



Differences between boys and girls in perceived group climate in residential youth care

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ABSTRACT

The aim of the present study was to examine differences in perceived living group climate between boys and girls in a sample of 344 youth (68.6% male, M age = 16, SD = 1.58) receiving residential youth care in the Netherlands. Participants filled out self-report measures on living group climate. Results of multilevel regression models indicated that girls in non-correctional facilities experienced living group climate most positively, and girls in correctional facilities experienced living group climate most negatively compared to girls and boys in non-correctional facilities. We conclude that residential treatment settings should adapt gender-responsive approaches to address specific needs of girls, specifically in secure residential care. Future studies should focus on specific needs of girls to advance knowledge on how they can benefit optimally from their stay in residential care to facilitate gender-specific programming in residential youth care.

1. Introduction

Adolescents with severe behavioral problems or who commit crimes are treated in (secure) residential youth care facilities. In general, their problems are more complex and severe compared to youth in non-residential facilities (Leloux-Opmeer, Kuiper, Swaab, & Scholte, 2016; Ter Beek, Van der Rijken, Kuiper, Hendriks, & Stams, 2018; Vermaes & Nijhof, 2014). Residential care and treatment in the Netherlands are delivered in living groups of typically 8–10 adolescents, where adolescents are supervised by two or more trained group workers. In correctional facilities, rules and regulations are mostly restrictive, and contact with peers is supervised by staff (De Valk, Kuiper, Van der Helm, Maas, & Stams, 2016).

In the Netherlands in the period 2010–2012¹, it is estimated that 90 per 10,000 minors were placed out of their homes each year, ca. 45,000 in total. Over the same period, the lowest number of young people in Europe were placed out of their homes in Italy – 38 per 10,000 minors – while the highest numbers were to be found in Denmark 120 per 10,000

minors. This means that the Dutch figures are slightly above the European average of the Netherlands (Harder, Knorth & Kuiper, 2020, p. 16). In the year 2013², 11,540 of these children and adolescents received residential youth care (Dutch Central Bureau of Statistics, 2020). Most youths are likely to be referred to open (non-correctional) residential youth care facilities, where as many girls as boys live. Of this group (in 2013) 1,818 adolescents (Jeugdzorg Nederland, 2017) between 12 and 18 years of age have been placed in one of twelve secure (non-correctional) youth care facilities (called Youthcare^{plus}) to protect them from others who pose a threat to their development, to prevent them from self-harm or refusal of necessary care, but most of all to provide intensive 24-hour care and effective treatment for complex problems (Van der Helm, Kuiper, & Stams, 2018). There is always a judicial authorization for the placement. Of these adolescents in Youthcare^{plus} 43% were female and 57% male (Jeugdzorg Nederland, 2017). In the year 2013 on top of the adolescents in residential youth care 1,180 (5,4% girls in a girls-only group) were placed in youth prisons (WODC, 2020). In those cases, there was a form of punishment related to a criminal offence. The

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¹ The most recent reliable European comparisons are available for this period.

² The data in the current study were collected in 2013

ultimate aim of residential treatment for youth is to learn to get along with others, to (re)start schooling, to develop prosocial attitudes, to reduce internalizing and externalizing problem behavior, delinquency, substance use, and prevent re-victimization (Van der Helm et al., 2018; Vermaes & Nijhof, 2014).

In order to achieve youths' treatment goals, a positive living group climate is required, as the living group is the primary social environment for adolescents receiving residential care (Eltink, 2020; Leipoldt, Harder, Kayed, Grietens, & Rimehaug, 2019; Stams & Van der Helm, 2017; Van der Helm et al., 2018). Knowledge on how girls and boys differ in their perception of living group climate is important to better understand how youth in residential youth care can benefit from their treatment in order to facilitate gender-specific programming in residential care. Notably, the perception of living group climate by girls is an important although understudied subject in literature. Therefore, the aim of the present study was to examine differences between boys and girls in perceived living group climate in secure (correctional and non-correctional) facilities.

1.1. Gender responsive treatment in residential youth care

Effective treatment is based on the RNR principles (Andrews & Bonta, 2010), which indicate that treatment should be tailored to the individual needs of the person: the intensity of treatment should be in line with the risk for recidivism or revictimization, should fit the criminogenic or development threatening needs, and should be in line with the motivation and capabilities of the individual. Recent studies have emphasized the need for gender responsive treatment of youth in residential care based on differences in psychological development of boys and girls as well as differences in exposure to risk factors, pathways to crime, and needs (Anderson, Hoskins, & Rubino, 2019; Granski et al., 2020; Hubbard & Matthews, 2008; Lanctôt, 2018; Piller, Gibly, & Peled 2019; Walker, Bishop, Nurius, & Logan-Greene, 2016). For example, boys tend to display more aggressive and delinquent behavior than girls, whereas girls display more internalizing behavior and are more at risk for exposure to adverse childhood experiences (ACEs), such as parental neglect, domestic violence, and sexual abuse (Asscher, Van der Put, & Stams, 2015; Assink et al., 2019; Biswas & Vaughn, 2011; Chaplo, Kerig, Modrowski, & Bennett, 2017; Dirkse, Eichelsheim, Asscher, & Van der Laan, 2018; Leve, Chamberlain, & Kim, 2015; Van Damme, Colins, De Maeyer, Vermeiren, & Vanderplassen, 2015).

Studies have found that girls are more at risk to develop trauma-related symptoms compared to boys, and that experienced trauma is likely to be one of the principal mechanisms underlying aggressive behavior in girls (Ford, Chapman, Connor, & Cruise, 2012; Ford, Grasso, Hawke, & Chapman, 2013; Kerig & Becker, 2012; Leenarts et al., 2013; Olf, 2017). Ample evidence indicates that history of trauma or post-traumatic stress disorder in girls is related to aggressive or antisocial behavior and mental health problems, resulting in affiliations with deviant peers, renewed victimization, and/or criminalization (Carbone-Lopez, Kruttschnitt, & McMillan, 2006; Hoeve et al., 2015; Kerig & Becker, 2012; Krabbendam, 2015; Leenarts et al., 2013; Van Vugt, Lanctôt, Paquette, Collin-Vézina, & Lemieux, 2014; Raine, 2013).

