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It matters where they live - the role of institutional factors for the mental health of unaccompanied young refugees

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ABSTRACT

Background: Child and Youth Welfare Service (CYWS) facilities are an essential source of support and recovery for unaccompanied young refugees (UYRs) with traumatic experiences. Their mental health is affected by pre-, peri-, and post-flight stressors, with the residential setting playing a crucial role in increasing or reducing these risks.
Objective: This longitudinal study aimed to analyze how institutional factors in CYWS facilities influence UYRs' mental health over a one-year period.
Participants and setting: We included $N = 131$ UYRs ($M_{age} = 17.04$; $SD_{age} = 1.46$; 81.7 % male) living in $N = 22$ residential group homes in Germany.
Methods: Standardized questionnaires were used to assess posttraumatic stress symptoms (PTSS), depression, and anxiety symptoms. Additionally, facility directors or social workers completed a questionnaire on facility characteristics, and the research team evaluated workload, staffing, and accommodation quality.
Findings: Lower staff workload predicted lower PTSS, depression, and anxiety scores among UYRs after one year. Living in UYR-specific groups also predicted lower PTSS scores. Open group climate after six months (T1) mediated the association between accommodation quality rating and PTSS, depression, and anxiety, as well as between UYR-specific group and PTSS and depression.
Conclusion: The institutional environment has an important impact on UYRs' mental health. An institutional environment with sufficient staff, a high accommodation quality, and UYR-specific groups is beneficial for reducing the mental health burden.

1. Introduction

Unaccompanied young refugees (UYRs) frequently report many potentially traumatic events before, during, and after their flight (Pfeiffer et al., 2022). After arriving in a European host country, they depend on local structures that guarantee security and stability. As stated in the Convention on the Rights of the Child (CRC, Article 22, Paragraph 1), every refugee child needs to receive adequate protection and humanitarian assistance (United Nations, 1989). In 2022, 7.277 unaccompanied minor refugees arrived in Germany, where they were integrated into the Children and Youth Welfare System (CYWS) and placed primarily in residential group homes (Bundesamt für Migration und Flüchtlinge, 2022). Such facilities usually provide not only accommodation but also comprehensive care and support, thereby addressing the high rates of psychological distress observed in UYRs. A systematic review of studies on UYRs found prevalence rates ranging from 4.6 % to 43 % for posttraumatic stress disorder (PTSD), from 2.9 %

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Abbreviations:

UYRs	Unaccompanied young refugees
CYWS	Children and youth welfare system
PTSD	Posttraumatic stress disorder
PTSS	Posttraumatic stress symptoms
PTEs	Potentially traumatic events

to 61.6 % for depression, from 32.6 % to 38.2 % for anxiety, and from 4 % to 14.3 % for behavioral problems (Daniel-Calveras et al., 2022). Longitudinal studies on the trajectories of mental health outcomes among UYRs under post-flight conditions showed heterogeneous results. While some studies reported the stability of high mental health symptoms (Jakobsen et al., 2017; Vervliet et al., 2014), others reported declining symptom scores with still persistent high levels of psychological distress (Behrendt et al., 2022; Müller et al., 2019; Pfeiffer et al., 2022) or different patterns for different disorders (Jensen et al., 2019).

The course of symptoms therefore appears to be influenced by several pre-, peri-, and post-migration factors. Post-migration stressors are among others the asylum process, and discrimination (Daniel-Calveras et al., 2022), but some aspects of the post-flight environment might also be beneficial for mental health, such as social support, cultural competences and language skills (Daniel-Calveras et al., 2022; Höhne, van der Meer, Kamp-Becker, & Christiansen, 2022; Oberg & Sharma, 2023). Since UYRs have often been separated from their families, CYWS facilities become their main point of contact and support, with facility staff being gatekeepers to social and practical assistance. This support can buffer the impact of potentially traumatic events (PTEs) on mental health (Höhne, van der Meer, Kamp-Becker, & Christiansen, 2022; Leipoldt et al., 2019; Sierau et al., 2019; Sonderman et al., 2021). A systematic review by Höhne, van der Meer, Kamp-Becker, & Christiansen, 2022 reported that low support accommodations are a risk factor for UYRs' mental health, as these are living arrangements with minimal professional supervision and limited access to social, psychological or practical support. But few studies have examined the impact of the direct environment in the host country, namely, the facility in which UYRs live.

These facilities usually accommodate multiple groups, with varying group sizes. Therefore, one potential factor influencing the mental health of institutionalized children and adolescents is *group size*. In smaller, less crowded settings, the potential for enhanced social support is greater (Mangrio & Zdravkovic, 2018; Whitsett & Sherman, 2017; Ziersch & Due, 2018).

Another potential influencing factor concerns the setting where children and youth are placed. In Germany, UYRs are either placed in *UYR-specific groups* exclusively established for UYRs, or in mixed groups together with youth born in the host culture (Zeller & Sandermann, 2017). Mixed groups may be advantageous, as they can facilitate social interaction and integration (Mahieu & van Caudenberg, 2020). A few studies have reported that forming friendships with youth born in the host culture can enhance the process of acculturation (adoption of receiving culture practices while retaining heritage culture practices), cultural competencies, and positive mental health (Oppedal & Idsoe, 2015; Schwartz et al., 2010; Yoon et al., 2013). However, this advantageous effect may depend on language skills (Beißert et al., 2020). Conversely, individuals in mixed groups may be exposed to more experiences of discrimination by their group members, which can lead to higher levels of anxiety and depression (Baranik et al., 2018; Brenick et al., 2012). Moreover, the challenges faced by UYRs are, to some extent, unique and need specific support services, as they are confronted with structural obstacles and post-migration stressors (Ulrich et al., 2022). Consequently, UYR-specific groups have the potential to be more context-sensitive as well as trauma-informed (Im & Swan, 2020; Ulrich et al., 2022). However, to the best of our knowledge, no study has specifically investigated the impact of residing in UYR-specific groups on mental health.

