave room for young peoples' initiatives including that everyone gets a chance to set-up initiatives, the social environment may be perceived as stimulating the autonomy of young people. This definition describes social climate on the micro level and a more recent definition defines social climate as "… the quality of the social and physical environment in terms of the provision of sufficient and necessary conditions for the physical and mental health, well-being, and personal growth of the residents, with respect for their human dignity and human rights as well as (if not restricted by judicial measures) their personal autonomy, aimed at participation in society" (Stams & Van der Helm, 2017, p. 4).

The definitions clearly illustrate a link to the self-determination theory (Van der Helm et al., 2018), where relatedness, autonomy, and competence are necessary for motivation and personal growth of youths (Ryan & Deci, 2000). Furthermore, social climate is considered a factor that is unrelated to treatment content but which can set the conditions for achievement of successful treatment outcomes (Andrews, 2011; Cantora et al., 2014; Lanctôt et al., 2016). Social climate can also be described as a contextual correlate of TRC. Studies investigating these contextual factors, such as setting characteristics (including type, structure, size, setting, staff, and daily routines) are scarce in contemporary TRC studies (e.g., Attar-Schwartz, 2017; Leipoldt et al., 2019). Previous studies have shown that these contextual factors can explain some 30 up to 50 percent of the variance in treatment outcomes (Attar-Schwartz, 2017; Moos & Lemke, 1996). Therefore, contextual factors, such as social climate, are important and should be considered when evaluating TRC results.

In a recently conducted systematic review of research over the past 28 years (Leipoldt et al., 2019), results indicated that TRCs focusing on strengths of young people, using a small group size, applying evidence-based interventions, having open (vs. closed) units, having staff with more work experience, and providing opportunities for training, and good clinical leadership are associated with a positive social climate. Furthermore, structured routines with varied daily activities are considered prerequisites for a positive social climate in TRC. Youth with a longer care history, more psychological and psychiatric (both internalizing and externalizing) problems, and living in secure units, more often perceive a negative social climate than youth without these characteristics (for a more detailed summary of the available evidence, see Leipoldt et al., 2019).

Although the findings of this review provide insight into which factors underlie a positive perception of social climate in TRC, they tell us little about how and why these factors interplay. For example, small groups are associated with a more positive social climate, but it is unclear whether larger organizations that have multiple small units can also perform as well as small centers. In addition, it is unknown how characteristics of adolescents interact with characteristics of TRC settings in relation to perceived social climate. The present study will address these issues in a cross-sectional perspective and tries to identify associations between youth, staff, and organizational characteristics in relation to perceived social climate in TRCs.

2. The present study

Given the limited empirical knowledge about determinants of social climate in TRCs and the importance of social climate for positive TRC outcomes, this study aims to explore how TRC and adolescent characteristics interplay in predicting perceived social climate in TRCs as intermediate outcomes. Previous research has mainly assessed associations between TRC and adolescent characteristics on social climate separately (see Leipoldt et al., 2019). To the best of our knowledge, no studies have focused on combining TRC characteristics and young peoples' characteristics in predicting experienced social climate in residential youth care centers. Insight into how organizational and adolescent factors interplay in predicting social climate can help TRCs to choose or tailor characteristics and strategies to their residents and to use this knowledge to guide *how* the TRCs can be improved to create more positive living environments. In the present study we will address the following research questions:

(1) How are TRC characteristics associated with experienced social climate in TRC?
(2) How are adolescent characteristics associated with experienced social climate in TRC?
(3) How do adolescent characteristics and TRC characteristics interact in their association to experienced social climate in TRC?

For the first question, based on previous research (Leipoldt et al., 2019), we expect that TRCs that are small and publicly owned, that have daily routines, staff training routines, staff with relevant education and that are located in more populated areas will show associations with a positive social climate. In contrast, we expect that TRCs that do not have these above-mentioned aspects will show associations with a negative social climate. Regarding the second question, we expect that adolescents with an internalizing psychiatric diagnosis will perceive the social climate as more supportive, compared to adolescents with an externalizing psychiatric diagnosis. In addition, and more explorative, we expect that adolescents with a shorter treatment history, Caucasian background, less school problems, and lower emotional regulation problems will perceive the social climate more positively. Finally, since previous studies have not investigated the interplay (interaction) between TRC and adolescent characteristics on social climate, we will perform an exploratory analysis without formulating a priori hypotheses.

3. Method

3.1. Treatment setting

TRC settings in Norway, approved by the Directorate of Children and Family Affairs, can be commercially, non-commercially, or publicly owned. Each TRC is organized as a group of several small units with on average three-to-five residents and staff presence ratios of 1:2 in an environment similar to a group home (Backe-Hansen et al., 2011; Jozefiak & Sønnichsen Kayed, 2015). Youths aged 10–23 years old can be placed due to abuse, neglect, or behavioral problems. TRC is chosen as first placement for a minority, whereas most of those entering TRC do so after unsuccessful foster care. The primary goal is to provide care and parenting substitution to adolescents, to support them in attending school or work, and to let them participate in leisure activities both inside and outside the center. The broader goal of TRC is reducing social

and psychological problems of the residents, while helping to socialize them through relationships with staff members and the resident group. TRC tends to be temporary, because (family) foster care is the preferred long-term placement (Backe-Hansen et al., 2011).

In our sample, placements are based on solely abuse or neglect for 76% of all cases, and for the others (24%) on combinations of adolescents' behavioral problems including criminal behavior, substance use, or conduct disorders. More than two-thirds of staff working with young people within TRC settings (70.87%, *SD* = 22.47) has bachelor's degree or other degrees relevant for social work. The average staff-patient ratio is 1: 2.49 (*SD* = 1.53). Staff leaders have an average working experience in TRC of 12.75 years (*SD* = 8.10) and an average of 6.61 years (*SD* = 6.43) work experience in other relevant social work.

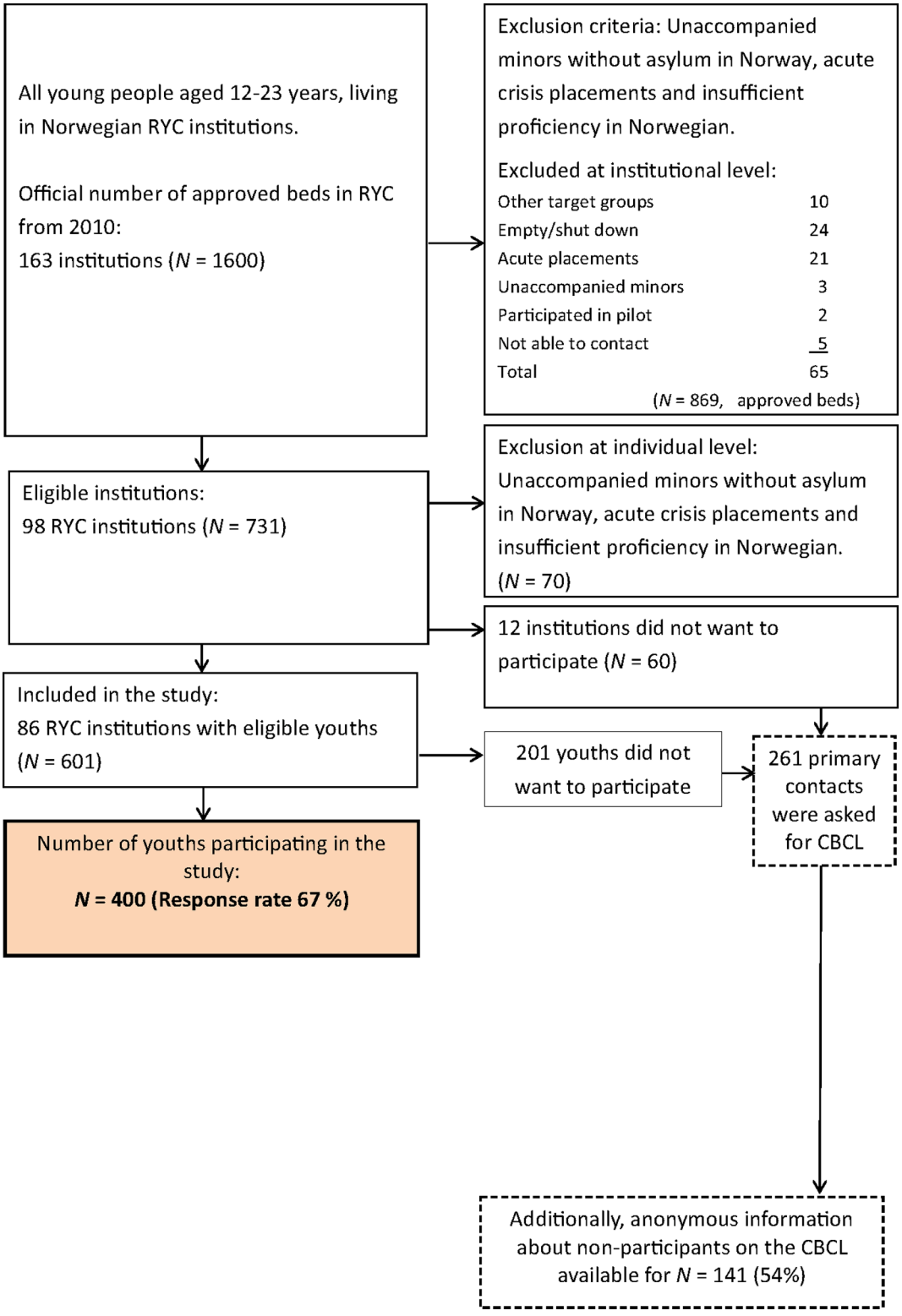

Fig. 1. Inclusion flowchart of participants (reproduced with permission of Jozefiak et al., 2016).

3.2. Participants

We obtained data for the present study from a large-scale Norwegian project on mental health in adolescents living in TRCs (Jozefiak et al., 2016). All TRC settings for adolescents aged 12–23 years were invited to participate in the study (see Fig. 1), however none of the participants were older than 20 years of age.

Unaccompanied minors without asylum in Norway and adolescents living in emergency care units are excluded from participation. They are considered to be in such a high state of crisis that data collection should not be a priority (Jozefiak & Sønnichsen Kayed, 2015). In addition, some centers specialized in conduct problems are excluded because of their high level of research activity (Andreassen, 2015). Furthermore, adolescents with insufficient proficiency in Norwegian language are excluded. Of the 98 eligible centers and 601 eligible adolescents, 86 centers and 400 adolescents consented to participate in the study, resulting in a 67% response rate (Jozefiak et al., 2016).

More than half of the 400 participating adolescents in the present study (57.5%) is female. The average age is 16.7 years (SD = 1.37), ranging from 12 to 20 years old. Adolescents have on average experienced 3.34 former placements (SD = 2.43) and have been placed for the first time in care when they were on average 12.5 years old (SD = 3.88). Most of the adolescents attend school (69.2%) or have jobs (11.3%). A majority (76%) meets criteria for at least one psychiatric diagnosis. Of the 86 participating TRC units (with a sample of 142 staff leaders), 18% have routines for visits by health-care workers. For more details about the sample characteristics, see Jozefiak et al. (2016).

3.3. Materials

3.3.1. TRC characteristics

TRC characteristics are measured with a questionnaire for TRC leaders that has been specifically designed for the present study. The questionnaire includes work experience of TRC leaders, work position of staff members and routines, division of free time for adolescents, school organization during care, and routines for daily activities. The items contain multiple answering formats including open-ended items, yes/no items, and Likert-scale items. An example item from the center's leader part is: "How many years have you been a leader in this institution?" A sample item from the routines part is: "Are there regular household meetings for the youngsters and staff members?". Information from the above-mentioned sections is used in the latent class analysis (see below) of TRC characteristics.