A recent meta-analysis by Granski et al. (2020) on program characteristics for youth with disruptive behavior problems demonstrated that boys may benefit more from interventions targeting disruptive behavior problems than girls. This finding could imply that gender responsive treatment for disruptive behavior problems is necessary to allow girls to benefit equally from treatment as boys. The authors suggest that the delivery of trauma-informed approaches to address experiences of trauma and victimization in girls as well as a relational approach, focusing on the girls' family and peer group, may be more beneficial for girls.

During the past decade, research has focused on treatment principles and implementation of trauma-informed care in residential youth care facilities aimed at preventing re-victimization and traumatization,

particularly through responsive and non-coercive staff-client interactions by refraining from restrictive measures, such as seclusion and restraint (Bryson et al., 2017; Ford et al., 2012; Ford & Blaustein, 2013; Hodgdon, Kinniburgh, Gabowitz, Blaustein, & Spinazzola, 2013; Roy et al., 2019). Also, recent studies have specifically focused on relational approaches targeting girls in residential care (Lanctôt, 2018; Lanctôt, Lemieux, & Mathys, 2016). While research on trauma-informed care and gender-responsive treatment is steadily growing, the effective implementation of these practices remains limited (Anderson et al., 2019; Bryson et al., 2017; Lanctôt, 2018, Smith, 2017). In addition to the development of promising interventions based on trauma-informed or relational based principles to address girls' needs in residential care, the adaptation of gender-responsive strategies may also be effective at the living group in which youth stay during their treatment.

1.2. Living group climate

During their stay in residential care it is important for youth to develop prosocial attitudes and prosocial behavior. The living group in which youth reside is the primary social environment for adolescents in residential care. The quality of this environment can be described in terms of living group climate. Living group climate can be defined as 'the quality of the social and physical environment in terms of the provision of sufficient and necessary conditions for physical and mental health, well-being, contact, 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 recovery and successful participation in society' (Stams & Van der Helm, 2017, p. 4).

Living group climate may be relatively 'open', providing a structured therapeutic environment, with a positive atmosphere where the adolescents respect each other and feel safe, and where group social workers support their needs, and support cohesion and active participation. On the other hand, group climate may be negative and repressive, with a lack of mutual respect and safety among the adolescents and between adolescents and group workers. An open group climate is associated with well-being, increased treatment motivation, active coping strategies, and treatment satisfaction (Leipoldt et al., 2019; Van der Helm, Klapwijk, Stams, & Van der Laan, 2009; Van der Helm, Kuiper, & Stams, 2018). A negative and repressive living group climate may lead to feelings of fear, uncertainty and helplessness, passive coping, and aggressive behavior (De Decker et al., 2018; Eltink, 2020; Heynen, Van Der Helm, Cima, Stams, & Korebrits, 2016; Van der Helm, Beunk, Stams, & Van der Laan, 2014; Van der Helm, Boekee, Stams, & Van der Laan, 2011).

In recent years, studies have focused on girls' perceptions of living group climate in residential youth care. Several studies have found relational factors, such as relationships with peers and relationships with staff, to be important aspects of group climate for girls (Cantora, 2014; Kerig & Schindler, 2013; Mathys, Lanctôt, & Touchette, 2013). Previous studies have demonstrated that girls are more orientated towards social interaction and social support seeking (Miller, Leve & Kerig, 2012; Miller, Winn, Taylor, & Wiki, 2012; Taylor et al., 2000). Lanctôt, Lemieux and Mathys (2016) explored girls' perceptions of group climate by means of latent class analysis, revealing that girls differ in their perceptions of group climate in terms of their sense of safety among their peers at the group, their connection with their peers, and with staff. Also, girls who displayed more complex problems at admission – particularly trauma-related problems – had more negative perceptions of group climate (Lanctôt et al., 2016). A qualitative study by De Valk, Kuiper, Van der Helm, Maas and Stams (2017) revealed differences between boys and girls in how youth perceived autonomy and meaningfulness. Girls experienced more repression when they were not granted opportunities for personal development related to internally motivated goals, whereas boys mainly focused on meeting externally motivated goals. For example, they wanted to meet the expectations of staff in order to be 'released'. Studies focusing on the working alliance –

the collaborative relationship – between girls and staff in residential care found that staff found it more difficult to establish a working alliance with girls than with boys due to gender-specific extreme problem behavior, such as auto-mutilation (Lanctôt, Aytte, Turcotte, & Besnard, 2012). Additionally, Aytte Lanctôt and Tourigny (2015) found that girls with more severe problem behavior had weaker working alliances with staff.

1.3. Present study

The aim of the present study was to examine differences between boys and girls in perceived living group climate in correctional and non-correctional facilities. To the best of our knowledge, prior studies on perception of group climate in residential youth care have not examined differences between boys and girls, taking into account the type of facility (non-correctional versus correctional facilities). Given the higher degree of coercion and restrictiveness and more severe problem behavior of youth in correctional facilities (Vermaes & Nijhof, 2014), we expected youth in these facilities to experience a less positive living group climate compared to youth in non-correctional facilities.

2. Method

2.1. Participants

The total (convenience) sample consisted of 344 adolescents ($n = 236$ boys, $n = 108$ girls) receiving residential care in the Netherlands. The mean age of the respondents was 16 years ($SD = 1.58$; range 7–24) and 77.9% had the Dutch nationality. Of the total sample, 76 youth ($n = 40$ boys, $n = 36$ girls) were treated in non-correctional centers (5 different open facilities) and 268 youth ($n = 196$ boys, $n = 72$ girls) were treated in correctional centers (6 different secure care facilities and 4 different youth prisons). The living groups at which youth were placed consisted of boys-only, girls-only, and mixed groups. Of the total sample, 179 boys resided in boys-only groups, 62 girls resided in girls-only groups, and 96 youth were resided in mixed groups ($n = 53$ boys, $n = 43$ girls). Youth were referred to secure non-correctional centers because of severe behavior problems or being a danger to themselves or others.

