



CLINICAL RESEARCH ARTICLE



Patterns of mental health problems and resilience among immigrant and refugee adolescents: a latent profile analysis

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ABSTRACT

Background: Immigrant and refugee adolescents often face traumatic experiences and are vulnerable to mental health problems, such as post-traumatic stress disorder (PTSD), anxiety and depression. Yet, they also show remarkable resilience in the face of these stressors. Research is still scarce on how both mental health problems and resilience dynamically interplay in immigrant and refugee adolescents' development.

Objective: We aimed to identify latent profiles of immigrant and refugee adolescents' wellbeing, consisting of externalizing and internalizing symptoms, PTSD (intrusion and avoidance), and resilience, and analyse the demographic and contextual determinants of these profiles.

Method: We employed cross-sectional survey data from the RefugeesWellSchool project for 1607 immigrant and refugee adolescents (mean age 15.3 years, SD 2.15, 42.3% girls) from six European countries: Belgium, Denmark, Finland, Norway, Sweden, and the United Kingdom. Latent profile analysis and three-step procedure with BCH weights were used to identify the wellbeing profiles and their determinants.

Results: Results identified four adolescent wellbeing profiles: (1) Low symptoms (49.7%, $n = 791$); (2) High symptoms with intrusion (10.6%, $n = 169$); (3) Moderate symptoms (26.9%, $n = 428$); and (4) Resilient avoidant (12.8%, $n = 203$). Older participants, those with refugee background, shorter residence in the host country, more experiences of daily stressors or discrimination, or low family support were less likely to belong to the Low symptoms or Resilient avoidant groups ($p \leq .001$).

Conclusions: The profiles reflected distinct differentiation of intrusive and avoidance dimensions of the PTSD-symptoms. Intrusion clustered with high level of other mental health problems, whereas avoidance co-occurred with high resilience. Experiences related to immigration, stressors, and family support were crucial determinants of the wellbeing profile membership. Future interventions should utilize information obtained by person-centered studies to create better targeted and tailored support for immigrant and refugee adolescents.

Patrones de problemas de salud mental y resiliencia entre adolescentes inmigrantes y refugiados: un análisis de perfil latente

Antecedentes: Los adolescentes inmigrantes y refugiados a menudo enfrentan experiencias traumáticas y son vulnerables a problemas de salud mental, como el trastorno de estrés posttraumático (TEPT), la ansiedad y la depresión. Sin embargo, también muestran una resiliencia notable frente a estos factores estresantes. La investigación aún es escasa sobre cómo los problemas de salud mental y la resiliencia interactúan dinámicamente en el desarrollo de los adolescentes inmigrantes y refugiados.

Objetivo: Nos propusimos identificar perfiles latentes del bienestar de los adolescentes inmigrantes y refugiados, que consisten en síntomas externalizantes e internalizantes, TEPT (intrusión y evitación) y resiliencia, y analizar los determinantes demográficos y contextuales de estos perfiles.

Método: Utilizamos datos de una encuesta transversal del proyecto RefugeesWellSchool para 1.607 adolescentes inmigrantes y refugiados (edad media 15.3 años, DE 2.15, 42.3% niñas) de

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HIGHLIGHTS

- Mental health symptoms and resilience were not mutually exclusive in immigrant and refugee adolescents' wellbeing, highlighting that they are two separate continua.
- Intrusive and avoidance symptoms of the PTSD showed distinct differentiation in adolescent wellbeing, with intrusion being prevalent with other mental health symptoms and avoidance with high resilience.
- Refugee background, older age, and experiences of discrimination, daily stressors and low familial support were related to belonging in profiles with high mental health symptoms.

seis países europeos: Bélgica, Dinamarca, Finlandia, Noruega, Suecia y Reino Unido. Se utilizó un análisis de perfil latente y un procedimiento de tres pasos con ponderaciones BCH para identificar los perfiles de bienestar y sus determinantes.