3.3.2. Semi-structured interview

The aim of the semi-structured interview is to gather information regarding the youths' life before and during stay in TRC. The interview consists of questions around themes relating to care history and number of placement (10 questions, e.g. "How old were you at the first placement?"); organized family care and information about the family (16 questions, e.g. "Does your father have a chronic disease?"); own and parental substance problems (nine questions, e.g. "Have you used drugs in this institution?"; eight questions, e.g. "Does your mother often use much medicine?"); school history (10 questions, e.g. "Do you go to school every day?"); and physical measurements (seven questions, e.g. "What is your length in cm.?"). Some questions are open-ended, others use yes/no or Likert scale response alternatives. Information from the above-mentioned themes is used in the latent classes of adolescent characteristics.

3.3.3. Psychiatric interview

We used the Child and Adolescent Psychiatric Assessment (CAPA; Angold & Costello, 2000) to gather information on psychiatric problems reported by the youths. The CAPA uses a computer-based scoring algorithm for diagnostic evaluation, which results in DSM-IV-TR diagnoses, except for autism spectrum disorder; reactive attachment disorder, and attention deficit hyperactivity disorder, which are based on information from TRC staff, also evaluated with DSM-IV algorithms. Inter-rater reliabilities between interviewer/rater pairs as estimated by Gwet's AC_1. Agreement rates are: Conduct disorder (0.78, 86%), reactive attachment disorder (0.82, 88%), major depressive disorder (0.89, 93%), and generalized anxiety disorder (0.93, 95%) (Jozefiak et al., 2016). Seven diagnostic group categories (any anxiety disorder, any depressive disorder, any substance abuse disorder, ADHD diagnosis, reactive attachment disorder, autism spectrum disorder, and 'any DSM diagnosis') are used in the latent classes of adolescent characteristics.

3.3.4. Emotion regulation

To measure emotion regulation, we used the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The 36 items were translated into Norwegian for the present study. An example item is: "I pay attention to how I feel". The DERS consists of six subscales and a combined total scale score. Participants answered on a five-point Likert Scale ranging from 1 = almost never, to 5 = almost always. Higher scores indicate more difficulties in emotion regulation. To compensate for missing values, we calculated an average mean score and multiplied this by 36 to obtain a total score. Internal consistency for the total score was high ($\alpha = 0.93$). The total score for the DERS is included in the latent classes of adolescent characteristics.

3.3.5. Social climate

We measured the young person's perception of social climate with the Norwegian version of the Community Oriented Programs Environment Scale (CPES; Moos, 2009). We used a short, refined version (Leipoldt et al., 2018) consisting of ten subscales divided over three dimensions (see Table 1). The scale consists of 40 true/false statements and higher scores are indicative for a higher endorsement of a social climate aspect. Scores range between 0 (low endorsement) and 4 (high endorsement). Since all subscales consist of four dichotomous items, the scale scores are directly comparable between subscales. An example

Table 1
COPES Dimensions and Subscales Descriptions (Moos, 2009).

Subscale	Description
Relationship Dimension	
1. Involvement	How active and energetic members are in the program
2. Support	How much members help and support each other and how supportive the staff is toward members
3. Spontaneity	How much the programme encourages open expression of feelings by members and staff
Personal Growth Dimension	
4. Autonomy	How well-sufficient and independent members are in decision-making and how much they are encouraged to take leadership in the program
5. Practical Orientation	The extent to which members learn social work skills and are prepared for discharge from the program
6. Personal Problem Orientation	The extent to which members seek to understand their feelings and personal problems
7. Anger and Aggression	The extent to which members argue with other members and staff, become openly angry, display other aggressive behavior
System Maintenance Dimension	
8. Order and Organization	How important order and organization are in the program
9. Program Clarity	The extent to which members know what to expect in their day-to-day routine and the explicitness of program rules and procedures
10. Staff Control	The extent to which staff use measures to keep members under necessary controls

item of the involvement scale is: "The members are proud of this program." The reliability and construct validity of the original CPES have been well documented (Moos, 2009). In the present sample, the refined version shows good internal consistency values (α = 0.81). In the current study, internal consistency values for the subscales varied between α = 0.50 and 0.66, which is, especially for short scales, acceptable for group comparisons. In addition, composite reliability (Raykov, 1997) scores indicated acceptable to good reliability for the short version of the CPES in the refinement study of the instrument. The psychometric quality is further strengthened with a good construct validity where the short scales showed a good representation of the social climate construct (for more information, see Leipoldt et al., 2018).

3.4. Procedure

All eligible Norwegian TRC centers listed in the 2010 national database of the Directorate for Child and Family Affairs were contacted in random order. Centers were provided with information about the research project and its goals. Data collection was carried out between 2011 and 2014 by four research assistants, all of whom holding master's degrees in psychology or social work, and had extensive experience working with adolescents and families. They administered multiple questionnaires and interviews to adolescents, teachers, primary contacts (staff members), and TRC leaders.

The CPES was administered as the second instrument in the data-collection process, immediately after the CAPA interview, given its importance to the main study. Thereafter, questionnaires concerning mental health, emotional regulation, social support, and quality of life were completed. The CAPA interview took on average 2.5 h and different questionnaires took approximately half-an-hour to fill out. Youths completed the questionnaires in the presence of the research assistant, and they could ask clarification questions regarding the content of the items. If the participants had difficulty reading the questions, the research assistant would read it aloud for them. During the entire data-collection period, a team of child and adolescent psychiatrists and psychologists was available in case of emergencies. Each adolescent received a gift certificate of 500 NOK (approximately USD 90) for participation.

3.5. Ethics

Participants were recruited in accordance with procedures approved by the Norwegian Regional Committee for Medical and Health Research Ethics (reference number 2016/1169/REC Central). Consent was given by the adolescent, and for those younger than 16 years of age, informed consent was also obtained from a significant caregiver. At the start of the data-collection process, the details of the research project were discussed with the adolescent once more to ensure informed consent. In addition, informed consent was also provided by staff leaders and main contact persons of the adolescents. All participants could withdraw from the study at any time.

3.6. Data-analysis

This study used latent class analysis (LCA) as an exploratory strategy to obtain different classes of TRC and adolescent characteristics (Von Eye & Bergman, 2003). First, we calculated descriptive statistics for the relevant variables that were to be included in the LCA. Second, we performed two separate LCA's to obtain different classes for TRC and adolescent characteristics. We did not a priori specify the number of classes that would emerge, but rather examined fit indices, class percentages, and interpretability of the data to determine the most appropriate number of classes. To help determine the optimal number of classes, we used the −2 Log Likelihood Statistic, (Sample size adjusted) Bayesian Information Criterion (BIC), Akaike Information Criterion (AIC), Entropy Values, Vuong-Lo-Mendell-Rubin test (VLMR; Lo, 2001), average posterior class probabilities (AvePP), and bootstrapped likelihood ratio tests. The first three criteria should be as small as possible, bootstrapped likelihood ratio tests should be statistically significant (Nylund et al., 2007), and entropy values should be >0.80 (Clark & Muthén, 2009). To ensure sufficient statistical power, each class also had to consist of at least 30 participants (Lanctôt et al., 2016). For the classes, item-probability scores of <0.30 and >0.70 indicate high class homogeneity membership, and AvePP values of >0.70 indicate well-separated classes (Nylund-Gibson & Choi, 2018).

After establishing classes, and to answer the research questions, we applied three Multivariate Analysis of Variance (MANOVA). In all MANOVA's, the independent variables are the class variables of TRC and adolescent characteristics. In the first MANOVA, the dependent variables are the three social climate subscales (involvement, support, and spontaneity) of the relationship dimension. In the second MANOVA, the dependent variables are the four social climate subscales (autonomy, practical orientation, personal problem orientation, and anger and aggression) of the personal growth dimension. In the third MANOVA, the three final subscales (order and organization, program clarity, and staff control) belonging to the system maintenance dimension are entered as dependent variables. In all analyses, multivariate interactions between TRC and adolescent characteristics were examined first. If the interaction did not show significance, main effects were investigated. We performed the LCA in Mplus version 7.11 (Muthén & Muthén, 2008) and the MANOVA analyses in IBM SPSS Statistics version 26. For all analyses, alpha levels of <0.05 were considered statistically significant, but we applied a Bonferroni correction for pairwise comparisons and a Tukey correction for multiple comparisons in the MANOVA analyses. In addition, partial eta-squared (η^2) is used as a measure of effect size, where values of 0.01, 0.06, and 0.14 are considered small, medium, and large respectively (Cohen, 1988).

4. Results

4.1. TRC characteristics

Table 2 shows the descriptive statistics and Table 3 presents conditional item probabilities for the two TRC classes. The results are based on responses of 142 staff leaders and indicated that a model with three classes showed the best fit. However, we chose the model with two classes due to convergence problems with the three-class solution and better interpretability.

The first class is labeled *family-style TRC (54% of the sample)*. The defining characteristic of this class of TRC organizations is that staff members cohabit with the adolescents, resulting in the label "Family-style TRC". The second class is labeled *larger TRC settings (46% of the sample)*. TRC organizations in the second class are defined by staff that adhere to a work schedule of shifts. These organizations typically consist of multiple units and adolescents meet on average 13 staff members a week.

4.1.1. Differences between the two classes

Both TRC classes have a mix of ownership and location, although family-style TRCs have a higher rate of private ownership (non-profit as well as commercial) and tend to be more often located outside cities, in rural areas. The family-style TRC class also tends to have leaders who are younger and fewer with female gender, without any class difference in leader competence or experience. Both classes have a mix or placement length, with more acute placements in family-style TRCs. Youths in family-style TRCs tend to participate more in organized and unorganized activities outside TRC, more often receive visits from friends in the TRC, and tend more to make friendships in care.

Family-style TRCs tend to be somewhat less organized with regards to meetings and regular tasks for adolescents, but more organized regarding detection and handling of substance use. Coercive measures were rarely used in both classes. They were to a lesser degree connected

Table 2
Descriptive Statistics for TRC Characteristics (n = 142).