The *workload and staffing* of professional caregivers in CYWS facilities can be challenging due to common staff shortages in the child welfare sector (Hickmann & Koneberg, 2022). This challenge is especially attributed to high staff turnover rates, high rates of vacant positions, lack of trained professionals, and scarce financial resources in the public sector (Bundesfachverband unbegleitete minderjährige Flüchtlinge, 2022; European Union Agency for Asylum [EUAA], 2023; Hickmann & Koneberg, 2022; Yamatani et al., 2009). Consequently, the mental health of social workers can be negatively impacted by a high workload (Chan et al., 2021; McFadden et al., 2018), which represents an obstacle in providing adequate care to children and adolescents in need (Darwich et al., 2022; Tham & Meagher, 2009). High demands for caregivers can lead to burnout and thus to various negative care-recipient outcomes (Gérain & Zech, 2019). To the best of the authors' knowledge, so far, no studies have focused on this factor with respect to UYRs' mental health problems.

The *accommodation quality* of a facility lacks a clear definition but corresponds to several characteristics, such as the arrangement of corresponding rooms, design, and cleanliness. Accommodation, with its physical characteristics, is essential for mental health, as it is the environment where people are living, interacting and recovering (Karpenstein & Rohleder, 2022; Smith et al., 2014). A policy paper from a German refugee organization indicates that there is no nationwide standard of accommodation and care adequacy, as the situation is highly variable across the different federal states (Karpenstein & Rohleder, 2022). The results for refugees are scarce and heterogeneous. Ellis et al. (2008) found a significant negative correlation between housing adequacy and PTSD/depression symptoms. Conversely, Schilz et al. (2023) reported that poorer living conditions predicted higher posttraumatic stress symptoms (PTSS) and depression scores among refugees in the United States of America and Germany.

The *group climate* is particularly relevant for children and adolescents in residential care settings (Lemos et al., 2021). In prior studies with children born in the host country, the group climate was an important factor in ensuring a warm and safe environment and relationship with caregivers (Sonderman et al., 2021). Based on a classification by Sonderman et al. (2021), the group climate defines the quality of the social and physical environment, which is divided into closed and open climate. A closed climate is characterized by asymmetric power balances, a lack of respect, and punishment, whereas an open climate is characterized by a supportive, warm, responsive, and respectful atmosphere (Leipoldt et al., 2019; Sonderman et al., 2021; van der Helm et al., 2009). A systematic review examined the associations between an open climate and improved mental health and psychosocial outcomes in therapeutic residential youth care, not focusing on refugee children. It emphasized the influence of organizational characteristics on the group climate and suggested that group climate may mediate the relationship between these characteristics and mental health (Leipoldt et al., 2019).

2. Study aims and research questions

It is important to examine specific institutional factors and inform practice and policy with broadly applicable recommendations for improvement, as the lack of national regulations for CYWS facilities in Germany leaves their management to the resources and discretion of individual states (Bauer-Blaschkowski, 2020). This work extends the findings published in prior studies focusing on the influence of post-migration factors on mental health (Hornfeck et al., 2023, 2024). The aim of this study was to investigate the potential effects of institutional factors on symptoms of PTSS, depression, and anxiety among UYRs in CYWS facilities. Due to lacking or heterogeneous research regarding the investigated factors (group size, UYR-specific groups, workload, staffing and accommodation ratings, and group climate), our

hypotheses were exploratory and non-directional.

3. Method

The study was approved by the ethics review boards of Ulm University (243/19) and Eichstaett-Ingolstadt University (004–19). The BETTER CARE study was registered in the German Clinical Trials Register (www.germanctr.de; registration number DRKS00017453), and the study protocol was published before data collection (Rosner et al., 2020).

3.1. Procedure

Data were derived from the trial mentioned above, and longitudinal data from a predefined subsample were analyzed. The study was conducted in CYWS facilities for UYRs in four German federal states. After obtaining an agreement with CYWS facilities, mental health screenings with UYRs were organized with the help of social workers and other caregivers in the corresponding residential group homes. Prior to the assessment, UYRs and their legal guardians were required to provide informed consent. All study materials were available in eleven different languages covering most of the languages of the participants. If the content was not available in a required language or in case of illiteracy, interpreters were available via phone or on site to ensure understanding and to answer additional questions, thus ensuring voluntary participation and informed decision making. Moreover, a cartoon-video was provided with study information in different languages. The inclusion criteria for participants were as follows: 1) aged 12–20 years at baseline assessment, 2) arrived in Germany as an unaccompanied minor, 3) applied for asylum or intended to do so, 4) being cared for by a CYWS facility, 5) written informed consent provided by the participant and legal guardian (if < 16 years at baseline assessment (T0)), and 6) reported at least one traumatic event in line with the DSM-5 A criterion at baseline assessment. Recruitment and screenings of UYRs took place between July 2020 and July 2021 at 22 CYWS facilities. The outbreak of the COVID-19 pandemic in 2020 was accompanied by restrictions and consequences for everyday life in the following months and years and affected the data collection procedure. Assessments were therefore performed via online tools or on-site in compliance with strict hygiene standards. UYRs received compensation for taking part in assessments through a voucher (35€ for each assessment), and facilities received 60€ compensation per participating UYR. After T0 (N = 131), UYRs were screened again after six months (T1, n = 99; 75.6 %) and 12 months (T2, n = 77; 58.8 %).