Resultados: Los resultados identificaron cuatro perfiles de bienestar adolescente: (1) síntomas bajos (49.7 %, $n = 791$); (2) síntomas altos con intrusión (10.6 %, $n = 169$); (3) síntomas moderados (26.9 %, $n = 428$); y (4) resiliente evitativo (12.8 %, $n = 203$). Los participantes de mayor edad, aquellos con antecedentes de refugiados, con una residencia más corta en el país de acogida, con más experiencias de factores estresantes diarios o discriminación, o con un bajo apoyo familiar tenían menos probabilidades de pertenecer a los grupos de resiliente evitativo o con síntomas bajos ($p \leq .001$).

Conclusiones: Los perfiles reflejaban una diferenciación clara de las dimensiones intrusivas y de evitación de los síntomas de TEPT. La intrusión se agrupó con un alto nivel de otros problemas de salud mental, mientras que la evitación se presentó simultáneamente con una alta resiliencia. Las experiencias relacionadas con la inmigración, los factores estresantes y el apoyo familiar fueron determinantes cruciales de la pertenencia al perfil de bienestar. Las intervenciones futuras deberían utilizar la información obtenida por estudios centrados en la persona para crear un apoyo mejor dirigido y personalizado para los adolescentes inmigrantes y refugiados.

1. Introduction

In addition to the normative developmental challenges that take place in adolescence, young people with immigrant or refugee backgrounds often need to renegotiate their ethnic identities, manage migration-related stressors, and possibly also cope with discrimination in a new host society (Marley & Mauki, 2019). These stressors have been consistently linked with adverse mental health outcomes like anxiety, depression, and post-traumatic stress disorder (PTSD) (Belhadj Kouider et al., 2014; Spaas et al., 2021). In addition, many young refugees have been exposed to traumatic events such as loss, threats to life, and war atrocities, which further heightens their vulnerability to mental health problems (Fazel et al., 2012). However, research also highlights the remarkable resilience of these adolescents in coping with immigration stress and displacement, and effectively managing traumatic experiences (Marley & Mauki, 2019). Despite this, there is a lack of research on the interplay of resilience and mental health symptoms among immigrant and refugee youth, particularly involving the role of PTSD symptoms of intrusion and avoidance (Andersson et al., 2024). This study aims to fill this gap by exploring the distinct subgroups of immigrant and refugee adolescents based on their wellbeing, consisting of externalizing and internalizing symptoms, PTSD intrusion and avoidance, and resilience. The study further examines the differences across the identified subgroups in demographic and contextual factors, including age, gender, migration status, length of stay, daily material stress, discrimination, and social support.

1.1. Wellbeing profiles reflecting both symptoms and resilience

A person's wellbeing can be regarded as composing of two distinct, yet related continuums that depict both mental health vulnerabilities and resources (Moore

et al., 2019). Research on adolescents with immigrant and refugee background has been largely variable-centred, focusing on the vulnerabilities by showing high prevalence of mental health problems such as PTSD (23%), anxiety (16%) and depression (14%) (Blackmore et al., 2020), with potentially comorbid overlapping symptomatology (Fazel et al., 2012; Hukkelberg & Jensen, 2011; Thabet et al., 2004). Some studies have, however, also acknowledged the resources by identifying resilience, the process involving biological, psychological, social, and ecological factors that help individuals regain or maintain wellbeing, to protect against or associate with less mental health problems and PTSD symptoms (Masten et al., 2021; Ungar & Theron, 2020; Veronese et al., 2021; Wu et al., 2018). A person-centred approach, identifying subpopulations of the heterogeneous group of immigrant and refugee youth based on their wellbeing can offer insightful ways to capture the dynamics of mental health symptoms and resilience that can enable professionals to tailor targeted and differentiated support (Andersson et al., 2024; Howard & Hoffman, 2017).