Variable	Category	n (%)	*M (SD)*
TRC leader characteristics			
Gender	Male	45 (33.8)	
	Female	88 (66.2)	
Age in years	25–35	19 (14.0)	
	> 35	117 (86.0)	
Years as current manager of TRC	0 to 3	66 (47.1)	
	3 to 5	24 (17.1)	
	> 5	50 (35.7)	
Years of social work education			3.86 (1.54)
Years of experience in TRC			12.75 (8.10)
Years of experience other social work			6.61 (6.43)
TRC Characteristics			
Ownership	State	57 (41.3)	
	Private, commercially	53 (38.4)	
	Private, non-profit	28 (20.3)	
Type of Care	Long-term	95 (73.6)	
	Short-term	17 (13.2)	
	Long-term, Short-term, and acute	17 (13.2)	
Type of shifts	8-hour rotation	36 (29.5)	
	Cohabitation	86 (70.5)	
Multiple units in TRC center	Yes	85 (60.7)	
	No	55 (39.3)	
Location of TRC center	City	31 (22.0)	
	Suburbs	34 (24.1)	
	Densely populated area	43 (30.5)	
	Outside densely populated area	33 (23.4)	
Youth participation in organized activities outside TRC	Less than half	104 (77.6)	
	More than half	30 (22.4)	
Youth participation in unorganized activities outside TRC	Less than half	53 (43.4)	
	More than half	69 (56.6)	
Unsupervised travel to and from activities outside TRC	Yes	116 (82.3)	
	No	25 (17.7)	
Regular organization of joint activities/trips by TRC	Yes	128 (90.8)	
	No	13 (9.2)	
Adolescents that usually receive family visits	Less than half	53 (37.6)	
	More than half	88 (62.4)	
Adolescents that usually receive friends visit	Less than half	64 (45.4)	
	More than half	77 (54.6)	
Adolescents that make new friends around TRC	Less than half	78 (55.3)	
	More than half	63 (44.7)	
Adolescents that make new friends with others in TRC	Less than half	48 (34.5)	
	More than half	91 (65.5)	
Regular household meetings between adolescents and staff	Yes	129 (91.5)	
	No	12 (8.5)	
Adolescents have regular tasks to carry-out	Yes	135 (97.1)	
	No	4 (2.9)	
Phase system with rights and obligations for youth in TRC	Yes	41 (29.7)	
	No	97 (70.3)	
Usage of token economy program in TRC	Yes	61 (44.2)	
	No	77 (55.8)	
Routines for detecting substance usage	Yes	111 (79.3)	
	No	29 (20.7)	
Routines for handling of substance problems	Yes	124 (89.2)	
	No	15 (10.8)	
Use of coercive measures	Weekly-monthly	29 (20.7)	
	Rarely	111 (79.3)	
Reason for using coercive measures	Substance related reasons	32 (28.1)	
	Running away	9 (7.9)	
	Behavioral problems	21 (1.4)	
	Acute dangerous situations	52 (45.6)	

(*continued on next page*)

Table 2 (*continued*)

Variable	Category	n (%)	*M (SD)*
Routines for visits of health staff	Yes	24 (17.5)	
	No	113 (82.5)	
Main reason for visits of health staff	Psychological problems	89 (78.1)	
	Somatic problems	25 (21.9)	
Staff training routines in UN rights of the child	Yes	32 (23.0)	
	No	107 (77.0)	
Staff training routines in key parts of Child Welfare Act	Yes	132 (94.3)	
	No	8 (5.7)	
Capacity for adolescents			5.50 (3.51)
Number of adolescents currently in care			4.95 (3.31)
Number of staff positions			13.63 (9.18)
Staff positions with daily adolescent contact			11.39 (9.39)
Daily staff-adolescent ratio			2.49 (1.53)
Number of staff that adolescents meet weekly			8.40 (5.08)
% of staff with social work degrees			59.29 (17.05)
% of daily contact staff with social work degrees			70.87 (22.47)

to behavioral problems and in general occurred less often in family-style TRC.

Although there seemed to be differences in mode averages, mean average differences were not significant regarding staff: adolescent ratio, daily/weekly staff contacts, staff competence, numbers of adolescents or staff per unit. This may be due to wide variation in both classes on these characteristics.

4.2. Adolescent characteristics

Descriptive statistics for adolescent characteristics are presented in Table 4. Model fit indices indicate that four different adolescent classes can be identified. Although a model with five classes also shows acceptable model fit, we prefer a model with four classes due to interpretability aspects and higher BIC values. Conditional item probabilities are presented in Table 5.

4.2.1. Severe problems class (38% of the sample)

The largest class is defined by having at least one psychiatric disorder based on our diagnostic interview with the highest prevalence in all major categories of psychiatric disorders. In addition, they have the highest rate of having received a clinical psychiatric diagnosis at any timepoint before the study. Their emotion dysregulation scores are the highest and above average of all classes. Furthermore, they have the lowest probability for attending school, and highest rate of school problems and receiving help for those problems. These adolescents tend to be non-voluntarily placed females. Their parents have increased prevalence of several problems (not somatic illness), but not as high as in the family problems class. Out of twelve individual and social problem categories, these adolescents had at least four and in average more than six – nearly twice as much as the average for the other adolescents.

4.2.2. Incidental problems class (36% of the sample)

This second largest class is defined by low rates of all categories of psychiatric disorders, the lowest rate of previous psychiatric diagnoses, and low rates of most parental problems. The class mainly consists of voluntarily placed males. They tend to have experienced their first placement as difficult and have had a low number of placements. Most of these adolescents are currently in school and show below average school problems. Therefore, this class is labeled as showing incidental problems (not chronic problems). They tend to have been placed due to behavioral problems or drug problems. However, our variable selection does not clearly show their main problems resulting in residential care.

4.2.3. Youth with family problems (13% of the sample)

The smaller third class is mainly defined by a high rate of parental problems, a first placement at a younger age, and the highest number of former placements. The adolescents have a high rate of present (and previous) psychiatric disorders, although lower than the severe problems class.

4.2.4. Adolescents with a migrant background (13% of the sample)

The final small class is mainly defined by their non-Norwegian origin or native language. These adolescents have experienced violence or other problems with their parents and have somewhat less contact with their family during placement. They tend to be males, have been placed voluntary as adolescents, and had the lowest number of former placements. They have experienced their first placement as more positive and show the lowest prevalence of previous and present psychiatric problems, including drug problems. They show below average emotional dysregulation problems, less school problems, and high school attendance. Their parents are reported to have low rates of all problems except chronic (somatic) illness.

4.3. Associations of TRC and adolescent characteristics with social climate

4.3.1. Relationship dimension

We performed a two-way MANOVA with two independent variables (TRC and adolescent characteristics) and three dependent variables (involvement ($M = 2.28$, $SD = 1.31$), support ($M = 2.74$, $SD = 1.30$), and spontaneity ($M = 2.51$, $SD = 1.15$)). There is a linear relationship between the three dependent variables, as assessed by a scatterplot, and no evidence of multicollinearity as assessed by Pearson's correlation ($r < 0.90$). There are some univariate outliers, but no multivariate outliers as assessed by Mahalanobis distance ($p > .001$). There is homogeneity of covariance matrices, as assessed by Box's M test, $F(42, 51583) = 0.90$, $p = .663$, *Box's M* $= 39.12$ and homogeneity of variances, as assessed by Levene's test of homogeneity of variance based on median values ($p > .05$).

There is a multivariate main effect for adolescent characteristics, $F(9, 861) = 4.36$, $p < .001$, *Wilks'* $\Lambda = 0.90$, partial $\eta^2 = 0.04$, but no main effect of TRC characteristics, $F(3, 354) = 0.03$, $p = .992$, *Wilks'* $\Lambda = 1.00$. There is a statistically significant interaction effect between TRC and adolescent characteristics on the dependent variables, $F(9, 861) = 2.44$, $p = .010$, *Wilks'* $\Lambda = 0.94$, partial $\eta^2 = 0.02$. Follow-up univariate two-way ANOVAs show a statistically significant interaction effect between TRC and adolescent characteristics for the involvement subscale, $F(3, 356) = 4.39$, $p = .005$, partial $\eta^2 = 0.04$, but not for the support subscale, $F(3, 356) = 0.75$, $p = .929$ and the spontaneity subscale, $F(3, 356) = 1.82$, $p = .716$. A simple main effect analysis for the involvement subscale shows a statistically significant difference between larger TRC

Table 3
Conditional Mean and Item Probabilities for TRC Characteristics.

Variable	Category	TRC Class	
		Large	Family-Style
Proportion of sample allocated in class		0.46	0.54
TRC leader characteristics			
Gender	Male	0.28	0.39
	Female	**0.72**	0.61
Age in years	25–35	0.10	0.18
	> 35	**0.90**	**0.82**
Years as current manager of TRC	0 to 3	0.44	0.50
	3 to 5	**0.19**	**0.16**
	> 5	0.37	0.35
M (SE) years of social work education		3.85 (0.12)	3.87 (0.19)
M (SE) years of experience in TRC		13.77 (1.35)	11.88 (1.21)
M (SE) years of experience other social work		6.12 (1.01)	6.99 (0.80)
TRC Characteristics			
Ownership	State	**0.78**	0.50
	Private, commercially	0.04	**0.16**
	Private, non-profit	0.19	0.35
Type of Care	Long-term	**0.83**	0.67
	Short-term	0.12	**0.14**
	Long-term, short-term, acute	0.05	**0.20**
Type of shifts	8-hour rotation	**0.70**	0.00
	Cohabitation	0.30	1.00
Multiple units in TRC center	Yes	**0.74**	0.50
	No	0.26	0.50
Location of TRC center	City	**0.29**	**0.16**
	Suburbs	**0.22**	**0.26**
	Densely populated area	0.33	**0.29**
	Outside densely populated area	**0.17**	**0.29**
Youth participation in organized activities outside TRC	Less than half	**0.87**	**0.70**
	More than half	0.13	0.30
Youth participation in unorganized activities outside TRC	Less than half	0.58	0.30
	More than half	0.42	**0.70**
Unsupervised travel to and from activities outside TRC	Yes	**0.91**	**0.75**
	No	0.06	0.25
Regular organization of joint activities/trips by TRC	Yes	**0.94**	**0.88**
	No	0.06	0.12
Adolescents that usually receive family visits	Less than half	0.40	0.36
	More than half	0.60	0.64
Adolescents that usually receive friends visit	Less than half	0.53	0.39
	More than half	0.47	0.61
Adolescents that make new friends around TRC	Less than half	0.67	0.47
	More than half	0.34	0.53
Adolescents that make new friends with others in TRC	Less than half	0.33	0.36
	More than half	0.67	0.65
Regular household meetings between adolescents and staff	Yes	**0.95**	**0.88**
	No	0.05	0.12
Adolescents have regular tasks to carry-out	Yes	**0.95**	**0.88**
	No	0.05	0.12
Phase system with rights and obligations for youth in TRC	Yes	0.30	0.29
	No	**0.70**	**0.71**
Usage of token economy program in TRC	Yes	0.41	0.47
	No	0.59	0.53
Routines for detecting substance usage	Yes	0.64	**0.92**
	No	0.36	0.08
Routines for handling of substance problems	Yes	**0.85**	**0.92**
	No	0.15	0.08
Use of coercive measures	Weekly-monthly	0.26	0.16
	Rarely	**0.74**	**0.84**
Reason for using coercive measures	Substance related reasons	**0.23**	0.38

(*continued on next page*)

Table 3 (*continued*)

Variable	Category	TRC Class	
		Large	Family-Style
	Running away	**0.05**	**0.11**
	Behavioral problems	**0.29**	**0.07**
	Acute dangerous situations	0.43	0.48
Routines for visits of health staff	Yes	0.16	0.18
	No	**0.84**	**0.82**
Main reason for visits of health staff	Psychological problems	**0.83**	**0.73**
	Somatic problems	0.17	0.27
Staff training routines in UN rights of the child	Yes	0.19	0.27
	No	**0.81**	**0.73**
Staff training routines in key parts of Child Welfare Act	Yes	**0.87**	1.00
	No	0.13	0.00
M (SE) capacity for adolescents		6.18 (1.01)	4.85 (0.51)
M (SE) number of adolescents currently in care		6.27 (0.42)	3.60 (0.23)
M (SE) number of staff positions		19.77 (1.39)	8.48 (0.54)
M (SE) staff positions with daily adolescent contact		15.94 (1.30)	7.66 (1.00)
M (SE) daily staff-adolescent ratio		2.94 (0.26)	2.12 (0.11)
M (SE) number of staff that adolescents meet weekly		12.80 (0.59)	4.90 (0.33)
M (SE) % of staff with social work degrees		61.00 (2.19)	57.95 (2.18)
M (SE) % of daily contact staff with social work degrees		72.59 (2.87)	69.60 (3.02)

Note. Model-Fit: −2 Log Likelihood = −7117.02, BIC = 14764.31, SBIC = 14425.78, AIC = 14448.04, Entropy = 0.92, Vuong, p = 0.51, LO, p = .51, Bootstraptest = p < .001. AvePP large = 0.97, family-style = 0.99. Items in bold highlight good class homogeneity for categorical items.

settings and family-style TRC settings on the involvement subscale for the youth with family problems class, $F(1, 356) = 5.72$, $p = .020$, partial $\eta^2 = 0.02$, and the incidental problems class, $F(1, 356) = 6.60$, $p = .010$, partial $\eta^2 = 0.02$. The results for the migrant background class, $F(1, 356) = 1.58$, $p = .209$ and the severe problems class, $F(1, 356) = 0.14$, $p = .708$ are not significant.