3.2. Sample

The *UYR sample* consisted of N = 131 UYRs, living in 22 different CYWS facilities at T0. Only a few (n = 17) lived in non-residential care at T0, in so-called supervised independent living, where they receive less intensive care but remain connected to the CYWS facility. 81.7 % of the participants (n = 107) were male, and one person (0.8 %) indicated diverse genders. The age at baseline assessment ranged from 13 to 20 years (M = 17.04; SD = 1.46), and the participants had resided between 1 and 90 months in Germany (M = 25.75; SD = 20.52). At baseline, 32.8 % reported on an accepted asylum application signifying a permanent or temporary residence permit. The participants originated from 29 different countries, and most participants (n = 40; 30.5 %) were born in Afghanistan (Table 1a).

In the *residential care facility sample*, N = 23 facility directors or social workers from N = 22 facilities completed the questionnaire. A total of 26.1 % (n = 6) of them were male, and they were, on average, M = 44.00 years old (SD = 10.66). Twenty-one participants (91.3 %) were in a leading position within the facility. The characteristics of the facilities can be seen in Tables 1b and 1c.

Table 1a
Descriptive characteristics of participating UYRs.

	n	*M* (*SD*); range	% (*n*)
Gender male	131		81.7 (107)
Age (years)	131	16.95 (1.46); 13-20	
School attendance (years)	131	4.81 (3.23); 0-13	
Secure residence status	131		32.8 (43)
Residential care (vs. non-residential care services)	131		87.0 (114)
Duration of living in Germany (months)	130	25.75 (20.52); 1-90	
Duration of living within the facility (months)	131	16.05 (13.49); 0-72	
Number of PTEs	131	6.56 (3.05); 1-14	
CATS-2 T0	131	24.56 (11.46); 1-56	
PHQ-9 T0	131	8.69 (5.55); 0-24	
GAD-7 T0	131	7.10 (4.80); 0-19	
CATS-2 T2	81	21.19 (10.93); 0-54	
PHQ-9 T2	81	8.02 (5.71); 0-25	
GAD-7 T2	81	5.96 (4.74); 0-19	
GCIC Open climate mean T0	131	3.93 (.84); 1-5	
GCIC Open climate mean T1	89	3.81 (.81); 1-5	
GCIC Open climate mean T2	70	3.78 (.74); 2-5	

Note. GCIC Group Climate Instrument for Children, CATS-2 Child and Adolescent Trauma Screen 2, PHQ-9 Patient Health Questionnaire-9, GAD-7 Generalized Anxiety Disorder Scale-7.

Table 1b
Descriptive characteristics of participating facilities.

	n	*M* (*SD*); range	% (*n*)
Group size	17	16.41 (11.63); 6-44	
UYR-specific group*	15		66.7 (10)
Years of experience with UYRs	14	7.43 (4.16); 2-19	

Note. *1 = yes.

Table 1c
Descriptive characteristics of facility ratings by study team members.

	n	*M* (*SD*); range
Accommodation (1–5)*	15	4.4 (.74); 3-5
Staffing (1–5)*	17	3.18 (1.38), 1-5
Workload (1–5)*	18	2.89 (1.37). 1-5

Note. *5 = adequate.

3.3. Measures

The current analyses combined data from two different surveys of UYRs and facility directors or social workers. They also included an external facility rating.

The questionnaires for the participating UYRs were available in the following languages: German, English, French, Arabic, Dari, Farsi, Pashto, Somali, Tigrinya, Russian, Ukrainian and Kurmanci. All questionnaires for UYRs were gathered at T0, T1 and T2. They were primarily completed on tablet computers via an online assessment tool. Demographic data included age, level of education, residential status, living situation/type of facility, and duration of living in Germany and in the current institution.

The *Child and Adolescent Trauma Screen (CATS-2)* (Sachser et al., 2022) was used to assess PTSS in children and adolescents according to the DSM-5 and ICD-11 criteria. In the present study, we used the included traumatic event checklist to assess the number of PTEs and used the DSM-5 total symptom score ranging from 0 to 60. Based on Sachser et al. (2022), a cut-off of 25 was set to indicate a clinically relevant PTSS. The internal consistency (Cronbach's α = .92 - .95) in our sample was found to be excellent.

The *Patient Health Questionnaire (PHQ-9)* (Kroenke & Spitzer, 2002; Kroenke et al.,

2001) is a 9-item rating scale used to measure depressive symptoms. Based on the validation study, scores of 10 and higher are classified as clinically relevant (Kroenke et al., 2001). The PHQ-9 has been validated in many contexts and languages (Kroenke et al., 2001, 2010) and has shown good reliability (Cronbach's α = .83-.89) in the current sample.

The *Generalized Anxiety Disorder Scale (GAD-7)* (Spitzer et al., 2006) is a 7-item rating scale based on the diagnostic criteria of the DSM-IV for generalized anxiety disorder. Scores of 10 or more indicate the presence of clinically relevant levels of anxiety. The GAD-7 has been validated in many contexts and languages (Kroenke et al., 2010). In our sample, good reliability (Cronbach's α = .81 - .95) was indicated.

A short version of the *Group Climate Instrument for Children* (GCIC) (Strijbosch et al., 2014), consisting of 14 items assessing open (9 items) and closed climate (5 items) in institutions, was used to assess the individual perspective of UYRs on the institutional climate. The items are rated on a 5-point Likert-type scale ranging from 1 (I do not agree) to 5 (I totally agree). The item ratings are summed up according to each scale. This questionnaire was developed for children and young adolescents aged 8–15 years and has been validated in the context of residential care settings in different countries (Backer, 2013; Strijbosch et al., 2014). In the current study, the open climate scale showed excellent reliability for the open scale (Cronbach's α = .93), but the value was unacceptable for the closed climate scale (Cronbach's α = .41), and it was therefore not used in the analyses.

The ***questionnaire for facility directors or social workers*** included questions regarding the group size and the type of group (binary variable for specific UYR group = 1) and was gathered before the assessment in the facility.