Research concerning latent profiles of youth with immigrant or refugee background including both mental health symptoms and resilience is largely lacking, as outlined in the review concerning refugee children and young adults by Andersson et al. (2024). Among immigrant background and native youth, Kassis et al. (2021) identified three wellbeing profiles based on mental health problems (depression and anxiety) and psychosocial resources (e.g. satisfaction in life and school grades, self-efficacy, and self-esteem), representing high, middle, and low wellbeing among both immigrant and native youth. The high wellbeing profile was characterized by low levels of mental health symptoms and high resources; middle wellbeing profile by average levels of both, and low wellbeing by high mental health symptoms and low to average levels of resources, representing therefore

mainly quantitative rather than nuanced qualitative differences between the profiles. However, studies examining similar wellbeing profiles among general adolescent samples have found mainly four profiles with similar profiles of high, medium and low well-being, but also a profile with high levels of both mental health symptoms and resources (Janousch et al., 2022; Moore et al., 2019).

Other related latent profile studies among refugee adolescents have found also distinct groups of individuals based on their self-regulation skills and emotional well-being (Aber et al., 2024), or trauma exposure, mental health and post-traumatic growth (PTG; a concept close to resilience) (Ryu et al., 2024). Interestingly, the two groups having experienced the most traumatic events were considerably different: the other was termed ‘High growth class’ with the highest PTG and low depression and social withdrawal, whereas the ‘High trauma with high comorbidity’ group had low PTG, high depression and social withdrawal (Ryu et al., 2024). In line with a large meta-analysis by Alisic et al. (2014), it is not the traumatic events *per se* that lead to psychopathology. Instead, there are other important trauma – as well as resilience-related factors such as family support and personal characteristics that may be crucial in the interplay of symptom and resilience manifestation. To sum, the few studies available suggest that mental health symptoms and resources may show both inversely related patterns but also more nuanced clustering within individuals. Considering immigrants and refugees, many of whom have been exposed to traumatic events, it would be important to study also PTSD symptoms in the context of other mental health symptoms due to their frequent comorbidity (Hukkelberg & Jensen, 2011). However, current research lacks the understanding of PTSD symptoms in the interplay of mental health and resilience and more research is needed to account for the potentially varying migration experiences of immigrants and refugees.

1.2. Determinants of profile membership

Demographic and contextual factors potentially affect immigrant and refugee adolescents’ mental health and resilience, contributing to unique wellbeing profiles (Bajo Marcos et al., 2021). However, research is largely lacking on the role of these factors in profile membership. Mental health problems often tend to increase during adolescence, but the developmental timing and amount of adversities may play a crucial role in defining the pathway to either resilient or symptomatic outcomes (Masten & Barnes, 2018; Spaas et al., 2021). However, over time spent in the new home country, the mental health of both immigrant and refugee youth generally tends to improve (Fazel et al., 2012). Many studies have also shown gender

differences with PTSD and internalizing symptoms being more prevalent among immigrant and refugee girls, and externalizing problems more common among boys (Belhadj Kouider et al., 2014; Dyregrov & Yule, 2005; Fazel et al., 2012).

Although research has demonstrated the more frequent exposure of refugee youth to traumatic events compared to immigrant or native youth, and the subsequent heightened vulnerability to mental health symptoms (Betancourt et al., 2017), also immigrant youth are often exposed to several migration-related stressors, exacerbating their wellbeing (Fazel et al., 2012; Spaas et al., 2021). Discrimination is consistently linked to increased internalizing and externalizing symptoms and lower self-esteem, while poverty and low economic opportunities are found major risk factors for mental health throughout the lifespan (Benner et al., 2018; Hynie, 2018). On the positive side, ample evidence shows social support from family and friends to decrease immigrant and refugee adolescents’ mental health problems and increase resilience (Fazel et al., 2012; Masten et al., 2021). The current study, therefore, aims to analyse these demographic and contextual factors as determinants of wellbeing profiles.