To further explore the differences in mean involvement scores between adolescent characteristics in both the larger TRC settings and the family-style TRC settings we ran simple comparisons with a Bonferroni adjustment for multiple comparisons (see Fig. 2).

In the larger TRC settings, the migrant background ($M = 3.21$; $SD = 0.98$) shows significant higher involvement scores than youth with family problems ($M = 1.50$; $SD = 1.33$), 1.71, 95% CI [0.71, 2.71], $p <$ .001, and the severe problems group ($M = 1.89$; $SD = 1.31$), 1.32, 95% CI [0.44, 2.20], $p < .001$. Furthermore, the incidental problems class ($M = 2.81$; $SD = 1.27$) reports significant higher involvement scores than the youth with family problems, −1.31, 95% CI [−2.08, −0.53], $p <$ .001, and the severe problems class, 0.92, 95% CI [0.30, 1.53], $p < .001$. Other comparisons are not statistically significant.

In the family-style TRC settings, the migrant background class ($M = 2.74$, $SD = 1.20$) shows significant higher involvement scores than the severe problems class ($M = 1.92$, $SD = 1.32$), 0.77, 95% CI [0.03, 1.51], $p = .038$. All other mean comparisons, including the youth with family problems ($M = 2.36$, $SD = 1.36$) and incidental problems class ($M = 2.26$, $SD = 1.12$) are not statistically significant. Finally, there is a significant difference in involvement scores between the larger TRC setting and the family-style TRC settings for the youth with family problems, −0.86, 95% CI [−1.57, −0.15] and the incidental problems class, 0.55, 95% CI [0.13, 0.97]. All other comparisons are not statistically significant (see Fig. 2).

There is a statistically significant main effect for adolescent characteristics on the support subscale, $F(3, 356) = 6.20$, $p < .001$, partial $\eta^2 = 0.05$. Tukey pairwise comparisons show a significant difference in marginal means support scores between the migrant background class ($M = 3.04$, $SE = 0.19$) and the youth with family problems ($M = 2.47$, $SE = 0.19$), 1.04, 95% CI [0.37, 1.70], $p < .001$ and the severe problems class ($M = 2.38$, $SE = 0.11$), 1.00, 95% CI [0.44, 1.55], $p < .001$. Furthermore, there is a significant difference between the incidental problems class ($M = 2.97$, $SE = 0.11$) and the family problems class, −0.61, 95% CI [−1.15, −0.07], $p = .020$ and between the incidental problems class and the severe problems class, 0.56, 95% CI [0.17, 0.96], $p = .001$. Other comparisons are not statistically significant (see Fig. 3).

Finally, there is a statistically significant main effect for adolescent characteristics on the spontaneity subscale, $F(3, 356) = 4.29$, $p = .024$, partial $\eta^2 = 0.03$. Tukey pairwise comparisons show a significant difference in marginal means spontaneity scores between the incidental problems class ($M = 2.65$, $SE = 0.10$) and the severe problems class ($M = 2.23$, $SE = 0.10$), 0.41, 95% CI [0.05, 0.78], $p = .020$. All other comparisons, including the migrant background class ($M = 2.63$, $SE = 0.17$) and the youth with family problems ($M = 2.53$, $SE = 0.17$) are not statistically significant (see Fig. 3).

4.3.2. Personal growth dimension

A two-way MANOVA with two independent variables (TRC and adolescent characteristics) and four dependent variables (autonomy ($M = 2.26$, $SD = 1.23$), practical orientation ($M = 2.21$, $SD = 1.32$), personal problem orientation ($M = 1.59$, $SD = 1.18$), and anger and aggression ($M = 2.30$, $SD = 1.35$)) shows a linear relationship between the four dependent variables, as assessed by a scatterplot and no evidence of multicollinearity, as assessed by Pearson's correlation ($r <$ 0.90). There are some univariate outliers, but no multivariate outliers as assessed by Mahalanobis distance ($p > .001$). There is homogeneity of covariance matrices, as assessed by Box's M test, $F(70, 44894) = 1.06$, $p = .339$, *Box's M* = 78.30 and homogeneity of variances, as assessed by Levene's test of homogeneity of variance based on median values ($p >$ .05).

There is a multivariate main effect for TRC characteristics, $F(4, 353) = 4.36$, $p = .032$, *Wilks' Λ* = 0.97, partial $\eta^2 = 0.03$ and for adolescent characteristics, $F(12, 934) = 3.08$, $p < .001$, *Wilks' Λ* = 0.90, partial $\eta^2 = 0.03$. However, there is no statistically significant interaction effect between TRC and adolescent characteristics on the dependent variables, $F(12, 934) = 0.84$, $p = .610$, *Wilks' Λ* = 0.97, partial $\eta^2 = 0.02$. Follow-up univariate two-way ANOVAs for TRC and adolescent characteristics shows that the marginal means for anger and aggression scores are significantly lower in larger TRC settings ($M = 1.98$, $SE = 0.12$) than in family-style TRC settings ($M = 2.47$, $SE = 0.11$), $F(1, 356) = 9.35$, $p = .002$, partial $\eta^2 = 0.02$. There are no significant main effects for the subscales autonomy, practical orientation, and personal problem

Table 4
Descriptive Statistics for Adolescent Characteristics (n = 400).

Variable	Category	n (%)	*M (SD)*
Demographic characteristics			
Gender	Male	169 (42.3)	
	Female	231 (57.8)	
Placement type	Voluntarily	171 (43.6)	
	Forced	221 (56.4)	
Ethnicity	Norwegian	307 (78.5)	
	Not Norwegian	84 (21.5)	
Primary language	Norwegian	320 (82.9)	
	Other	66 (16.5)	
Age in years			16.76 (1.37)
Treatment characteristics			
Age in years at first placement			12.52 (3.88)
Number of placements			3.34 (2.43)
Placement due to problems between youth and parents	Yes	150 (37.6)	
	No	249 (62.4)	
Placement due to drug problems	Yes	56 (14.0)	
	No	343 (86.0)	
Placement due to behavioral problems	Yes	87 (21.8)	
	No	312 (78.2)	
Placement due to parental mental illness	Yes	45 (11.3)	
	No	354 (88.7)	
Placement due to violence in the family	Yes	54 (13.5)	
	No	345 (86.3)	
Contact with family during placement	Yes	339 (88.5)	
	No	44 (11.5)	
Living at home between multiple placements	Yes	100 (30.1)	
	No	232 (69.9)	
Perceived experience of first placement	Good to very good	117 (31.0)	
	Okay	74 (19.6)	
	Difficult to very difficult	187 (49.5)	
Mother Chronic illness	Yes	85 (27.0)	
	No	230 (73.0)	
Mother mental illness	Yes	136 (44.4)	
	No	170 (55.6)	
Father chronic illness	Yes	64 (24.5)	
	No	197 (75.5)	
Father mental illness	Yes	67 (27.3)	
	No	178 (72.7)	
Received a diagnosis at some point	Yes	190 (54.6)	
	No	158 (45.4)	
Mother smokes	Yes	216 (60.3)	
	No	142 (39.7)	
Mother alcohol abuse	Yes	41 (11.8)	
	No	306 (88.2)	
Mother drug usage	Yes	36 (10.2)	
	No	317 (89.8)	
Often medication use mother	Yes	80 (26.2)	
	No	225 (73.8)	
Father alcohol abuse	Yes	59 (19.9)	
	No	237 (80.1)	
Father drug usage	Yes	43 (14.6)	
	No	252 (85.4)	
Used drugs in residential center	Yes	145 (37.0)	
	No	247 (63.0)	
Bought drugs from others outside residential center	Yes	110 (32.7)	
	No	226 (67.3)	
Currently in school	Yes	273 (68.8)	
	No	124 (31.2)	
Received help for school problems	Yes	280 (74.7)	
	No	95 (25.3)	
School problems			25.64 (7.16)
Difficulties with emotion regulation			89.48 (25.02)
Any anxiety disorder	Yes	117 (34.9)	
	No	218 (65.1)	
Any depressive disorder	Yes	125 (37.3)	
	No	210 (62.7)	
Any behavioral disorder	Yes	70 (20.9)	
	No	265 (79.1)	
Any substance use disorder	Yes	42 (12.5)	
	No	293 (87.5)	
ADHD diagnosis	Yes	129 (32.3)	
	No	270 (67.7)	
Reactive attachment disorder	Yes	68 (21.1)	
	No	255 (78.9)	
Autism spectrum disorder	Yes	23 (7.1)	
	No	300 (92.9)	
Any DSM-IV diagnosis	Yes	276 (69.7)	
	No	120 (30.3)	

orientations.

There is a statistically significant main effect of adolescent characteristics on the autonomy subscale, $F(3, 356) = 6.15$, $p < .001$, partial $\eta^2 = 0.05$. Tukey pairwise comparisons show a significant difference in marginal means autonomy scores between the migrant background class ($M = 2.44$, $SE = 0.18$) and the youth with family problems ($M = 1.77$, $SE = 0.10$), 0.69, 95% CI [0.03, 1.34], $p = .035$. Furthermore, there was a significant difference between the incidental problems class ($M = 2.51$, $SE = 0.10$) and the family problems class, −0.73, 95% CI [−1.25, −0.20], $p = .002$, and between the incidental problems class and the severe problems class ($M = 2.03$, $SE = 0.11$), 0.45, 95% CI [0.66, 0.83], $p = .014$. All other comparisons are not statistically significant (see Fig. 4).

Furthermore, there is a statistically significant main effect of adolescent characteristics on the practical orientation subscale, $F(3, 356) = 3.98$, $p = .008$, partial $\eta^2 = 0.03$. Tukey pairwise comparisons show a significant difference in marginal means practical orientation scores between the youth with family problems ($M = 1.91$, $SE = 0.19$) and the incidental problems class ($M = 2.47$, $SE = 0.11$), −0.57, 95% CI [−1.14, −0.0.002], $p = .049$, and between the incidental problems class and the severe problems class ($M = 1.99$, $SE = 0.12$), 0.46, 95% CI [0.05, 0.87], $p = .023$. All other comparisons, including the migrant background class ($M = 2.36$, $SE = 0.20$) are not statistically significant (see Fig. 4).