2.2. Procedure

The data were collected in 2013. All adolescents participated voluntarily, signed an informed consent declaration, and were told that their answers would be treated confidentially and anonymously, and would be accessed only by the researchers. As a token of gratitude for their participation, participants received a telephone card or a small gift with a maximum value of €5.50. The names of the respondents on the questionnaires were deleted and substituted with a code number for use in SPSS data-analysis software. In order to protect the privacy of the adolescents, researchers had no access to their full names. Specially trained graduate students of social work administered questionnaires during a group session on the residential group. The questionnaires were completed two to three weeks after the arrival of the adolescent at the centers. This choice (cross-sectional) has been made because the duration of stay of the youngsters varies considerably from for example, 6 weeks in a juvenile prison to 2 years in an open residential facility. The answering rate was approximately 82%; reasons for not participating were: absence due to going to court or leave (12%); not interested or angry (6%).

2.3. Measures

Living group climate. Living group climate was assessed with the Prison Group Climate Inventory (PGCI, Van der Helm et al., 2011). This self-report measure consists of 36 items rated on a five point Likert type scale, ranging from 1, (*I do not agree*), to 5 (*I totally agree*). Each item

belongs to one of the four scales for group climate: Support, Growth, Repression and Atmosphere. The Support scale (12 items) assesses perceived support from group workers, in particularly the responsiveness of group workers. Listening to youth, taking their complaints seriously, and respect and trust are important characteristics of support. An example item is: ‘Group workers treat me with respect’. The Growth scale (8 items) assesses youth’s perceptions of learning and hope for the future during their stay in the center. An example item is: ‘I learn the right things here’. The Repression scale (9 items) assesses perceptions of strictness and control as well as unfair and haphazard rules. An example item is: ‘You have to ask permission for everything here’. The Atmosphere scale (7 items) assesses the social interaction among youth in terms of mutual trust, their feelings of safety at the group, and how youth perceive the physical environment at the group, such as daylight and fresh air at the group. An example item is: ‘We trust each other here’. The internal consistency reliability of the scales was good in boys and girls for the scales Support ($\alpha = 0.90$, $\alpha = 0.87$, respectively), Growth ($\alpha = 0.87$, $\alpha = 0.88$, respectively), Repression ($\alpha = 0.75$, $\alpha = 0.72$, respectively), and Atmosphere ($\alpha = 0.78$, $\alpha = 0.83$, respectively). Higher mean scores for the scales Support, Growth, and Atmosphere are indicative of higher levels of support from group workers, more possibilities for growth, and a more positive atmosphere as perceived by youth. Also, a higher mean score for the scale Repression is indicative of more repressive behavior of staff as perceived by youth.

2.4. Statistical analyses

To examine differences in living group climate, a multilevel approach was used, given the nested nature of the data (youth are nested in living groups). Hierarchical Linear Modeling (HLM) was used to account for violation of the independence assumption of regression. HLM allows for examination of how variation in the dependent variable is attributed to differences within-group (i.e., individual level) or between-group (i.e., living group level). The analyses were conducted using the ‘lme4’ package (Bates, Maechler, Bolker, & Walker, 2015) in the R environment. The ‘lmerTest’ package (Kuznetsova, Brockhoff, & Christensen, 2015) was used for the calculation of p -values, which uses the Satterthwaite approximation procedure for calculating degrees of freedom.

Four models were fit for each dependent variable. First, a random intercept-only model (null model) was fitted without predictors to estimate the Level-2 variance and ICC (Intraclass Correlation Coefficient) for the dependent variable. When significant Level-2 variance is demonstrated, multilevel analysis is warranted. Subsequently, three multilevel models were fitted. The first model included only main effects of Level-1 predictors (Gender and Age). A second model included Level-2 predictors (Type of facility). A final model included a cross-level interaction between Gender and Type of facility. The fit of the models was compared using likelihood-ratio tests. Models were compared after adding the cross-level interaction term. Parameter estimates and statistical tests on individual terms are reported for the basic model and the final model.

3. Results

Table 1 shows the descriptive information of all study variables for boys and girls in non-correctional and correctional residential care facilities. Mean scores of Support, Growth, and Atmosphere (scales referring to an open climate) for boys in correctional facilities ranged from $M = 3.20$ to 3.35 , and scores for girls in correctional facilities ranged from $M = 2.74$ to 3.22 . The mean score of the scale Repression for boys and girls in correctional facilities were $M = 3.45$ and $M = 3.54$, respectively. A previous study on group climate in 59 boys in correctional facilities reported similar mean scores for the scales Growth ($M = 3.1$), Atmosphere ($M = 3.2$), Repression ($M = 3.3$), and a somewhat lower score for Support ($M = 2.8$) (Van der Helm, Stams, Van der Stel,

Table 1
Descriptive Statistics of all Study Variables for Boys and Girls in Non-correctional and Correctional Residential Care Facilities.