An ***external facility*** rating was conducted by multiple members of the study team, who were present at the initial assessments in the facilities. The number of ratings per facility varied between one and three raters, with a mean score calculated in case of discrepancies. Due to the high number of facilities and their wide-spread location, the composition of the study team varied between the screenings. Therefore, the rating was done by different people to ensure that the rater was physically present at the facility. This rating encompassed three items about workload, staffing, and accommodation quality ("How do you evaluate the accommodation/staffing/workload of the social workers within the facility?"). The items were rated on a 5-point Likert scale, with 1 indicating a rating of "not adequate" and 5 indicating a rating of "adequate" after the T0 assessment.

3.4. Statistical analysis

Analyses were performed using IBM SPSS Statistics version 22. According to Little's missing completely random test, which included all the study variables, the missing data were completely random, $\chi 2(242) = 248.02$, $p = .38$. However, most of the missing data were due to wave nonresponse. Binary logistic regression revealed that attrition was not significantly related to sociodemographic characteristics (age and sex) or mental health outcomes (CATS-2, PHQ-9, or GAD-7 scores). Listwise deletion was applied to handle missing data. The descriptive statistics included the sociodemographic characteristics, means, standard deviations, and frequencies of all the study variables. Differences in mean scores were calculated using *t*-tests for dependent samples and univariate analyses of variance (ANOVAs). Associations among continuous variables were calculated using bivariate, point-biserial, and partial correlations (Pearson correlation coefficients (*r*) reported). Three multiple regression analyses were conducted to investigate the impact of institutional factors on UYRs' mental health at T2. Only variables that showed significant correlations were included in the regression analyses. The data met the basic assumptions required for these types of analysis. All tests were two-tailed. An alpha significance level of α = 5 % was reported as significant, and a level of α = 10 % was reported as marginally significant. The regression analyses were controlled for the respective sum scores and number of PTEs before T0, as number of PTEs is not only a risk factor for PTSS (Sagaltici et al., 2020), but also for depression (Nosè et al., 2020) and anxiety (Ayazi et al., 2014).

Mediation analyses were conducted using the PROCESS macro developed by Hayes and colleagues (Hayes & Litttle, 2018; Preacher & Hayes, 2004). This macro uses ordinary least squares regression to yield unstandardized path coefficients for total, direct, and indirect effects. Bootstrapping with 10,000 samples was employed to compute the confidence intervals and inferential statistics. The effects were considered significant when the confidence interval did not include zero.

4. Results

The descriptive characteristics of all included study variables are presented in Table 1a–c. Regarding the available longitudinal data, UYRs' mental health outcomes from T0 and T2 and group climate from T0, T1, and T2 were included. This approach was chosen based on methodological considerations to realize both regression analyses and mediation analyses. No significant differences were found for the mental health outcomes regarding UYRs' gender and age.

A significant difference was found for PTSS scores between both waves, with UYRs showing lower symptom levels at T2, $t(80) = 2.32$; $p = .023$ compared to baseline scores. No differences were found for depression and anxiety scores between baseline and 12-month follow-up. Statistically significant correlations between both assessment time points were found for every area of mental health problems, PTSS: $r(81) = .58$, $p < .001$; depression: $r(81) = .42$, $p < .001$; anxiety: $r(81) = .37$, $p = .001$, indicating that UYRs with more problems at T0 also had higher scores at T2.

4.1. Prediction of UYRs' mental health problems by institutional factors

As preliminary analyses, bivariate correlations were calculated between potential predictor variables and mental health outcomes. These results are presented in Table 2, and show the bivariate correlations between PTSS, depression, and anxiety at T0 and T2 and the relevant study variables. Correlational analyses revealed that lower PTSS levels at T2 were significantly associated with UYR-specific groups, better workload, staffing and accommodation ratings and more open group climate (T1). Lower depression symptoms at T2 were significantly associated with UYR-specific groups, better workload, staffing and accommodation ratings, and more open group climate (T0, T1). Lower anxiety symptom scores were significantly associated with better workload, staffing and accommodation ratings, and more open group climate at T1. Moreover, marginally significant negative correlations were found between group size and depression and anxiety scores.

To investigate the contribution of institutional factors to UYRs' levels of mental health problems, three hierarchical multiple regression models with total PTSS, depression, and anxiety scores at T2 as dependent variables were conducted. Only factors at least marginally significantly associated with the outcome variables were included. Owing to a high intercorrelation between the factors workload and staffing ($r = .80$, $p < .001$), only the variable for workload was included in the regression analyses to avoid problems related to multicollinearity. The results of all hierarchical multiple regression models are presented in Table 3.

In the regression model for **PTSS scores at T2**, the number of PTEs and PTSS scores at T0 were controlled in the first step. The institutional factors of UYR-specific groups, workload and accommodation ratings were included in the second step. The group climate at T1 was entered in the third step. Multiple regression analysis explained a significant portion of the variance, $R^2 = .55$, $F(6, 53) = 10.83$, $p \leq .001$. The regression model revealed that PTSS levels at baseline significantly predicted PTSS scores one year later and, in combination with the number of PTEs, explained 32.8 % of the variance. Furthermore, the factors UYR-specific group and higher workload rating were significant predictors, accounting for 22.1 % of the variance. These results indicate lower PTSS scores for UYRs in specific groups and with lower workload