Finally, there is a statistically significant main effect of adolescent characteristics on the anger and aggression subscale, $F(3, 356) = 7.72$, $p < .001$, partial $\eta^2 = 0.06$. Again, Tukey pairwise comparisons show a significant difference in marginal means anger and aggression scores between the migrant background class ($M = 1.84$, $SE = 0.20$) and the severe problems class ($M = 2.62$, $SE = 0.12$), −0.72, 95% CI [−1.30, −0.14], $p = .008$, and between the severe problems class and the incidental problems class ($M = 1.95$, $SE = 0.11$), 0.69, 95% CI [0.27, 1.10], $p < .001$. All other comparisons, including the youth with family problems ($M = 2.48$, $SE = 0.19$) are not statistically significant (see Fig. 4). In addition, there is no significant main effect of the subscale

Table 5
Conditional Mean and Item Probabilities for Adolescent Characteristics.

Variable	Category	Adolescent Class			
		Severe	Incidental	Family	Migrant
Proportion of sample allocated in class		0.38	0.36	0.13	0.13
Demographic characteristics					
Gender	Male	0.27	0.53	0.42	0.59
	Female	**0.74**	0.47	0.58	0.41
Placement type	Voluntarily	0.27	0.53	0.16	0.67
	Forced	**0.73**	0.47	**0.85**	0.33
Ethnicity	Norwegian	**0.87**	0.50	**0.95**	0.02
	Not Norwegian	0.13	0.50	0.05	**0.98**
Primary language	Norwegian	**0.90**	**1.00**	**0.98**	0.00
	Other	0.10	0.00	0.02	1.00
Age in years		17.07 (0.11)	16.66 (0.13)	16.44 (0.20)	16.45 (0.24)
Treatment characteristics					
M (SE) age in years at first placement		13.51 (0.22)	13.72 (0.25)	4.25 (0.51)	14.15 (0.27)
M (SE) number of placements		3.44 (0.22)	2.71 (0.16)	5.61 (0.59)	2.58 (0.25)
Placement due to problems between youth and parents	Yes	0.42	0.42	0.00	0.49
	No	0.58	0.58	**1.00**	0.51
Placement due to drug problems	Yes	0.18	0.16	0.02	0.08
	No	**0.82**	**0.84**	**0.98**	**0.92**
Placement due to behavioral problems	Yes	0.24	0.28	0.04	0.16
	No	**0.76**	**0.72**	**0.96**	**0.84**
Placement due to parental mental illness	Yes	0.15	0.06	0.26	0.00
	No	**0.85**	**0.94**	**0.74**	1.00
Placement due to violence in the family	Yes	0.22	0.06	0.04	0.19
	No	**0.78**	**0.94**	**0.96**	**0.81**
Contact with family during placement	Yes	**0.88**	**0.93**	**0.87**	**0.79**
	No	0.12	0.07	0.13	0.21
Living at home between multiple placements	Yes	0.38	0.29	0.26	0.14
	No	0.62	**0.71**	**0.74**	**0.85**
Perceived experience of first placement	Good to very good	0.31	**0.26**	0.31	0.42
	Okay	**0.20**	**0.19**	**0.25**	**0.16**
	Difficult to very difficult	0.49	0.55	0.44	0.42
Mother Chronic illness	Yes	0.29	0.25	0.23	0.31
	No	**0.71**	**0.75**	**0.77**	0.69
Mother mental illness	Yes	0.58	0.35	0.61	0.12
	No	0.42	0.65	0.39	**0.88**
Father chronic illness	Yes	0.31	0.26	0.05	0.13
	No	0.69	**0.74**	**0.95**	**0.87**
Father mental illness	Yes	0.40	0.16	0.39	0.08
	No	0.60	**0.84**	0.61	**0.92**
Received a diagnosis at some point	Yes	**0.83**	0.39	0.50	0.20
	No	0.17	0.61	0.50	**0.80**
Mother smokes	Yes	0.65	0.61	**0.94**	0.13
	No	0.35	0.39	0.06	**0.87**
Mother alcohol abuse	Yes	0.16	0.08	0.22	0.00
	No	**0.84**	**0.92**	**0.78**	1.00
Mother drug usage	Yes	0.08	0.06	0.42	0.00
	No	**0.92**	**0.94**	0.58	1.00
Often medication use mother	Yes	0.38	0.17	0.33	0.11
	No	0.62	**0.83**	0.67	**0.89**
Father alcohol abuse	Yes	0.31	0.12	0.22	0.09
	No	**0.70**	**0.88**	**0.78**	**0.91**
Father drug usage	Yes	0.17	0.06	0.48	0.00
	No	**0.82**	**0.94**	0.52	1.00
Used drugs in residential center	Yes	0.51	0.29	0.45	0.09
	No	0.49	**0.71**	0.55	**0.91**
Bought drugs from others outside residential center	Yes	0.44	0.28	0.36	0.08
	No	0.56	**0.72**	0.64	**0.92**
Currently in school	Yes	0.57	**0.72**	**0.75**	**0.89**
	No	0.43	0.28	0.25	0.11
Received help for school problems	Yes	**0.82**	**0.70**	**0.76**	0.67
	No	0.18	0.30	0.24	0.33
M (SE) school problems		30.15 (0.65)	23.12 (0.69)	25.12 (1.26)	19.86 (0.86)
M (SE) difficulties with emotion regulation		105.29 (3.13)	75.90 (2.10)	89.47 (4.08)	83.00 (3.78)
Any anxiety disorder	Yes	0.63	0.09	0.35	0.15
	No	0.37	**0.91**	0.65	**0.85**
Any depressive disorder	Yes	0.66	0.07	0.45	0.20
	No	0.34	**0.93**	0.55	**0.80**
Any behavioral disorder	Yes	0.33	0.11	0.27	0.02
	No	0.67	**0.89**	**0.73**	**0.98**

(*continued on next page*)

Table 5 (*continued*)

Variable	Category	Adolescent Class			
		Severe	Incidental	Family	Migrant
Any substance use disorder	Yes	0.26	0.03	0.07	0.00
	No	**0.74**	**0.97**	**0.93**	1.00
ADHD diagnosis	Yes	0.48	0.20	0.33	0.18
	No	0.52	**0.80**	0.67	**0.82**
Reactive attachment disorder	Yes	0.31	0.11	0.31	0.05
	No	0.69	**0.89**	0.69	**0.95**
Autism spectrum disorder	Yes	0.13	0.01	0.11	0.00
	No	**0.87**	**0.99**	**0.89**	1.00
Any DSM-IV diagnosis	Yes	**0.99**	0.46	**0.79**	0.43
	No	0.01	0.54	0.21	0.57

Note. Model-Fit: −2 Log Likelihood = −11467.93, BIC = 23966.40, SBIC = 23420.63, AIC = 23279.87, Entropy = 0.91, Vuong, $p < .001$, LO, $p < .001$, Bootstraptest = $p < .001$. AvePP severe = 0.95, incidental = 0.95, family = 0.97, migrant = 0.99. Items in bold highlight good class homogeneity for categorical items.

personal problem orientation ($F(3, 356) = 0.37$, $p = .775$).

4.3.3. System maintenance dimension

Finally, we performed a two-way MANOVA for this dimension with two independent variables (TRC and adolescent characteristics) and three dependent variables (order and organization ($M = 2.62$, $SD = 1.21$), program clarity ($M = 2.42$, $SD = 1.24$), and staff control ($M = 2.91$, $SD = 1.12$)). There is a linear relationship between the three dependent variables, as assessed by a scatterplot and no evidence of multicollinearity, as assessed by Pearson's correlation ($r < 0.90$). There are some univariate outliers, but no multivariate outliers as assessed by Mahalanobis distance ($p > .001$). There is homogeneity of covariance matrices, as assessed by Box's M test, $F(42, 51583) = 1.23$, $p = .143$, *Box's M* = 53.85 and homogeneity of variances, as assessed by Levene's test of homogeneity of variance based on mean values ($p > .05$).

There is a multivariate main effect for adolescent characteristics, $F(9, 861) = 2.65$, $p = .005$, *Wilks' Λ* = 0.94, partial $\eta^2 = 0.02$. However, there are no multivariate main effects for TRC characteristics, $F(3, 354) = 1.54$, $p = .203$, *Wilks' Λ* = 0.99 or the interaction of TRC and adolescent characteristics $F(9, 861) = 0.48$, $p = .890$, *Wilks' Λ* = 0.99. Follow-up univariate two-way ANOVAs for adolescent characteristics show a statistically significant main effect of adolescent characteristics for the order and organization subscale, $F(3, 356) = 2.85$, $p = .037$, *partial* $\eta^2 = 0.02$ and the program clarity subscale, $F(3, 356) = 6.11$, $p < .001$, partial $\eta^2 = 0.05$. There is no main effect for the staff control subscale, $F(3, 356) = 1.72$, $p = .163$ (see Fig. 5).

For the order and organization subscale, Tukey pairwise comparisons show a significant difference in marginal means order and organization scores between the incidental problems class ($M = 2.78$, $SE = 0.10$) and the severe problems class ($M = 2.35$, $SE = 0.11$), 0.41, 95% CI [0.03, 0.79], $p = .028$. All other comparisons, including the migrant background class ($M = 2.67$, $SE = 0.19$) and the youth with family problems ($M = 2.66$, $SE = 0.18$) are not statistically significant (see Fig. 5).

Finally, for the program clarity subscale, Tukey pairwise comparisons show a significant difference in marginal means program clarity scores between the migrant background class ($M = 2.84$, $SE = 0.18$) and the severe problems class ($M = 2.12$, $SE = 0.11$), 0.616, 95% CI [0.12,

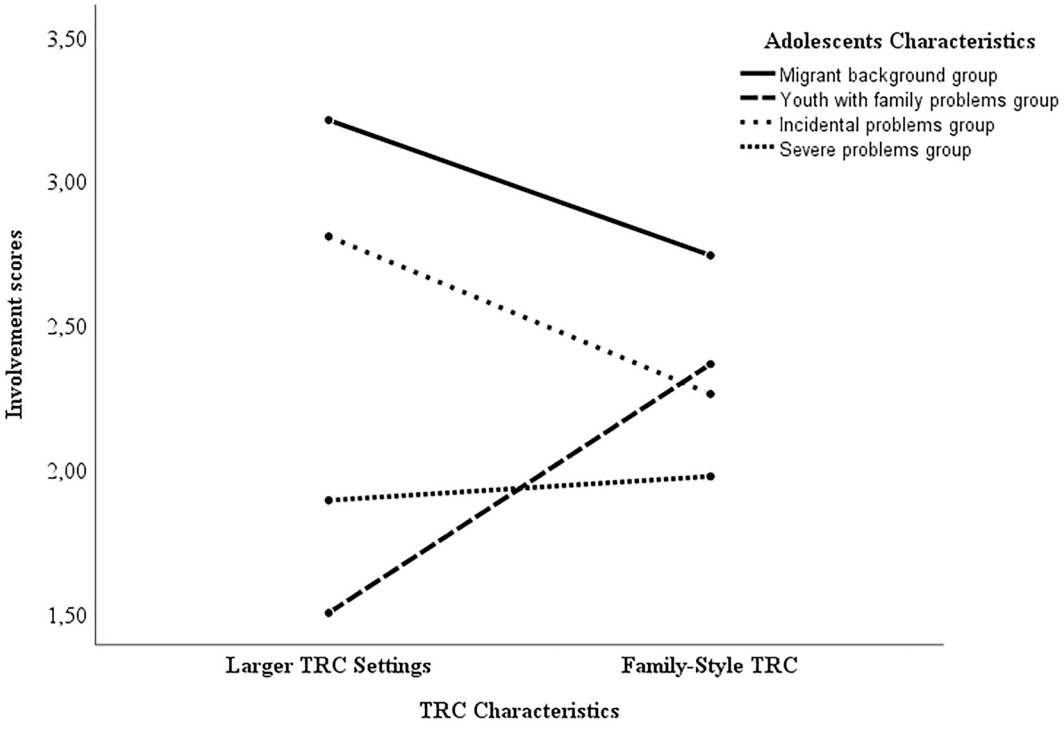

Fig. 2. Interaction effects of TRC and adolescent characteristics on the involvement subscale.