1.3. Aims of the study

This study examines wellbeing profiles and their determinants. The first objective is to explore what kind of distinct wellbeing profiles of both vulnerabilities (mental health symptoms) and resources (resilience) arise among immigrant and refugee adolescents across multiple countries. Using latent profile analysis, we classify adolescents into subgroups based on mental health indicators of externalizing and internalizing symptoms, PTSD intrusion and avoidance, and resilience. The second objective is to explore how demographic and contextual factors (age, gender, migration status, time in host country, discrimination, daily material stress, and social support from family and friends) associate with these profiles. Given the sparsity of prior research, we approach both analyses exploratorily without predefined hypotheses.

2. Method

2.1. Study setting and participants

This cross-sectional study was part of the RefugeesWellSchool project evaluating school-based psychosocial interventions for immigrant and refugee youth (RefugeesWellSchool, 2021). The study was conducted across six European countries: Belgium, Denmark, Finland, Norway, Sweden, and the United Kingdom. Ethical approval was obtained from national ethics committees in all participating countries, except Denmark, where formal approval is not required; however,

the study was registered with the Danish Data Protection Agency. Additionally, ethical statement was received from Ghent University Ethical Board, Belgium (the coordinating institute) and was approved by the Horizon 2020 Ethical Review. Schools were recruited between January 2018 and October 2019. Recruitment methods varied by country, using municipal and national education departments in Belgium, Denmark, and Norway, and direct contact in Finland, Sweden, and the United Kingdom. Schools with significant proportions of immigrant and refugee students were targeted. A total of 1607 adolescents answered the survey. All participants were born abroad and were distributed across 86 schools (Belgium $n = 10$; Denmark $n = 28$; Finland $n = 16$; Norway $n = 21$; Sweden $n = 9$; United Kingdom $n = 2$). Participation was voluntary and the adolescent participants were provided written information and consent forms in their mother tongue. Parental consent was not asked, because the majority of participants were over 15 years of age. However, the parents or guardians of all participants were provided with an information letter about the research and for those participants under 15, the passive parental consent was applied. Participants were informed of confidentiality and the possibility to withdraw at any time without consequences.

2.2. Procedure

Data collection occurred between January 2019 and September 2020. The questionnaire was translated and back-translated into 22 languages, but when there were already validated translations of existing scales, they were used instead of new translations. The questionnaire was completed independently by each participant either on paper (Belgium, Denmark, United Kingdom) or electronically (Finland, Norway, Sweden) using LimeSurvey (<https://www.limesurvey.org/>) during a 60-minute school lesson. The research team and teachers provided practical help for the participants if needed. For the participants with limited literacy skills, assistance of qualified interpreters was provided in Belgium, Norway and Sweden. At the beginning of the questionnaire, participants provided demographic data, including age and gender (male, female, other). Due to the small number of youth reporting gender as 'other' ($n = 7$), their gender was treated as missing in the analyses. Migration status was coded as 'refugee' or 'immigrant' and determined primarily on the reported motive for migration (e.g. 'fleeing war or persecution' for refugees, versus 'my parents came for work' for immigrants). When the motive did not clearly categorize the participant (e.g. 'family reunification,' or missing data), classification was based on country of origin. Drawing from combined information from Eurostat of the most prevalent countries of origin of

refugees, and reports from UNHRC describing countries' political situations and risks for war or persecution, the participants whose country of origin was Afghanistan, Syria, Iraq, Somalia, Eritrea, State of Palestine, Kurdistan, or Yemen were classified as refugees. For participants with other countries of origin, the information was left missing. Asylum-seeking participants and unaccompanied minors were categorized as refugees. Participants also reported the length of time they had resided in the host country. The information on the demographic characteristics of the sample by country is described in Appendix 1. After demographics, the participants answered the scales in the following order: PTSD symptoms, daily material stress, internalizing and externalizing symptoms, resilience, social support, and discrimination. The total questionnaire included yet two scales but these were not used in the current study.

2.3. Measures

The construct validity of the multi-item measures for adolescents' profile indicators (internalizing and externalizing symptoms, PTSD-intrusion, PTSD-avoidance, and resilience) and profile determinants (discrimination, daily stress, and social support) was first evaluated using confirmatory factor analysis (CFA). The analyses are described in detail in Appendix 2, and the final scales and their reliabilities (McDonald's omega) are depicted below. Composite mean scores were calculated for all scales or subscales.