Table 2
Bivariate correlations between study variables.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1) Group size	.013	−.215*	.153	−.208*	.019	.020	.154	.396***	−.240*	−.142	−.156	−.068	−.168	−.141	−.206+	−.206+
2) UYR-specific group	–	.051	.154	.141	.293*	.231+	.334**	.357***	.437***	−.134	−.083	.025	.090	−.381**	−.318**	−.185
3) Gender		–	.053	−.050	−.208*	−.182	.095	−.102	−.013	.072	.091	.157+	.087	.007	−.051	.004
4) Age			–	.110	.110	.183	.269*	.265**	.144	.058	.078	.041	.006	.083	.018	.053
5) GCIC Open climate T0				–	.433***	.444***	.117	−.064	.133	−.232**	−.185*	−.284**	−.182*	−.181	−.281*	−.162
6) GCIC Open climate T1					–	.698***	.268*	.009	.118	−.244*	−.308**	−.309**	−.287**	−.366**	−.304*	−.351**
7) GCIC Open climate T2						–	.210	−.094	.043	−.274*	−.238*	−.309**	−.181	−.200+	−.158	−.103
8) Accommodation rating							–	.256**	.201*	−.119	−.185+	−.087	−.165+	−.423***	−.450***	−.421***
9) Staffing rating								–	.804***	−.153	−.080	−.015	−.031	−.397**	−.451***	−.430***
10) Workload rating									–	−.098	−.010	.005	.040	−.351**	−.391**	−.321**
11) Number of PTEs										–	.600***	.419***	.427***	.422***	.469***	.384***
12) CATS-2 T0											–	.736***	.783***	.581***	.541***	.497***
13) PHQ-9 T0												–	.811***	.395***	.417***	.375**
14) GAD-7 T0													–	.340**	.360**	.366**
15) CATS-2 T2														–	.813***	.829***
16) PHQ-9 T2															–	.794***
17) GAD-7 T2																–

Note. $n = 58–131$, GCIC Group Climate Instrument for Children, CATS-2 Child and Adolescent Trauma Screen 2, PHQ-9 Patient Health Questionnaire-9, GAD-7 Generalized Anxiety Disorder Scale-7; $^{+}p < 0.10$ $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

levels of the staff.

In the regression model for **depression scores at T2**, the number of PTEs and depression scores at T0 were controlled for in the first step. The institutional factors of group size, UYR-specific groups, workload and accommodation ratings, and group climate at T0 were included in the second step. The group climate at T1 was entered in the third step. Multiple regression analysis explained a significant portion of the variance, $R^2 = .48$, $F(8, 51) = 5.99$, $p < .001$. The regression model revealed that depression levels at baseline and the number of PTEs marginally significantly predicted depressive symptom scores one year later and explained 30.1 % of the variance. A robustness test for this research result was conducted by increasing the sample size via Bootstrapping. It revealed that depression levels at baseline and the number of PTEs did not significantly predict depressive symptom scores. Furthermore, the factor higher workload rating was a significant predictor for higher depression scores of UYRs, accounting for 17.9 % of the variance.

In the last regression model for the level of **anxiety scores at T2**, the number of PTEs and anxiety scores at T0 were controlled in the first step. The group size, workload and accommodation ratings were entered in the second step. Finally, the group climate at T1 was entered in the last step. Multiple regression analysis explained a significant portion of the variance, $R^2 = .33$, $F(6, 53) = 4.34$, $p = .001$. Anxiety scores at T0 and the number of PTEs explained 16.4 % of the variance but did not predict the outcome variable significantly independently. The institutional factors included in step two contributed to the explained variance with 14.6 %. In the final model, lower anxiety symptom scores at T2 were significantly predicted by a better workload rating.

4.2. Mediation of open climate on accommodation quality and mental health

Based on the intercorrelations (see Table 2), we used Model 4 to test a simple mediation model. The model included the accommodation rating and UYR-specific group as predictors, the open climate at T1 as a mediator, and the PTSS, depression, and anxiety scores at T2 as the outcome, as can be seen in Fig. 1. None of the other potential models met the requirements of a true mediation relationship.

First, the effect of the accommodation rating on mental health outcomes was observed (PTSS: B = −6.62, $p < .001$; depression: B = −3.53, $p < .001$; anxiety: B = −2.95, $p < .001$). After the mediator (open climate T1) was entered into the model, the accommodation rating significantly predicted the mediator (B = 0.39, $p = .005$), and the open climate significantly predicted PTSS (PTSS: B = −3.76, $p = .036$) and marginally significantly predicted depression and anxiety (depression: B = −1.46, $p = .101$; anxiety: B = −1.52, $p = .055$). Finally, we found that the open climate scale significantly mediated the effect of the accommodation rating on mental health outcomes: indirect effect PTSS: $ab = -1.48$, 95 % CI [−3.019, −0.387]; depression: $ab = -.57$, 95 % CI [−1.294, −0.038]; anxiety: $ab = -.60$, 95 % CI [−1.271, −0.061].

Second, an effect of the factor for UYR-specific groups on mental health outcomes was observed (PTSS: B = −9.21, $p = .002$; depression: B = −3.73, $p = .013$). After the mediator (open climate) was entered into the model, the UYR-specific group significantly predicted the mediator (B = 0.47, $p = .028$), and the open climate significantly predicted PTSS and marginally depression (PTSS: B = −4.22, $p = .019$; depression: B = −1.79, $p = .054$). Finally, we found a significant indirect effect of the factor UYR-specific group on mental health outcomes mediated by the open climate scale: PTSS: $ab = -1.97$, 95 % CI [−3.956, −0.379]; depression: $ab = -.84$, 95 % CI [−1.938, −0.076].

5. Discussion

This study examines the impact of institutional factors on PTSS, depression, and anxiety among UYRs in CYWS facilities. Although PTSS and depression scores were influenced by the number of PTEs and baseline symptom scores, institutional factors and, specifically, staff

Table 3
Hierarchical Multiple Regression models predicting CATS-2, PHQ-9, and GAD-7-scores at T2.