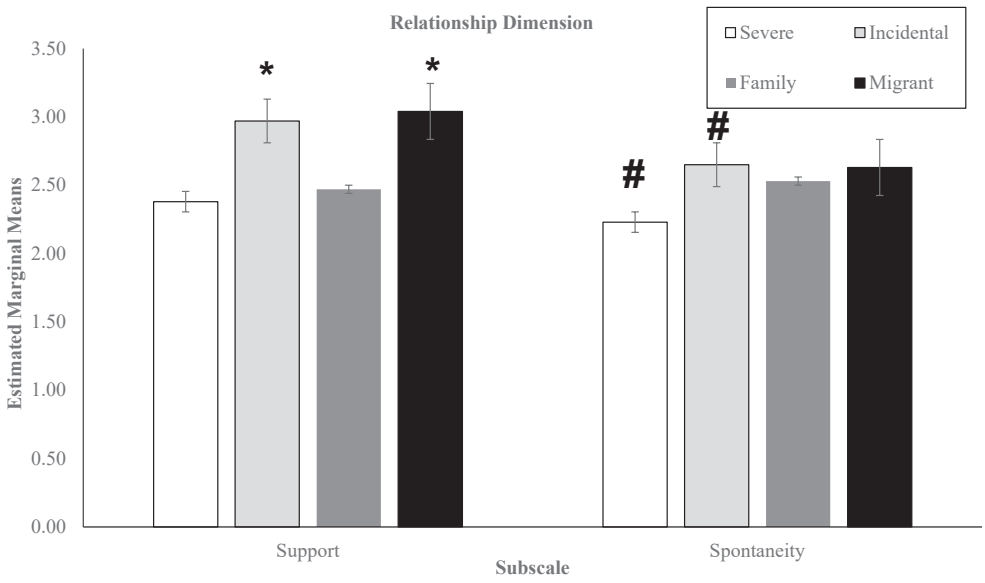

Fig. 3. Estimated marginal means of the support and spontaneity subscale for adolescent characteristics. * The migrant and incidental class differ significantly from the severe and family class. # Significant difference between the severe and incidental class.

1.20], $p = .009$ and between the severe problems class and the incidental problems class ($M = 2.65$, $SE = 0.10$), −0.52, 95% CI [−0.90, −0.14], $p = .003$. All other comparisons, including the youth with family problems ($M = 2.30$, $SE = 0.18$) are not statistically significant (see Fig. 5).

5. Discussion

The aim of this study was to investigate how classes of TRC and adolescent characteristics are associated with experienced social climate in TRC. Using LCA, results showed two types of TRC and four classes of youth, which differ in their relation to experienced social climate reported by young people living in TRC.

Regarding TRC characteristics, we expected that small and publicly owned TRCs located in more populated areas and having (staff training) routines and staff with relevant education were associated with a positive social climate. However, the results show little variation between the TRC settings and the LCA only indicated two TRC clusters consisting of family-style TRC and larger TRC settings. Both these settings are mostly publicly owned, have routines for youth, staff training programs, and have staff members with mostly a social work degree. They mainly differ in size, as the family-style TRC is smaller, and family-style TRCs have more staff cohabitation compared to the larger TRC settings.

Contrary to our expectation, social climate in terms of the perception of anger and aggression (i.e., the extent to which young people argue, become openly angry, and display other aggressive behavior between each other and staff) was higher in family-style TRC settings than in larger TRC settings. An explanation for this unexpected finding may be that these emotional expressions are more tolerated in smaller family-oriented settings than in larger TRC settings. For example, youth in family-style TRC seem to have a more positive emotional development (Leloux-Opmeer et al., 2018) compared to children in residential care or foster care. Furthermore, there are indications for more attachment

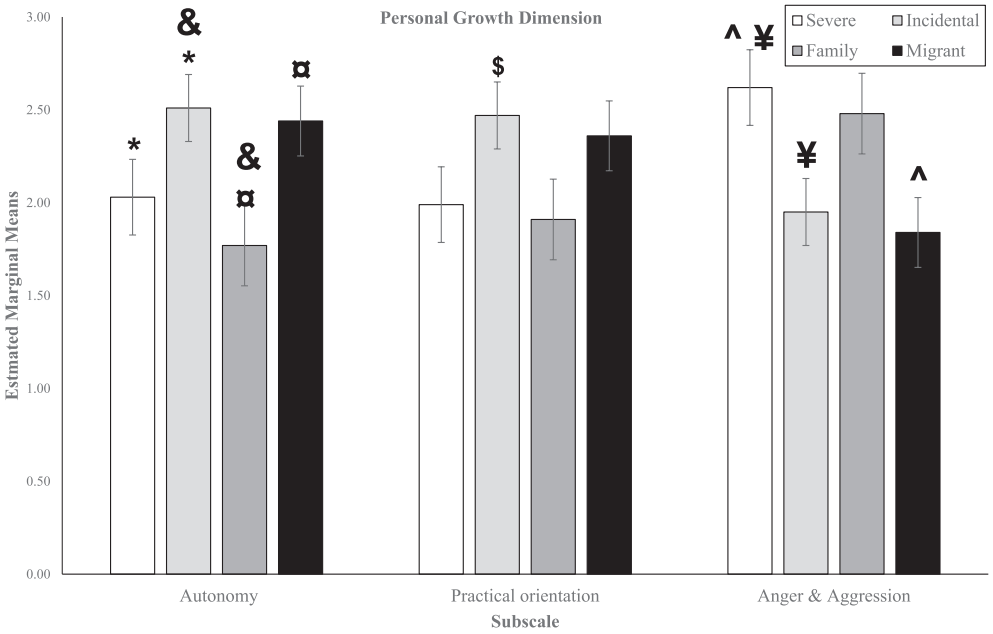

Fig. 4. Estimated marginal means of the autonomy, practical orientation, and anger and aggression subscales for adolescent characteristics. ¤ Significant difference between the migrant and family class. & Significant difference between the incidental and family class. * Significant difference between the severe and incidental class. $ Significant difference between the incidental class and the severe and family class. ^ Significant difference between the severe and migrant class. ¥ Significant difference between the severe and incidental class.

related problems in youth admitted to family-style TRC compared to larger TRC settings (Leloux-Opmeer et al., 2017), which may explain why more anger is perceived and expressed. The cohabitation schedule may also provoke more conflict and turbulence. In addition, larger TRC settings may focus more on adaptive behavior of youth during care and, consequently, allow less angry expressions or behavior (Harder, 2018). Overall, our findings do not show evidence that small family-style TRC settings have a more positive social climate compared to larger settings, which is not in line with previous research (Anglin, 2002; Caldwell & Rejino, 1993; Chipenda-Dansokho & Bullock, 2003). A potential problem in explaining this finding is that the variation and differences in TRC characteristics are generally small, within as well between the two identified TRC classes. Future studies on more heterogenous and different TRC types may be necessary to clarify the associations between TRC characteristics and perceived social climate.

Regarding youth characteristics, we identified a migrant background group, youth with family problems, incidental problems, and youth with severe/comorbid problems. The severe problems group showed, as expected, the least positive perception of social climate in terms of involvement, support, spontaneity, autonomy, practical orientation, order and organization, and program clarity. In addition, they experienced the highest level of anger and aggression in the TRC living environment – especially in family-style TRC. This finding is in line with previous research, which shows that youth with more emotional and behavioral problems perceive social climate more negatively than youth with fewer problems (e.g., Bastiaanssen et al., 2012; Lanctôt et al., 2016; Leipoldt et al., 2019; Pellerin et al., 2020; Robinson et al., 2018; Southwell & Fraser, 2010; Van der Helm et al., 2014).

The results did not support our hypotheses that adolescents with an internalizing psychiatric diagnosis perceive the social climate as more supportive than adolescents with an externalizing psychiatric diagnosis. Previous research shows that staff members use more autonomy granting for youth with internalizing problems, compared to more controlling interventions for externalizing problems in TRC (Bastiaanssen et al., 2012). Therefore, there seems to be a discrepancy in what staff members do and what adolescents perceive. It is important to investigate these discrepancies in future research as previous findings have indicated that autonomy is positively associated with treatment motivation, less aggression (Van der Helm et al., 2013; Van der Helm et al., 2014), and a focus on youth's strengths in treatment programs (Barton et al., 2008; Barton & Mackin, 2012).

Furthermore, our results indicate that youth with family problems perceive the lowest amount of autonomy in the environment, regardless of TRC characteristics. An explanation might be that youth with family problems in residential care have experienced negative parenting at home, e.g., more emotional and physical abuse and neglect (see review of Leloux-Opmeer et al., 2016), which may lead to higher sensitivity toward perceived autonomy restrictions. It is important that staff members are sensitive towards this possible sensitivity and potential helplessness feelings of youths and allow them more autonomy and support development of autonomy skills during treatment.

Although we expected that having a Caucasian background was associated with a more positive perception of social climate, our results show that the migrant background class perceived social climate most positively on all measured aspects. This is not in line with findings from Dutch TRC where youth with a Turkish and Moroccan background perceived lower levels of support (less trust, respect and taken seriously) than native Dutch youth (Sevilir et al., 2020) and evidence where Dutch (Knorth & Eldering, 1998) and Norwegian (Drange & Telle, 2021) children with an immigrant background have less opportunities for adequate care. A possible explanation is that the migrant background youth (and this also accounts for the incidental problems group) have less mental health problems and the shortest treatment history. That might make them less burdened by problems and more optimistic about their environment, influencing their experience of TRC social climate. In other words, the migrant background group (and incidental problems group) might have a less pessimistic attitude and be more adaptive during placement with subsequently more positive perceptions of their environment (Southwell & Fraser, 2010).