	Boys				Girls			
	Non-correctional (n = 40)		Correctional (n = 196)		Non-correctional (n = 36)		Correctional (n = 72)	
	M	SD	M	SD	M	SD	M	SD
Support	3.61	0.80	3.35	0.90	4.15	0.58	3.22	0.71
Growth	3.56	0.99	3.26	1.02	4.10	0.78	3.01	0.91
Atmosphere	3.35	0.81	3.20	0.85	3.71	0.71	2.74	0.75
Repression	2.83	0.81	3.45	0.72	2.71	0.67	3.54	0.65

Van Langen, & Van der Laan, 2012) compared to the sample of boys in correctional facilities in the present study. Another study examining 179 adolescents (66% male) in correctional facilities also reported similar mean scores for the scales Support ($M = 3.49$), Growth ($M = 3.41$), Atmosphere ($M = 3.24$), and Repression ($M = 3.25$). Of note, no prior studies on scores of the group climate scales for girls are available. For boys in non-correctional facilities, mean scores ranged from $M = 3.35$ to 3.61 for the scales Support, Growth, and Atmosphere, and scores for girls in non-correctional facilities ranged from $M = 3.71$ to 4.15 . The mean score of the scale Repression for boys and girls in non-correctional facilities were $M = 2.83$ and $M = 2.71$, respectively. No prior studies on scores on group climate scales for youth in non-correctional facilities are available.

A series of hierarchical linear models was conducted to examine the relation between gender, type of facility, and living group climate. First, four different random intercept-only models were conducted to establish whether there was significant variance at Level-2 for the variables Support, Growth, Repression, and Atmosphere. Results indicated that there was significant Level-2 variance for Support ($ICC = 0.16$, Wald $z = 2.68$, $p = .007$), Growth ($ICC = 0.16$, Wald $z = 2.55$, $p = .011$) Repression ($ICC = 0.22$, Wald $z = 3.04$, $p = .002$), and Atmosphere ($ICC = 0.16$, Wald $z = 2.50$, $p = .012$).

Second, for each dependent variable, multilevel models were specified in which several main effects for Level-1 (Gender and Age) and Level-2 (Type of facility) were included, and an interaction effect between Gender and Type of facility.

Results of the HLM models with only main effects (basic model) and interaction effects (final model), as well as comparisons between models

Table 2
Estimates for the Basic and Final Models with Support as Dependent Variable.

	Basic model			Final model		
	B (se)	t	p	B (se)	T	p
Intercept	3.34 (0.49)	6.96	<0.001	3.42 (0.47)	7.31	<0.001
Gender	0.04 (0.11)	0.36	0.720	0.48 (0.19)	2.57	0.011
Age	0.03 (0.03)	1.07	0.284	0.01 (0.03)	0.46	0.647
Type of facility	-0.54 (0.12)	-4.42	<0.001	-0.29 (0.15)	-1.95	0.052
Gender × Type of facility				-0.64 (0.23)	-2.83	0.004
	Variance	Explained variance		Variance	Explained variance	
Living group	0.078	32.6%		0.053	54.2%	
Residual	0.594	1.5%		0.591	2.0%	
Model Comparison	df	LogLik		χ^2	p	
Basic model	6	-405.06				
Final model	7	-401.21		7.708	0.005	

are presented in Tables 2-5. Results indicated a significant cross-level interaction effect between Gender and Type of facility for Support ($\beta = -0.75$), Growth ($\beta = -0.76$), and Atmosphere ($\beta = -0.87$), which indicated that girls in correctional facilities experienced lower levels of support, growth, and atmosphere compared to boys. Results showed no significant interaction effect between gender and type of facility for Repression. However, a positive main effect was found for Type of facility ($\beta = 0.85$), indicating that youth in correctional facilities experienced more repression compared to youth in non-correctional facilities.

4. Discussion

The aim of the present study was to examine differences in perceived group climate between boys and girls in non-correctional and correctional residential care facilities. Findings indicated that girls in non-correctional facilities experienced aspects of living group climate most positively (more support, more possibilities for growth, and a more positive atmosphere), and girls in correctional facilities experienced aspects of living group climate most negatively compared to girls and boys in non-correctional facilities. The differences in perceived group climate between youth in non-correctional and correctional facilities were largely in line with our expectations. According to literature, these results could be explained by the higher degree of coercion and restrictiveness as well as by more severe problem behavior of youth in correctional facilities (Vermaes & Nijhof, 2014). For girls, this possibly touches on giving meaning to their stay because they experience less possibilities for personal growth (De Valk et al., 2017). In addition, girls may benefit less from interventions targeting disruptive behavior problems (Granski et al, 2020).

Findings also revealed that girls in non-correctional facilities indeed reported more support from group workers, whereas girls in correctional facilities experienced less support from group workers. These findings could also be explained by the complex and severe problem behavior of girls in correctional facilities. Most girls in correctional facilities have a history of trauma and are often poly-victimized (Kerig & Becker, 2012). Lanctôt (2020) found that high levels of childhood trauma in girls are related to maladaptive cognitive schemas, specifically perceptions of disconnection and rejection, which is negatively related to girls' perceived social support during their stay in residential care. Several other studies found that severe problem behavior in girls is related to a poor working alliance with staff (Ayotte et al., 2015, 2017; Lanctôt et al., 2012).

Further, findings revealed that girls in correctional facilities

Table 3
Estimates for the Basic and Final Models with Growth as Dependent Variable.

	Basic model			Final model		
	B (se)	t	p	B (se)	t	p
Intercept	3.08 (0.57)	5.45	<0.001	3.16 (0.56)	5.64	<0.001
Gender	-0.01 (0.13)	-0.05	0.961	0.51 (0.22)	2.30	0.020
Age	0.04 (0.03)	1.27	0.204	0.02 (0.03)	0.70	0.487
Type of facility	-0.58 (0.15)	-3.97	<0.001	-0.27 (0.18)	-1.52	0.129
Gender × Type of facility				-0.76 (0.27)	-2.80	0.005
	Variance	Explained variance		Variance	Explained variance	
Living group	0.110	29.6%		0.100	36.0%	
Residual	0.831	1.6%		0.820	2.9%	
Model Comparison	df	LogLik		χ^2	p	
Basic model	6	-461.38				
Final model	7	-457.43		7.895	0.005	

Table 4
Estimates for the Basic and Final Models with Atmosphere as Dependent Variable.