	CATS-2 ($n = 60$)		PHQ-9 ($n = 60$)		GAD-7 ($n = 60$)	
Predictors	ΔR^2	ß	ΔR^2	ß	ΔR^2	ß
Step 1	.328***		**.301*** **		**.164** **	
Number of PTEs		−.149		**.241**$^{+}$		**.088**
CATS-2/PHQ-9/GAD-7 T0		**.621*** **		**.237**$^{+}$		**.192**
Step 2	**.221*** **		**.179** **		**.146** *	
Group size				−.107		−.152
UYR-specific group		**−.251***		−.137		
Workload rating		**−.275***		**−.288***		**−.249***
Accommodation rating		**−.087**		−.147		−.156
GCIC open climate T0				−.162		
Step 3	**.002**		**.004**		**.019**	
GCIC open climate T1		**−.048**		**.079**		**−.156**
Total R^2	**.551*** **		**.484*** **		**.329*** **	

Note. GCIC Group Climate Instrument for Children, CATS-2 Child and Adolescent Trauma Screen 2, PHQ-9 Patient Health Questionnaire-9, GAD-7 Generalized Anxiety Disorder Scale-7; $^{+}p < 0.10$ $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

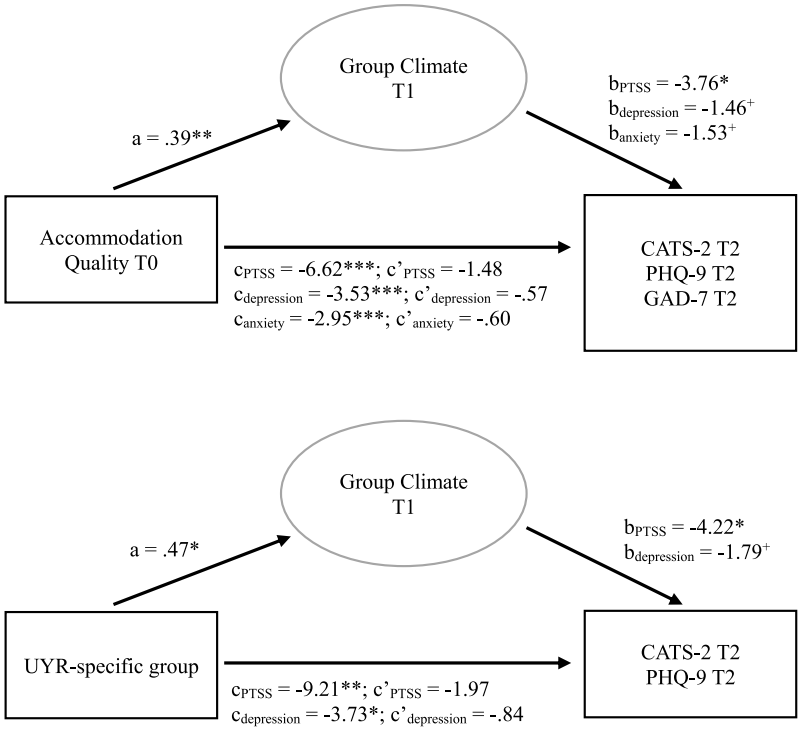

Fig. 1. Institutional factors and mental health: group climate as a mediator
Note. $N = 60–62$, CATS-2 Child and Adolescent Trauma Screen 2, PHQ-9 Patient Health Questionnaire-9, GAD-7 Generalized Anxiety Disorder Scale-7.

workload had a substantial effect on mental health outcomes over time.

Regarding the impact of the *group size* on UYRs' mental health, the findings do not indicate a clear association as expected from the literature review (e.g., Whitsett & Sherman, 2017). A marginally significant correlation was observed between decreased depression and anxiety scores and a smaller group size. However, within the multiple regression analyses, this factor did not significantly predict mental health problems anymore. The discrepancy between our results and those of Mangrio and Zdravkovic (2018) may be attributed to differences in the methodology, which involved dichotomization based on the number of individuals within a facility and categorizing them as either crowded or not crowded. This approach resulted in a reduction of variability, thereby

facilitating the identification of potentially significant effects. Our study indicates that the number of young people in a facility is not the sole determining factor. Additional factors may also be relevant, such as staff resources and accommodation quality (e.g., areas that promote privacy and interaction). Consequently, greater attention should be paid to occupancy rates and their conformity with legal standards. However, these data were not collected in our study.

Moreover, placement in *UYR-specific groups* was significantly correlated with decreased depression and PTSS scores. However, it only contributed to decreased PTSS scores when it was analyzed together with other factors within the regression analyses. This finding is consistent with previous research highlighting the benefit of specialized residential groups with trauma-informed care approaches and culturally sensitive caregivers, wherein individual needs can be more adequately addressed (Ulrich et al., 2022). Furthermore, within groups comprising solely UYRs, there might be greater comprehension and empathy towards each other's living circumstances, particularly among individuals with collectivistic values, thereby augmenting the available social support within a group (Keles & Oppedal, 2022). Another point is that UYR-only group homes are intentionally designed for unaccompanied youth refugees and may therefore have specific competencies and resources in caring for them. Moreover, social workers who chose specifically these facilities as workplace may have a higher motivation and sensitivity in working with refugee children and youth. These interpretations align with the results of our mediation model, which demonstrated that UYR-specific groups fostered a more open group climate after six months, thereby reducing PTSS and marginally depression symptoms after 12 months. However, once language proficiency is sufficient and there are no severe psychological or social behavioral issues, UYRs may benefit more from staying in mixed groups, as they can serve as a source of social support and provide informal learning, which may facilitate integration into the host culture (Mahieu & van Caudenberg, 2020).