Finally, regarding the interplay of TRC and youth characteristics and associations with social climate, we found only one significant interaction. Only youth with family problems had a more positive perception of involvement in smaller family-style TRC settings, than in larger TRC settings. Opposite to this, the incidental problems class perceived involvement as higher in larger TRC settings than in smaller family-style TRCs settings. A potential explanation for this is that youth with family-related problems benefit more from a smaller family-style setting, because of the nature of their problems (e.g., mental, or chronic illness of mother) and mental health problems (e.g., in terms of youth DSM-IV diagnoses) than youth with incidental problems. Youth with family-related problems also show the most attachment-related problems and previous research shows that youths with these problems seem to be

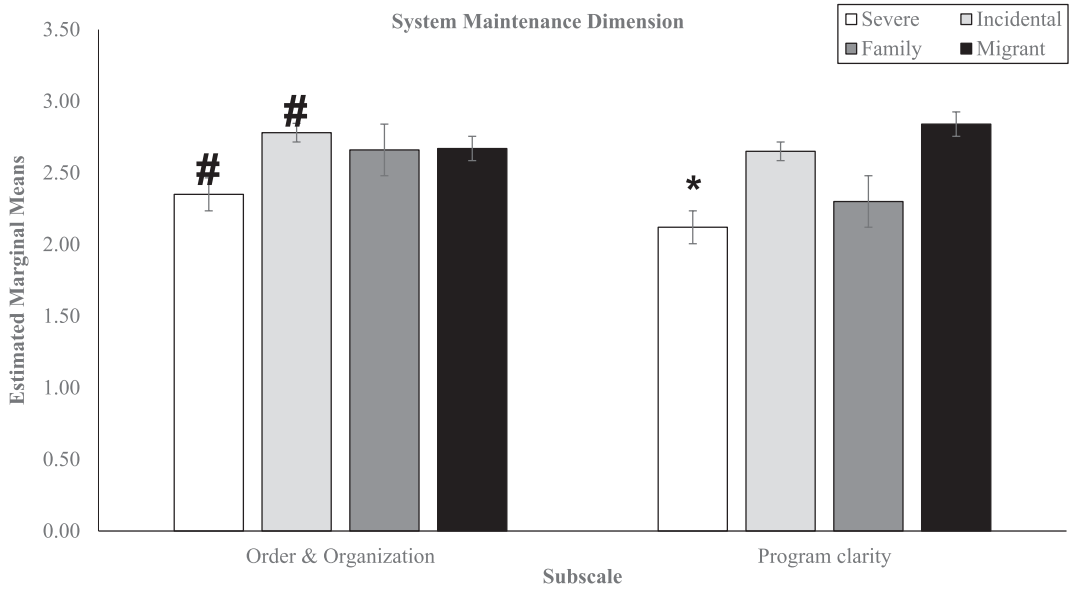

Fig. 5. Estimated marginal means of the order and organization and program clarity subscales for adolescent characteristics. # Significant difference between the severe and incidental class. * Significant difference between the severe class and the incidental and migrant class.

placed more often in family-style TRC than in larger TRC settings (Lee & Thompson, 2008; Leloux-Opmeer et al., 2017). Consequently, a family-style setting might fit better with their needs, resulting in a higher perceived social climate in terms of involvement. Youth with incidental problems seem to have different needs, because they report few family problems and might not have a need for gaining positive experiences in a new family setting. Consequently, a family-style setting might fit poorly with their needs and results in a lower perceived social climate in terms of involvement. However, they also show mainly behavioral problems making them more likely to be placed in non-family style TRC.

5.1. Strengths and limitations

A strength of this study is the usage of a person-centered approach over a variable-centered approach (Von Eye & Bergman, 2003). Many studies in TRC concentrate on effectiveness, but rather overlook how these effects are obtained. By adhering to a person-centered approach, we were able (1) to include much contextual information to gain a better understanding of TRC types and its users, and (2) to identify what works for whom (Harder & Knorth, 2015) in terms of perceived social climate. Furthermore, practical implications can be generated from this approach by tailoring the emphasis on different social climate aspects to adolescent characteristics in order to improve their perception of social climate.

This study also has some limitations. First, the obtained results are cross-sectional and therefore make it difficult to generalize how social climate might change (the group dynamic) over time and provide causational interpretations. Longitudinal studies monitoring change and development of social climate to increase our understanding of this dynamic interplay are underway (Strijbosch et al., 2019). Second, most data came from youth self-report measures, including information regarding behavioral problems of youth and parental problems. This limits the objectivity of the number of problems that may exist according to caregivers and could potentially have underestimated the number of problems in the present study. Caution is therefore necessary when considering the parental problems in this study.

Third, not all items discriminated well between groups, which indicate that the groups are to some extent homogeneous. Although caution is therefore necessary with the interpretation of the description of classes, the present overlap also provides an indication of the low variation between TRC settings in Norway. Therefore, our results may not be valid beyond this relatively narrow variation between TRC's. A final limitation is that information regarding TRC characteristics was provided only by staff leaders and not by the (daily) staff members that work with the adolescents. This can potentially limit the accurateness of the perception of daily tasks carried out by staff members and how they are experienced by youth.

5.2. Implications and future directions

Despite the limitations, this study provides several implications for clinical practice and future research. First, staff members should consider the heterogeneity of adolescents within TRC and acknowledge that they have different environmental needs. For example, a continuous conversation about the perception of the residential environment and how this can be improved can be beneficial for both adolescents and staff members (Leipoldt & Strijbosch, 2020; Levrouw et al., 2020; Knorth et al., 2004). Expectations from and towards the resident youth should be synchronized at the start of treatment during an intake by discussing with adolescents how they expect and prefer the social climate to be in care. This can be done by using the revised CPES questionnaire (Leipoldt et al., 2018) with a reformulation of the questions to an expected social climate style (see Moos, 2003 for a description). By using this questionnaire at intake, expectation management can already be performed before treatment starts, and this subsequently can increase positive and more realistic expectations. This study shows that youth with the most problems perceive social climate the least positive. Therefore, youth care workers should pay extra attention to these youth and not only focus on the many present problems, but also on how they can optimize the environment for these youth based on their needs.

Future research should focus on longitudinal studies to determine how the perception of social climate interplays with youth development and organizational changes. Having a single snapshot of social climate limits our understanding of how social climate perception changes during treatment and whether adjustments are necessary. In addition, future research should investigate the discrepancies between staff and youth perceptions of autonomy and other aspects of the environment to align experience, expectations, and action to both perspectives. Finally, the findings from this study should be extended to include treatment outcome indicators, such as quality of life, treatment satisfaction, and changes in emotional and behavioral problems. A study that includes youth and contextual factors, treatment outcomes, and social climate as covariate can provide a better view of what works for whom in TRC.

6. Conclusion

This study has contributed to a clearer picture of how social climate aspects could advance the existing knowledge on "what works for whom" in TRC, including both TRC and youth characteristics. This study indicated that adolescent characteristics interact with the practical organization of staff-youth relationships in producing different social climate experiences. A close staff-youth relationship may counteract the differences in adolescent characteristics, but that this is more challenging for some groups of adolescents. In addition, this study indicated that the perception of social climate is not homogenous and that staff members should consider the heterogeneity of their adolescents when changing aspects of the social climate aspects within TRC. This clearly requires more differentiation within and between TRCs and to move beyond the 'one size fits all' approach.

CRediT authorship contribution statement

Jonathan D. Leipoldt: Conceptualization, Methodology, Software, Formal analysis, Writing – original draft. **Annemiek T. Harder:** Conceptualization, Writing – review & editing, Supervision. **Nanna S. Kayed:** Resources, Data curation, Writing – review & editing, Supervision, Funding acquisition. **Hans Grietens:** Resources, Writing – review & editing, Supervision, Funding acquisition. **Tormod Rimehaug:** Conceptualization, Methodology, Formal analysis, Writing – review & editing, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors would like to thank all young people and TRC staff that participated and supplied the data for the project «Mental health in adolescents in child welfare institutions», at the Regional Centre for Child and Youth Mental Health and Child Welfare, Department of Mental Health, Faculty of Medicine, Norwegian University of Science and Technology (NTNU).

Funding

The main study was funded by means from the Norwegian Directorate for Children, Youth and Family Affairs, the Norwegian Directorate for Health and Faculty of Medicine and Health Sciences, and the

Norwegian University of Science and Technology.

References

Andreassen, T. (2015). MultifunC: Multifunctional treatment in residential and community settings. In J. K. Whittaker, J. F. del Valle, & L. Holmes (Eds.), *Therapeutic residential care with children and youth: Developing evidence-based international practice.* (pp. 100–110). Jessica Kingsley Publishers.

Andrews, D. A. (2011). The impact of nonprogrammatic factors on criminal-justice interventions. *Legal and Criminological Psychology, 16*(1), 1–23. https://doi.org/10.1348/135532510X521485

Anglin, J. P. (2002). Creating an extrafamilial living environment. *Child & Youth Services, 24*(1–2), 79–105. https://doi.org/10.1300/J024v24n01_06

Angold, A., & Costello, E. J. (2000). The Child and Adolescent Psychiatric Assessment (CAPA). *Journal of the American Academy of Child & Adolescent Psychiatry, 39*(1), 39–48. https://doi.org/10.1097/00004583-200001000-00015

Attar-Schwartz, S. (2017). Experiences of victimization by peers and staff in residential care for children at risk in Israel from an ecological perspective. In A. V. Rus, S. R. Parris, & E. Stativa (Eds.), *Child maltreatment in residential care* (pp. 269–299). Springer International Publishing AG. https://doi.org/10.1007/978-3-319-57990-0_13.

Backe-Hansen, E., Bakketeig, E., Gautun, H., & Gronningsaeter, A. B. (2011). *Institusjonsplassering – siste utvei? Betydningen av barnevernsreformen fra 2004 for institusjonstilbudet [Institutional placement – last resort? The significance of the child welfare reform of 2004 for residential youth care institutions]*. NOVA.

Barton, W. H., Mackin, J. R., & Fields, J. (2008). Assessing youth strengths in a residential juvenile correctional program. *Residential Treatment for Children & Youth, 23*(3–4), 11–36. https://doi.org/10.1080/08865710609512715

Barton, W. H., & Mackin, J. R. (2012). Towards a strength-based juvenile correctional facility: Sustainability and effects of an institutional transformation. *Journal of Offender Rehabilitation, 51*(7), 435–452. https://doi.org/10.1080/10509674.2012.700688

Bastiaanssen, I. L. W., Kroes, G., Nijhof, K. S., Delsing, M. J. M. H., Engels, R. C. M. E., & Veerman, J. W. (2012). Measuring group care worker interventions in residential youth care. *Child & Youth Care Forum, 41*(5), 447–460. https://doi.org/10.1007/s10566-012-9176-8

Caldwell, B., & Rejino, E. (1993). Ensuring that all children and adolescents in residential treatment live in a protected, safe environment. *Residential Treatment For Children & Youth, 11*(1), 49–62. https://doi.org/10.1300/J007v11n01_04

Cantora, A., Mellow, J., & Schlager, M. D. (2014). What about nonprogrammatic factors? Women's perceptions of staff and resident relationships in a community corrections setting. *Journal of Offender Rehabilitation, 53*(1), 35–56. https://doi.org/10.1080/10509674.2013.861315

Chipenda-Dansokho, S., & Bullock, R. (2003). The determinants and influence of size on residential settings for children. *International Journal of Child and Family Welfare, 6*(3), 66–76.

Clark, S. L., & Muthén, B. (2009). *Relating latent class analysis results to variables not included in the analysis*. https://www.statmodel.com/download/relatinglca.pdf.

Cohen, J. (1988). *Statistical power and analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates, Inc.

De Swart, J. J. W., Van den Broek, H., Stams, G., Asscher, J. J., Van der Laan, P. H., Holsbrink-Engels, G. A., et al. (2012). The effectiveness of institutional youth care over the past three decades: A meta-analysis. *Children and Youth Services Review, 34*(9), 1818–1824. https://doi.org/10.1016/j.childyouth.2012.05.015

Drange, N., & Telle, K. (2021). Segregation in a universal child care system: Descriptive findings from Norway. *European Sociological Review, 36*(6), 886–901. https://doi.org/10.1093/esr/jcaa026

Frensch, K. M., & Cameron, G. (2002). Treatment of choice or a last resort? A review of residential mental health placements for children and youth. *Child and Youth Care Forum, 31*, 307–339. https://doi.org/10.1023/A:1016826627406

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment, 26*(1), 41–54. https://doi.org/10.1023/B:JOBA.0000007455.08539.94

Grietens, H. (2002). Evaluating the effects of residential treatment for juvenile offenders: A review of meta-analytic studies. *International Journal of Child and Family Welfare, 5*, 129–140.