	Basic model			Final model		
	B (se)	t	p	B (se)	t	p
Intercept	2.74 (0.48)	5.68	<0.001	2.81 (0.47)	5.91	<0.001
Gender	-0.24 (0.11)	-2.26	0.025	0.26 (0.18)	1.41	0.158
Age	0.05 (0.03)	1.84	0.067	0.03 (0.03)	1.19	0.235
Type of facility	-0.43 (0.12)	-3.47	<0.001	0.14 (0.15)	-0.90	0.371
Gender × Type of facility				-0.74 (0.23)	-3.24	0.001
	Variance	Explained variance		Variance	Explained variance	
Living group	0.086	24.2%		0.075	33.9%	
Residual	0.597	2.4%		0.587	4.0%	
Model Comparison	df	LogLik		χ^2	p	
Basic model	6	-407.29				
Final model	7	-402.02		10.521	0.001	

Table 5
Estimates for the Basic and Final Models with Repression as Dependent Variable.

	Basic model			Final model		
	B (se)	t	p	B (se)	t	p
Intercept	3.49 (0.41)	8.42	<0.001	3.47 (0.41)	8.38	<0.001
Gender	0.05 (0.09)	0.55	0.811	-0.06 (0.16)	-0.36	0.723
Age	-0.04 (0.03)	-1.82	0.161	-0.04 (0.03)	-1.63	0.105
Type of facility	0.71 (0.10)	6.84	<0.001	0.65 (0.13)	4.91	<0.001
Gender × Type of facility				0.16 (0.20)	0.78	0.435
	Variance	Explained variance		Variance	Explained variance	
Living group	0.044	66.4%		0.043	67.2%	
Residual	0.460	1.4%		0.461	1.7%	
Model Comparison	df	LogLik		χ^2	p	
Basic model	6	-357.69				
Final model	7	-357.75		0.640	0.424	

experienced a less positive atmosphere at the living group. Prosocial and meaningful relationships are necessary to feel 'safe and connected', and prior research suggests that this is specifically the case for girls (Lanctôt et al., 2016). This means that staff in correctional facilities should take an active role in stimulating positive interactions among youth (Sonderman et al., 2020). Further, by creating a positive atmosphere at the living group, aggressive behavior and negative group dynamics may be reduced or prevented. This is important not only to create a positive living group climate during youth's stay at the facility, but also because evidence suggests that aggressive behavior persists in adulthood (Cleverley, Szatmari, Vaillancourt, Boyle, & Lipman, 2012; Krabbendam et al., 2014; Teplin, Welty, Abram, Dulcan & Washburn, 2012).

4.1. Limitations

Several limitations to the present study need to be acknowledged. Firstly, the present study used cross-sectional data and the measurements were carried out at the beginning (first weeks) of the youths' stay in the facility. A longitudinal design would have provided a better

insight in how youth experience living group climate throughout their stay. A second limitation is that we did not assess problem behavior of youth. Severity of problem behavior of youth, specifically trauma-related symptoms in girls, is important to consider when measuring group climate. Thirdly, the living group climate instrument used in the present study not only measures atmosphere at the living group in terms of social interactions between youth, containing items referring to feelings of safety and mutual trust, but also as the quality of the physical environment, which somewhat obscures how youth perceive interactions with other group members. Finally, due to the limited sample size, we were not able to examine measurement invariance across boys only, mixed gender and girls only groups.

4.2. Implications for practice and Future research

A number of implications for practice and future research can be formulated based on the findings of the present study. Since the results of this study indicate that in particular girls in correctional facilities experience a negative living group climate, this subject warrant further investigation. In correctional settings, youth cannot leave the facility voluntarily, it is more difficult for them to maintain pre-existing positive relationships with their family and peers, and therefore youth have very limited choice in people to interact with. This means that most social interactions among youth and between youth and staff take place at the living group. Therefore, in the context of secure residential care it is especially important to address specific needs of girls regarding their social interactions and need for support. In this regard, Lanctôt (2018) found that girls expected more from staff and their mentor than boys. According to Lanctôt (2018), staff members must be particularly responsive to the feelings and emotions of the girls, and must demonstrate a genuine desire to help them, whereas boys may need more supervision and guidance for dealing with rules and restrictions.

Future research should focus on what knowledge and skills group workers need for working with girls in secure youth care, and whether group workers could benefit from training in specific treatment approaches that are suitable within a sociotherapeutic context, such as a trauma-informed approach. It should be recognized that trauma-informed care requires a paradigm shift within any youth care facility, focusing more on understanding trauma, stress, and their impact on client-staff interactions, informed by principles of collaboration as well as shared decision making (Bryson et al., 2017; Roy, Morizot, Lamothe, & Geoffrion, 2020). This perspective is in line with principles of working on a positive living group climate, which not only requires effort and commitment from staff at the living group in terms of providing support, autonomy granting, and refraining from repressive behavior, but also a positive working climate of staff in terms of team functioning and a safe work environment (Stams & Van der Helm, 2017; Roy et al., 2020). Providing group workers tools to help youth cope during their stay and focusing on prosocial behavior, specifically by stimulating positive peer interactions and relationships with their social network may improve treatment efficacy and increase motivation for change.

Future studies should focus on perception of living group climate of youth using a longitudinal design, taking into account correlates such as problem behavior, trauma-related symptoms, aggressive behavior at the living group, as well as motivation for treatment. Also, establishing measurement invariance of group climate scales is needed to examine whether group climate constructs can be measured in a conceptually identical way across boys and girls, which allows meaningful comparisons of perception of group climate between boys and girls. Further, qualitative methods are necessary to investigate how girls and boys in secure residential care perceive living group climate.

Finally, in addition to establish a clear understanding of how boys and girls in correctional facilities differ in their criminogenic and treatment needs the heterogeneity of needs of boys and girls should be addressed by recognizing that they are not homogeneous groups (Lanctôt, 2018). A more detailed understanding of how girls and boys

differ in their perception of living group climate and acknowledging differences within girls and boys' populations are important to advance knowledge on how youth may benefit from their stay in residential care. Future qualitative research on the differences can contribute to a deeper understanding of the gender differences that emerged in this study, which knowledge can be used to inform practice in order to facilitate gender-specific programming as well as a client-centered approach in residential youth care.