In accordance with the theoretical model from Gérain and Zech (2019), workforce shortage within the facility was associated with worse mental health outcomes in all three domains. In the regression models, a lower *workload of the involved staff* led to reduced PTSS, depression, and anxiety scores in UYRs after one year, even when other institutional factors were considered. For anxiety, it even was the only significant predictor in the analysis. As research findings on this association are barely available, the underlying mechanisms warrant further investigation. It might be assumed that the relation was mediated by the social workers' behavior towards UYRs and the quality of care as indicated in a study with nurses that reported that workload affects the quality of care (van Bogaert et al., 2017). However, the results must also be interpreted cautiously due to the assessment methodology and the possible mutual association between staffing/workload ratings and mental health problems among UYRs. This phenomenon applies not only to UYRs but also to the general CYWS facility population, as the challenges presented by depressed and traumatized children and adolescents may lead to increased workload and staff turnover (Middleton & Potter, 2015). Moreover, a prior study among nurses has identified resilience as a moderating factor in the relationship between workload and job outcomes (Lanz & Bruk-Lee, 2017). Resilience has been defined by the authors as an emotional strength that allows for positive adaptation in the face of significant challenges or adversity. Another study showed that mental health among caregivers is linked to reduced mental health issues in traumatized children (Wong et al., 2013). As this is, to the authors' knowledge, the first study to examine the influence of workload and staffing on mental health outcomes among UYRs in residential care, the importance of these findings is notable.

Accommodation quality did not significantly predict UYRs' mental health outcomes in line with the results of Ellis et al. (2008), who reported no significant relationship between housing quality and PTSS for adolescent refugees in the United States. However, better accommodation quality significantly correlated with decreased PTSS, depression and anxiety symptom scores in terms of bivariate correlations. This association aligns with findings from other authors, who noted the importance of adequate communal areas for well-being (Easterbrook & Vignoles, 2015; Worsley et al., 2021). One reason why the regression did not reach significance could also be the lack of variance in the analysis, as the average rating for accommodation quality was 4.4 (range 3–5), with a standard deviation of only .74. This, in turn, could be contextually explained by the fact that there is less variability and better quality in CYWS facilities than in adult reception centers, which are often located in remote, industrial, or commercial areas with limited living space per person (Baier & Siegert, 2018; Hajak et al., 2021). Now that some German federal states have lowered the minimum standards for accommodating UYRs (Méndez de Vigo & Endres de Oliveira, 2024), future studies should analyze the influence of institutional factors in less supportive and not child-adequate environments on mental health. However, accommodation quality was linked to the perceived open group climate after six months, which in turn led to reduced PTSS and marginally also to reduced depression and anxiety symptoms after 12 months. While these findings suggest that accommodation quality may indirectly influence UYRs' mental health, more research is needed as the observed associations for depression and anxiety only reached marginal significance.

Another explanation might be that the institutional factors mentioned above also interact with each other, although this was not statistically analyzed in this study. For instance, larger group sizes may lead to poorer accommodation quality, and both may increase caregiver workload, reducing the time and attention available to support individual youth (Yamatani et al., 2009, Ziersch et al., 2018).

A setting where UYRs experienced an *open group climate* at the six-month follow-up was found to be correlated with better mental health outcomes in terms of PTSS, depression, and anxiety, but it was not a significant predictor for all three outcome measures in the multiple regression models. Nevertheless, the results highlight the crucial mediating role of group climate on UYRs' mental health for PTSS. Further investigation is required to elucidate the mediating effect on depression and anxiety, as the observed effects were only marginally significant. This finding is consistent with the conclusions drawn in the review by Leipoldt et al. (2019) and highlights the central role of the social climate in relation to various determinants and outcomes, as well as the positive effects of an open group climate. In this study, an open climate included an atmosphere of honesty, trust, and caregiver support (Strijbosch et al., 2014) potentially making social workers more approachable and thus contributed to mental health improvement within one year.

Previous published reviews summing up studies on refugee youth in several high-income countries have highlighted the significant impact of the institutional environment on mental health focusing primarily on factors such as placement in large-scale reception centers, the role of social support or multiple relocations (Fernández-Pacheco Alises et al., 2024; Nielsen et al., 2008; Mitra & Hodes, 2019; O'Higgins et al., 2018; Oberg & Sharma, 2023). However, studies have largely been limited to these aspects, with less attention given to operationalized aspects of the facility, where the following study provides new insights especially into how UYR-specific groups, caregiver workload, accommodation quality, and group climate influence the mental health of UYRs.

5.1. Practice and policy implications

Although international and national guidelines provide a solid framework to protect UYRs, the responsibility is often diffused at the federal and state levels, leading to unmet standards. For example, in Germany, reduced placement capacities coupled with a growing number of arriving UYRs, led to poorer living conditions in CYWS facilities and the undermining of minimum standards in recent years (Bundesfachverband unbegleitete minderjährige Flüchtlinge, 2022; Bundesfachverband unbegleitete minderjährige Flüchtlinge, 2024; EUAA, 2023). This is particularly concerning since the current study

highlights the importance of an adequate institutional environment to reduce high levels of mental health problems among UYRs.

It is essential that federal and state policies in Germany ensure the financing of adequate staffing and accommodation conditions within CYWS. Instead of placing UYRs in temporary placement options such as emergency shelters, unlicensed facilities or asylum centers with "socially experienced" or seemingly qualified employees (Méndez de Vigo & Endres de Oliveira, 2024), it is important to give every UYR the right to be placed in well-staffed groups and to ensure that staff-youth ratios are adequate to allow for meaningful interactions and individualized care, which are critical for long-term mental health outcomes. It is also recommended that UYRs should be placed in UYR-specific groups, particularly in the early stages, with the aim to ensure stability in a familiar setting with trauma- and flight-sensible conditions. These groups should be staffed by caregivers trained in trauma-informed care, including, for example, knowledge of mental health symptoms and their recognition, as well as low-threshold interventions such as the preventive group intervention "My Way" (Pfeiffer & Goldbeck, 2019). This training should be ensured through annual mandatory training seminars and provide not only skills, confidence and competence, but also lead to reduced workload and psychological distress of caregivers (Acker & Lawrence, 2009). Staff workload and turnover may also be reduced through strategic approaches such as maintaining manageable caseloads, ensuring sufficient staffing, fostering a supportive organizational culture, providing supervision, and providing professional development opportunities (Griffiths et al., 2020).