Gutterswijk, R. V., Kuiper, C. H. Z., Lautan, N., Kunst, E. G., Van der Horst, F. C. P., Stams, G. J. J. M., et al. (2020). The outcome of non-residential youth care compared to residential youth care: A multilevel meta-analysis. *Children and Youth Services Review, 113*, 104950. https://doi.org/10.1016/j.childyouth.2020.104950

Harder, A. T. (2018). Residential care and cure: Achieving enduring behavior change with youth by using a self-determination, common factors and motivational interviewing approach. *Residential Treatment for Children & Youth, 35*(4), 317–335. https://doi.org/10.1080/0886571X.2018.1460006

Harder, A. T., & Knorth, E. J. (2015). Uncovering what is inside the "black box" of effective therapeutic residential youth care. In J. K. Whittaker, J. F. del Valle, & L. Holmes (Eds.), *Therapeutic residential care with children and youth: Developing evidence-based international practice* (pp. 217–228). Jessica Kingsley Publishers.

Jozefiak, T., Kayed, N. S., Rimehaug, T., Wormdal, A. K., Brubakk, A. M., & Wichstrøm, L. (2016). Prevalence and comorbidity of mental disorders among adolescents living in residential youth care. *European Child & Adolescent Psychiatry, 25*(1), 33–47. https://doi.org/10.1007/s00787-015-0700-x

Jozefiak, T., & Sønnichsen Kayed, N. (2015). Self- and proxy reports of quality of life among adolescents living in residential youth care compared to adolescents in the general population and mental health services. *Health and Quality of Life Outcomes, 13*. https://doi.org/10.1186/s12955-015-0280-y

Knekt, P., Virtala, E., Härkänen, T., Vaarama, M., Lehtonen, J., & Lindfors, O. (2016). The outcome of short- and long-term psychotherapy 10 years after start of treatment. *Psychological Medicine, 46*(6), 1175–1188. https://doi.org/10.1017/S0033291715002718

Knorth, E. J. (2003). De black box van de residentiële jeugdzorg geopend? [The black box of residential youth care opened?]. *Kind En Adolescent, 24*(3), 102–104. https://doi.org/10.1007/BF03060887

Knorth, E. J., & Eldering, L. (1998). Immigrant adolescents in residential group care and treatment settings: Research and experience in the Netherlands. *Child & Youth Care Forum, 27*(4), 237–258. https://doi.org/10.1007/BF02589252

Knorth, E. J., Harder, A. T., Zandberg, T., & Kendrick, A. J. (2008). Under one roof: A review and selective meta-analysis on the outcomes of residential child and youth care. *Children and Youth Services Review, 30*(2), 123–140. https://doi.org/10.1016/j.childyouth.2007.09.001

Knorth, E. J., Meijers, J. P. M., Brouwer, A., Jansen, E., & Du Prie, H. (2004). Changing the horizon: Client feedback as a driving force behind innovations in residential child and youth care. In H. G. Erikkson & T. Tjelflaat (Eds.), *Residential care: Horizons for the future* (pp. 23–37). Ashgate.

Lanctôt, N., Lemieux, A., & Mathys, C. (2016). The value of a safe, connected social climate for adolescent girls in residential care. *Residential Treatment for Children & Youth, 33*(3–4), 247–269. https://doi.org/10.1080/0886571X.2016.1207218

Lee, B. R., & Thompson, R. (2008). Comparing outcomes for youth in treatment foster care and family-style group care. *Children and Youth Services Review, 30*(7), 746–757. https://doi.org/10.1016/j.childyouth.2007.12.002

Leloux-Opmeer, H., Kuiper, C. H. Z., Swaab, H. T., & Scholte, E. M. (2017). Children referred to foster care, family-style group care, and residential care: (How) do they differ? *Children and Youth Services Review, 77*, 1–9. https://doi.org/10.1016/j.childyouth.2017.03.018

Leipoldt, J. D., Harder, A. T., Kayed, N. S., Grietens, H., & Rimehaug, T. (2019). Determinants and outcomes of social climate in therapeutic residential youth care: A systematic review. *Children and Youth Services Review, 99*, 429–440. https://doi.org/10.1016/j.childyouth.2019.02.010

Leipoldt, J. D., Kayed, N. S., Harder, A. T., Grietens, H., & Rimehaug, T. (2018). Refining the COPES to measure social climate in therapeutic residential youth care. *Child & Youth Care Forum, 47*(2), 173–197. https://doi.org/10.1007/s10566-017-9424-z

Leipoldt, J. D., & Strijbosch, E. L. L. (2020). Een positief leefklimaat in gezinshuizen en residentiële leefgroepen [A positive climate in family-style group care and residential youth care]. In A. T. Harder, E. J. Knorth, & C. Kuiper (Eds.), *Uithuisgeplaatste jeugdigen. Sleutels tot succes in behandeling en onderwijs* (pp. 109–117). SWP Publishers.

Leloux-Opmeer, H., Kuiper, C., Swaab, H., & Scholte, E. (2016). Characteristics of children in foster care, family-style group care, and residential care: A scoping review. *Journal of Child and Family Studies, 25*(8), 2357–2371. https://doi.org/10.1007/s10826-016-0418-5

Leloux-Opmeer, H., Kuiper, C., Swaab, H., & Scholte, E. (2018). Similarities and differences in the psychosocial development of children placed in different 24-h settings. *Journal of Child and Family Studies, 27*(4), 1299–1310. https://doi.org/10.1007/s10826-017-0955-6

Levrouw, D., Devlieghere, J., Vandevelde, S., & Roose, R. (2020). Developing a positive living climate in residential youth care: A qualitative study. *Children and Youth Services Review, 116*, 105221. https://doi.org/10.1016/j.childyouth.2020.105221

Libby, A. M., Coen, A. S., Price, D. A., Silverman, K., & Orton, H. D. (2005). Inside the black box: What constitutes a day in a residential treatment centre? *International Journal of Social Welfare, 14*(3), 176–183. https://doi.org/10.1111/j.1468-2397.2005.00357.x

Lo, Y. (2001). Testing the number of components in a normal mixture. *Biometrika, 88*(3), 767–778. https://doi.org/10.1093/biomet/88.3.767

Mathys, C. (2017). Effective components of interventions in juvenile justice facilities: How to take care of delinquent youths? *Children and Youth Services Review, 73*, 319–327. https://doi.org/10.1016/j.childyouth.2017.01.007

Moos, R. H. (2003). *The social climate scales: A user's guide.* Mind Garden.

Moos, R. H. (2009). *Community oriented programs environment scale manual (4h ed.).* Mind Garden.

Moos, R. H., & Lemke, S. (1996). *Evaluating residential facilities. The multiphasic environmental assessment procedure.* Sage.

Murray, H. A. (1938). *Explorations in personality.* Oxford University Press.

Muthén, L. K., & Muthén, B. O. (2008). *MPlus user's guide (7th ed.).* Muthén & Muthén.

Nylund-Gibson, K., & Choi, A. Y. (2018). Ten frequently asked questions about latent class analysis. *Translational Issues in Psychological Science, 4*(4), 440–461. https://doi.org/10.1037/tps0000176

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A monte carlo simulation study. *Structural Equation Modeling: A Multidisciplinary Journal, 14*(4), 535–569. https://doi.org/10.1080/10705510701575396

Pellerin, M., Parent, G., & Lanctôt, N. (2020). Perception of social climate by welfare/justice-involved girls in out-of-home placement centers. *Children and Youth Services Review, 108*, 104554. https://doi.org/10.1016/j.childyouth.2019.104554

Raykov, T. (1997). Estimation of composite reliability for congeneric measures. *Applied Psychological Measurement, 21*(2), 173–184. https://doi.org/10.1177/01466216970212006

Robinson, J., Craig, L. A., & Tonkin, M. (2018). Perceptions of social climate and aggressive behavior in forensic services: A systematic review. *Trauma, Violence, & Abuse, 19*(4), 391–405. https://doi.org/10.1177/1524838016663936

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*(1), 54–67. https://doi.org/10.1006/ceps.1999.1020

Scherrer, J. L. (1994). *A meta-analysis of the effectiveness of residential treatment programs for children and adolescents (Doctoral dissertation)*. University of Illinois.

Sevilir, R., Van der Helm, G. H. P., Roest, J. J., Beld, M. H. M., & Didden, R. (2020). Differences in perceived living group climate between youth with a Turkish/Moroccan and native Dutch background in residential youth care. *Children and Youth Services Review, 114*, 105081. https://doi.org/10.1016/j.childyouth.2020.105081

Southwell, J., & Fraser, E. (2010). Young people's satisfaction with residential care: Identifying strengths and weaknesses in service delivery. *Child Welfare, 89*(2), 209–228.

Stams, G. J., & Van der Helm, P. (2017). What works in residential programs for aggressive and violent youth? In P. Sturney (Ed.), *The Wiley handbook of violence and aggression* (pp. 1–12). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781119057574.whbva116.

Stern, G. G. (1970). *People in context: Measuring person-environment congruence in education and industry*. Wiley.

Strijbosch, E. L. L., Huijs, J. A. M., Stams, G. J. J. M., Wissink, I. B., Van der Helm, G. H. P., De Swart, J. J. W., et al. (2015). The outcome of institutional youth care compared to non-institutional youth care for children of primary school age and early adolescence: A multi-level meta-analysis. *Children and Youth Services Review, 58*, 208–218. https://doi.org/10.1016/j.childyouth.2015.09.018

Strijbosch, E. L. L., Wissink, I. B., Van der Helm, G. H. P., & Stams, G. J. J. M. (2019). Building a positive group climate together: How monitoring instruments are part of an improvement process in residential care for children. *Children and Youth Services Review, 96*, 266–277. https://doi.org/10.1016/j.childyouth.2018.11.051

Theunissen, H. L. A. (1986). *Het sociaal klimaat van de leefgroep [The social climate of the living group] (Doctoral dissertation)*. Katholieke Universiteit Nijmegen. Krips Repro.

Van der Helm, G. H. P., Kuiper, C. H. Z., & Stams, G. J. J. M. (2018). Group climate and treatment motivation in secure residential and forensic youth care from the perspective of self determination theory. *Children and Youth Services Review, 93*, 339–344. https://doi.org/10.1016/j.childyouth.2018.07.028

Van der Helm, G. H. P., Wissink, I. B., De Jongh, T., & Stams, G. J. J. M. (2013). Measuring treatment motivation in secure juvenile facilities. *International Journal of Offender Therapy and Comparative Criminology, 57*(8), 996–1008. https://doi.org/10.1177/0306624X12443798

Van der Helm, P., Beunk, L., Stams, G.-J., & Van der Laan, P. (2014). The relationship between detention length, living group climate, coping, and treatment motivation among juvenile delinquents in a youth correctional facility. *The Prison Journal, 94*(2), 260–275. https://doi.org/10.1177/0032885514524884

Van der Ploeg, J. D. (1982). The social climate in the group. In J. E. Rink (Ed.), *Developments in residential child and youth care* (pp. 40–53). Wolters-Noordhoff.

Von Eye, A., & Bergman, L. R. (2003). Research strategies in developmental psychopathology: Dimensional identity and the person-oriented approach. *Development and Psychopathology, 15*(3), 553–580. https://doi.org/10.1017/S0954579403000294

Whittaker, J. K., Del Valle, J. F., & Holmes, L. (2015). *Therapeutic residential care with children and youth: Developing evidence-based international practice.* Jessica Kingsley Publishers.