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.

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References

- Anderson, V. R., Hoskins, K. M., & Rubino, L. L. (2019). Defining gender-responsive services in a juvenile court setting. *Women & Criminal Justice*, 29(9), 338–354. <https://doi.org/10.1080/08974454.2019.1588836>
- Andrews, D. A., & Bonta, J. (2010). *The psychology of criminal conduct* (5th ed.). New Providence NJ: Matthew Bender and co. inc.
- Asscher, J. J., Van der Put, C. E., & Stams, G. J. J. M. (2015). Gender Differences in the Impact of Abuse and Neglect Victimization on Adolescent Offending Behavior. *J Fam Viol*, 30(2), 215–225. <https://doi.org/10.1007/s10896-014-9668-4>
- Assink, M., Van der Put, C. E., Meeuwse, M. W. C. M., De Jong, N. M., Oort, F. J., Stams, G. J. J. M., & Hoeve, M. (2019). Risk factors for child sexual abuse victimization: A meta-analytic review. *Psychological Bulletin*, 145(5), 459–489. <https://doi.org/10.1037/bul0000188>
- Ayotte, M.-H., Lanctôt, N., & Tourigny, M. (2015). Pre-treatment profiles of adolescent girls as predictors of the strength of their working alliances with practitioners in residential care settings. *Children and Youth Services Review*, 53, 61–69. <https://doi.org/10.1016/j.childyouth.2015.03.010>
- Ayotte, M., Lanctôt, N., & Tourigny, M. (2017). The association between working alliance with adolescent girls in residential care and their trauma-related symptoms in emerging adulthood. *Child and Youth Care Forum*, 46, 601–620. <https://doi.org/10.1007/s10566-017-9398-x>
- Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). lme4: Linear mixed-effects models using Eigen and S4. R package version 1.1-8 [Computer software]. Retrieved from <http://CRAN.R-project.org/package=lme4>
- Biswas, B., & Vaughn, M. G. (2011). Really troubled girls: Gender differences in risky sexual behavior and its correlates in a sample of juvenile offenders. *Children and Youth Services Review*, 33(11), 2386–2391. <https://doi.org/10.1016/j.childyouth.2011.08.010>
- Bryson, S. A., Gauvin, E., Jamieson, A., Rathgeber, M., Faulkner-Gibson, L., Bell, S., Davidson, J., Russel, J., & Burke, S. (2017). What are effective strategies for implementing trauma-informed care in youth inpatient psychiatric and residential treatment settings? A realist systematic review.
- 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>
- Carbone-López, K., Kruttschnitt, C., & Macmillan, R. (2006). Patterns of intimate partner violence and their associations with physical health, psychological distress, and substance use. *Public health reports*, 121(4), 382–392. <https://doi.org/10.1177/00335490612100406>
- Chaplo, S. D., Kerig, P. K., Modrowski, C. A., & Bennett, D. C. (2017). Gender Differences in the Associations Among Sexual Abuse, Posttraumatic Stress Symptoms, and Delinquent Behaviors in a Sample of Detained Adolescents. *Journal of Child and Adolescent Trauma*, 10(1), 29–39. <https://doi.org/10.1007/s40653-016-0122-z>
- Cleverley, K., Szatmari, P., Vaillancourt, T., Boyle, M., & Lipman, E. (2012). Developmental Trajectories of Physical and Indirect Aggression From Late Childhood to Adolescence: Sex Differences and Outcomes in Emerging Adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry*, 51(10), 1037–1051. <https://doi.org/10.1016/j.jaac.2012.07.010>
- de Decker, A., Lemmens, L., van der Helm, P., Bruckers, L., Molenberghs, G., & Tremmery, S. (2018). The relation between aggression and the living group climate in a forensic treatment unit for adolescents: A pilot study. *International Journal of Offender Therapy and Comparative Criminology*, 62(7), 1821–1837. <https://doi.org/10.1177/0306624X17712347>
- De Valk, S., Kuiper, C., van der Helm, G. H. P., Maas, A. J. J. A., & Stams, G. J. J. M. (2016). Repression in residential youth care: A scoping review. *Adolescent Research Review*, 1, 195–216.
- De Valk, S., Kuiper, C., van der Helm, G. H. P., Maas, A. J. J. A., & Stams, G. J. J. M. (2017). Repression in residential youth care: A qualitative study examining the experiences of adolescents in semi-secure and secure institutions. *Journal of Adolescent Research*, 34(6), 757–782. <https://doi.org/10.1177/0743558417719188>
- Dirkse, M. J., Eichelsheim, V., Asscher, J. J., & Van der Laan, P. H. (2018). Meisjes in een JeugdzorgPlus instelling [Girls in secure residential youth care in the Netherlands]. Nederlands Studiecentrum Criminaliteit en Rechtshandhaving.
- Dutch Central Bureau of Statistics (2020). Jongeren provinciaal gefinancierde jeugdzorg. Retrieved from: <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82354NED/table?fromstatweb>.
- Eltink, E. (2020). Back to Basic: Relations between residential group climate and juvenile antisocial behavior. (Doctoral dissertation). University of Amsterdam.