While improvements in the accommodation quality, the establishment of UYR-specific groups and the reduction of workload may take time and effort due to financial, structural, or organizational challenges, the group climate may be a factor, that can be influenced even with few resources. To improve group climate, training for caregivers and social workers on fostering trust, honesty, and emotional support can be implemented alongside peer-led activities such as sport or group games, and mentorship programs (Leipoldt et al., 2019). Additionally, low-cost interventions such as regular feedback sessions, or anonymous/confidential feedback forms, can foster an open climate within the facility and could help create a supportive and positive group atmosphere (Leipoldt et al., 2019).

Overall, future research is needed to examine the impact of working conditions in CYWS settings on the mental health of UYRs. In addition, examining the impact of interventions and staff characteristics as determinants of group climate is critical to understand their influence on youth mental health.

5.2. Strengths and limitations

This study has three notable strengths. First, it comprises a longitudinal design with three measurement points within a one-year study period. Second, it includes a diverse sample. The study included UYRs from various countries and 22 different CYWS facilities located in four German federal states. The sample is comparable to the population of registered UYRs in Germany (Deutscher Bundestag, 2020) and to other samples of UYR studies (Daniel-Calveras et al., 2022), particularly in terms of the high percentage of male participants, the age distribution, and the countries of origin. Third, as this is one of the first studies examining the impact of the institutional environment on mental health in the unique context of UYRs, it can help to guide policy and practice how to improve facilities for refugee children and youth. However, more research is needed in this field to understand the underlying processes more deeply.

However, this study also has several limitations. First, the questionnaires utilized for the assessment of PTSS, depression, and anxiety were brief screening instruments, and we lacked clinical interviews to obtain valid diagnoses. Second, it cannot be ruled out that the participating facilities constitute a selective sample, with either better human resources or an exceptionally high degree of dissatisfaction with the current conditions in their facility. Third, the assessment of workload, staffing, and accommodation conditions relied on the assessment of the study team, which provides only a snapshot of the actual situation. While this approach may be more objective and less emotionally biased, it still carries the risk of underestimating or overestimating actual conditions. Fourth, the assessment of facility characteristics was conducted only once, and CYWS facilities are subject to constant changes, including regular staff turnover, fluctuations in workload, and group size (Nilsen et al., 2023). Consequently, the initially assessed characteristics may have changed during follow-up assessments of the UYR sample. Furthermore, some participating UYRs no longer lived in the same facility as at baseline and might have been subjected to changed living conditions at T2. Fifth, given that some German federal states have decreased the minimum standards for accommodating UYRs (Méndez de Vigo & Endres de Oliveira, 2024), the study results cannot be generalized to UYRs residing in other settings than CYWS facilities, such as reception centers for adults. Sixth, because the participants were predominantly male, the findings may not directly apply to females. Seventh, our relatively small sample size and the high proportion of drop-outs over time may limit the generalizability of our findings, and results that are only marginally significant should be interpreted with caution. However, longitudinal studies with UYRs are challenging and high drop-out rates are common due to their high mobility, and the rate is comparable to other longitudinal studies (e.g., Jakobsen et al., 2017). Nevertheless, this attrition could introduce potential bias if those who dropped out differ systematically from those who remained, particularly in characteristics relevant to the study outcomes. But a previous analysis showed that attrition was not significantly related to sociodemographic characteristics, mental health outcomes or post-migration variables (Hornfeck et al., 2024). Future research with larger, more diverse samples and strategies to minimize attrition will be essential to confirm and extend these findings. Eight, the analyses are based on self-reported data and the measures used are brief screening instruments with the risk of over- or under inclusivity of UYRs with mental health problems. Despite the high validity of these questionnaires, they are not sufficient to obtain reliable diagnoses. Therefore, it is recommended that future studies include clinical interviews or triangulate data sources.

5.3. Conclusion

The results demonstrate that placing UYRs in specific groups with staff facing adequate workload and staffing ratios is crucial for long-term mental health outcomes. In addition, CYWS facilities should ensure an open group climate defined by high levels of openness and confidentiality. This goal can be achieved, on the one hand, through the provision of adequate accommodation conditions (such as welcoming common areas) and, on the other hand, through a post-arrival setting that takes the individual needs of often traumatized children and youth into account. This is particularly important in the first years and months after arrival in the host country. In summary, UYRs need a place where they feel welcomed and validated and where caretakers have the time and capacities to react to the specific needs of these young people. Policy and practice should focus on measures that help to create an environment where benevolent experiences can emerge, and resilience can grow.

CRediT authorship contribution statement

Flora Katrin Dietlinger: Writing – review & editing, Writing – original draft, Data curation. **Fabienne Hornfeck:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation. **Rita Rosner:** Writing – review & editing, Project administration, Conceptualization. **Elisa Pfeiffer:** Writing – review & editing, Project administration, Data curation, Conceptualization. **Cedric Sachser:** Writing – review & editing, Project administration, Data curation, Conceptualization. **Heinz Kindler:** Writing – review & editing, Project administration, Conceptualization.

Informed consent

For study participation, written informed consent was given by participants and legal guardians.

Trial registration number/date of registration

DRKS00017453/December 11, 2019.

Data availability statement

The datasets generated for this study is available from the corresponding author on request.

Ethics approval

The study was approved by the ethics review board of the University Ulm (243/19) and Eichstaett-Ingolstadt (004–19).

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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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