- Ford, J. D., & Blaustein, M. E. (2013). Systemic self-regulation: A framework for trauma-informed services in residential juvenile justice programs. *Journal of Family Violence*, 28(7), 665–677.
- Ford, J. D., Chapman, J., Connor, D. F., & Cruise, K. R. (2012). Complex trauma and aggression in secure juvenile justice settings. *Criminal Justice and Behavior*, 39(6), 694–724. <https://doi.org/10.1177/0093854812436957>
- Ford, J. D., Grasso, D. J., Hawke, J., & Chapman, J. F. (2013). Poly-victimization among juvenile justice-involved youths. *Child Abuse & Neglect*, 37(10), 788–800. <https://doi.org/10.1016/j.chiabu.2013.01.005>
- Granski, M., Javdani, S., Anderson, V. R., & Caires, R. (2020). A meta-analysis of program characteristics for youth with disruptive behavior problems: The moderating role of program format and youth gender. *Am J Community Psychol*, 65, 201–222. <https://doi.org/10.1002/ajcp.12377>
- Harder, A. T., Knorth, E. J., & Kuiper, C. H. Z. (2020). Uithuisplaatsing van jeugdigen: Wat, voor wie, en wanneer? In A. T. Harder, E. J. Knorth, & C. H. Z. Kuiper (Eds.), *Uithuisgeplaatste jeugdigen; Sleutels tot success in behandeling en onderwijs* (pp. 13–27). Amsterdam: SWP.
- Heynen, E., Van Der Helm, G. H. P., Cima, M., Stams, G. J. J. M., & Korebrits, A. (2017). The relation between living group climate, aggression, and callous-unemotional traits in delinquent boys in detention. *International Journal of Offender Therapy and Comparative Criminology*, 61(15), 1701–1718.
- Hodgdon, H. B., Kinniburgh, K., Gabowitz, D., Blaustein, M. E., & Spinazzola, J. (2013). Development and Implementation of Trauma-Informed Programming in Youth Residential Treatment Centers Using the ARC Framework. *Journal of Family Violence*, 28(7), 679–692. <https://doi.org/10.1007/s10896-013-9531-z>
- Hoeve, M., Colins, O. F., Mulder, E. A., Loeber, R., Stams, G. J. J. M., & Vermeiren, R. R. J. M. (2015). Trauma and mental health problems in adolescent males: Differences between childhood-onset and adolescent-onset offenders. *Criminal Justice and Behavior*, 42(7), 685–702. <https://doi.org/10.1177/0093854814558505>
- Hubbard, D. J., & Matthews, B. (2008). Reconciling the differences between the "gender responsive" and the "what works" literatures to improve services for girls. *Crime & Delinquency*, 54(2), 225–258. <https://doi.org/10.1177/0011128706296733>
- Jeugdzorg Nederland (2017) Factsheet Jeugdzorg plus instroomgegevens 2015. Retrieved from: <https://www.jeugdzorgnederland.nl/wp-content/uploads/2017/03/> <https://www.jeugdzorgnederland.nl/wp-content/uploads/2017/03/Jeugdzorgplus-Factsheet-2016.pdf>.
- Kerig, P. K., & Becker, S. P. (2012). Trauma and girls delinquency. In S. Miller, L. D. Leve, & P. K. Kerig (Eds.), *Delinquent girls: contexts, relationships and adaptation* (pp. 119–143). New York: Springer.
- Kerig, P. K., & Schindler, S. R. (2013). Engendering the evidence base: A critical review of the conceptual and empirical foundations of gender-responsive interventions for girls' delinquency. *Laws*, 2, 244–282. <https://doi.org/10.3390/laws2030244>
- Krabbandam, A. A. (2015). *Troubled girls, troubled futures: The adverse adult outcomes of detained adolescent females (doctoral thesis)*. Amsterdam: Free University.
- Krabbandam, A. A., Jansen, L. M., Van de Ven, P. M., Van der Molen, E., Doreleijers, T. A., & Vermeiren, R. R. (2014). Persistence of aggression into adulthood in detained adolescent females. *Comprehensive Psychiatry*, 55(7), 1572–1579. <https://doi.org/10.1016/j.comppsy.2014.05.002>
- Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2015). lmerTest: Tests in linear mixed effects models. R package version 2.0-28 [Computer software]. Retrieved from <http://CRAN.R-project.org/package=lmerTest/>.
- Lanctôt, N. (2018). Gender-Responsive Programs and Services for Girls in Residential Centers: Meeting Different Profiles of Rehabilitation Needs. *Criminal Justice and Behavior*, 45(1), 101–120. <https://doi.org/10.1177/0093854817733495>
- Lanctôt, N. (2020). Child maltreatment, maladaptive cognitive schemas, and perceptions of social support among young women care leavers. *Child & Family Social Work*. <https://doi.org/10.1111/cfs.12736>
- Lanctôt, N., Ayotte, M.-H., Turcotte, M., & Besnard, T. (2012). Youth care workers' views on the challenges of working with girls: An analysis of the mediating influence of practitioner gender and prior experience with girls. *Children and Youth Services Review*, 34(11), 2240–2246. <https://doi.org/10.1177/009385481212.08.002>
- 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>
- Leenarts, L. E., Vermeiren, R. R., Ven, P. M., Lodewijks, H. P., Doreleijers, T. A., & Lindauer, R. J. (2013). Relationships between interpersonal trauma, symptoms of

- posttraumatic stress disorder, and other mental health problems in girls in compulsory residential care. *Journal of traumatic stress*, 26(4), 526-529. <https://doi.org/10.1002/jts.21831>.
- Leipoldt, J. D., Harder, A. T., Kaye, 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.chidyouth.2019.02.010>
- 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, 2357-2371. <https://doi.org/10.1007/s10826-016-0418-5>
- Leve, L. D., Chamberlain, P., & Kim, H. K. (2015). Risks, outcomes, and evidence-based interventions for girls in the US juvenile justice system. *Clinical Child and Family Psychology Review*, 18(3), 252-279. <https://doi.org/10.1007/s10567-015-0186-6>
- Mathys, C. L., Lanctôt, N., & Touchette, L. (2013). Validation d'une mesure de climat de groupe chez des adolescentes en centre de réadaptation: Le vécu éducatif partagé au travers de trois dimensions essentielles. *Revue Européenne de Psychologie Appliquée*, 63(2), 109-119. <https://doi.org/10.1016/j.erap.2012.11.001>
- Miller, S., Leve, L. D., & Kerig, P. K. (2012). *Delinquent girls: contexts, relationships and adaptation*. New York: Springer.
- Miller, S., Winn, D., Taylor, J., & Wiki, T. (2012). Girls' relational orientation and interpersonal dynamics of delinquency. In S. Miller, L. D. Leve, & P. K. Kerig (Eds.), *Delinquent girls: contexts, relationships and adaptation* (pp. 85-104). New York: Springer.
- Olf, M. (2017). Sex and gender differences in post-traumatic stress disorder: an update. *European Journal of Psychotraumatology*, 8. <https://doi.org/10.1080/20008198.2017.1351204>
- Piller, S., Gibly, J., & Peled, E. (2019). The value and rationale of gender-specific intervention with at-risk adolescent girls. *Child & Family Social Work*, 24, 69-76. <https://doi.org/10.1111/cfs.12582>
- Raine, A. (2013). *The anatomy of violence: The biological roots of crime*. New York: Pantheon Books.
- Roy, C., Castonguay, A., Fortin, M., Drolet, C., Franche-Choquette, G., Dumais, A., Lafortune, D., Bernard, P., & Geoffrion, S. (2019). The use of restraint and seclusion in residential treatment care for youth: A systematic review of related factors and interventions. Trauma, Violence, & Abuse. <https://doi.org/10.1177/1524838019843196>.
- Roy, C., Morizot, J., Lamothe, J., & Geoffrion, S. (2020). The influence of residential workers social climate on the use of restraint and seclusion: A longitudinal study in a residential treatment center for youth. *Children and Youth Services Review*, 114. <https://doi.org/10.1016/j.chidyouth.2020.105035>
- Smith, P. (2017). Girls in traditional and gender-responsive juvenile justice placements. *Women & Criminal Justice*, 27(5), 302-326. <https://doi.org/10.1080/08974454.2016.1250699>
- Sonderman, J., Bekken, F., Van der Helm, P., Roest, J., Kuiper, C., Stams, G. J., & Van de Mheen, D. (2020). Peer Interactions in Residential Youth Care: A Validation Study of the Peer Interactions in Residential Youth Care (PIRY) Questionnaire. *Residential Treatment for Children & Youth*. <https://doi.org/10.1080/0886571X.2020.1787924>
- Stams, G. J. J. M., & Van der Helm, G. H. P. (2017) What works in residential programs for aggressive and violent youth? In P. Sturmey (Ed.), *The Wiley handbook of Violence and aggression*.
- Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T., Gurung, R. A., Updegraff, J. A., & Bjork, R. A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychological Review*, 107(3), 411-429. <https://doi.org/10.1037/0033-295X.107.3.411>
- Teplin, L. A., Welty, L. J., Abram, K. M., Dulcan, M. K., & Washburn, J. J. (2012). Prevalence and persistence of psychiatric disorders in youth after detention. *Archives of General Psychiatry*, 69(10), 1031-1043. <https://doi.org/10.1001/archgenpsychiatry.2011.2062>
- Ter Beek, E., van der Rijken, R. E. A., Kuiper, C. H. Z., Hendriks, J., & Stams, G. J. J. M. (2018). The Allocation of Sexually Transgressive Juveniles to Intensive Specialized Treatment: An Assessment of the Application of RNR Principles. *Int J Offender Ther Comp Criminol*, 62(5), 1179-1200.
- Van Damme, L., Colins, O., De Maeyer, J., Vermeiren, R., & Vanderplasschen, W. (2015). Girls' quality of life prior to detention in relation to psychiatric disorders, trauma exposure and socioeconomic status. *Qual Life Res*, 24(6), 1419-1429. <https://doi.org/10.1007/s11136-014-0878-2>
- van der Helm, P., Boeke, I., Jan Stams, G., & van der Laan, P. (2011). Fear is the key: Keeping the balance between flexibility and control in a Dutch youth prison. *Journal of Children Services*, 6(4), 248-263. <https://doi.org/10.1108/17466661111190947>
- Van der Helm, G. H. P., Beunk, L., Stams, G. J. J. M., & Van der Laan, P. H. (2014). The relation between detention length, living group climate, coping and treatment motivation among juvenile delinquents in a youth correctional centre. *The Prison Journal*, 94(2), 260-275. <https://doi.org/10.1177/0032885514524884>
- van der Helm, P., Klapwijk, M., Stams, G., & van der Laan, P. (2009). "What works" for juvenile prisoners: The role of group climate in a youth prison. *Journal of Children's Services*, 4(2), 36-48. <https://doi.org/10.1108/17466660200900011>
- 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.
- van der Helm, G. H. P., Stams, G. J. J. M., van der Stel, J. C., van Langen, M. A. M., & van der Laan, P. H. (2012). Group Climate and Empathy in a Sample of Incarcerated Boys. *International Journal of Offender Therapy and Comparative Criminology*, 56(8), 1149-1160. <https://doi.org/10.1177/0306624X11421649>
- van Vugt, E., Lanctôt, N., Paquette, G., Collin-Vézina, D., & Lemieux, A. (2014). Girls in residential care: From child maltreatment to trauma-related symptoms in emerging adulthood. *Child abuse & neglect*, 38(1), 114-122. <https://doi.org/10.1016/j.chiabu.2013.10.015>
- Vermaes, I. P., & Nijhof, K. S. (2014). Zijn jongeren in jeugdzorgplus anders dan jongeren in de open residentiële jeugdzorg. *Orthopedagogiek: Onderzoek en Praktijk*, 53, 33-46.
- Walker, S. C., Bishop, A. S., Nurius, P. S., & Logan-Greene, P. (2016). The Heterogeneity of Treatment Needs for Justice-Involved Girls: A Typology Using Latent Class Analysis. *Criminal Justice and Behavior*, 43(3), 323-342. <https://doi.org/10.1177/0093854815615162>
- WODC (2020) Repris [database]. <https://wodc-repris.nl/Repris.html>.