Internalizing and externalizing symptoms were assessed with the Strengths and difficulties questionnaire (SDQ) (Goodman et al., 1998). Participants rated on a three-point scale (0 = Not true, 1 = Somewhat true, 2 = Certainly true) how well statements like 'I worry a lot' or 'I get very angry and often lose my temper' described them. The reliability for internalization was $\Omega = .69$ and for externalization $\Omega = .63$ with higher scores representing more symptoms.

PTSD symptoms were measured using the 8-item Children's Revised Impact of Event Scale (CRIES-8) (Dyregrov et al., 1996) as recommended by an international consortium of experts (Krause et al., 2021). The scale has two subscales: intrusion and avoidance, each with four items. Participants rated on a four-point scale (Not at all = 0, Rarely = 1, Sometimes = 3, Often = 5) how often they experienced intrusive thoughts ('Do pictures about it pop into your mind?') and avoidance behaviours ('Do you try not to think about it?'). As CFA did not support the use of the total scale for PTSD symptom mean scores (see Appendix 2 for further information), the composite mean scores for the two subscales were calculated and used in the following analyses separately. The reliability for intrusion was $\Omega = .83$ and for avoidance $\Omega = .81$ with higher scores representing more symptoms.

Resilience was measured using the unidimensional 12-item Child and Youth Resilience measure (CYRM-12) (Liebenberg et al., 2013). Participants rated on a five-point scale (1 = Not at all, 2 = A little, 3 = Somewhat, 4 = Quite a bit, 5 = A lot) how well statements like ‘Do you feel you fit in with other peers?’ described them. The reliability of the scale was $\Omega = .75$ with higher scores representing more resilience.

Daily material stress due to lack of sufficient nutrition, clothing, money, healthcare, and general feeling of security was measured using six items from the unpublished Daily Stressors Scale for Young Refugees (DSSYR) by Vervliet et al. Participants rated on a four-point scale (1 = Never, 2 = Sometimes, 3 = Often, 4 = Always) how often they lacked resources like ‘an ok place to live’ or ‘enough medical care.’ The reliability of the unidimensional scale was $\Omega = .85$, with higher scores representing more resources, ie. less daily stress.

Discrimination was measured using eight items of the discrimination at school and stigmatization/disvaluation subscales from the Brief Perceived Ethnic Discrimination Questionnaire (PEDQ) (Brondolo et al., 2005). Participants rated on a four-point scale (1 = Never, 2 = Sometimes, 3 = Often, 4 = Always) how often they experienced discrimination, such as ‘Have you been treated unfairly by classmates?’ The reliability for the total unidimensional scale was $\Omega = .77$, with higher scores representing more discrimination.

Social support from family and friends was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) with eight items divided into two subscales: family support and friend support (Zimet et al., 1988). Participants rated on a four-point scale (Not at all = 1, A little bit = 2, Quite a bit = 3, A lot = 4) how much support they received from family (e.g. ‘I get the emotional help & support I need from my family’) and friends (e.g. ‘I can count on my friends when things go wrong’). The reliabilities for the two subscales were $\Omega = .81$ for family support and $\Omega = .88$ for friend support, with higher scores representing more support.

2.4. Statistical analyses

All analyses were conducted using cross-sectional baseline data. First, to determine the optimal number of subgroups, we estimated latent profile analyses (LPA) with $k = 2$ to $k = 8$ profiles. This was done using the `mplus.lca` function from the `Misty` package in R, which generates Mplus input files for conducting the analyses (Mplus version 8.4) (Muthén & Muthén, 1998/2017; Yanagida, 2024). Following the procedure used by Turunen et al. (2024) the profile indicators (externalization, internalization, PTSD-intrusion, PTSD-avoidance, and resilience) were standardized to assess their levels relative to the average of the entire sample (Turunen et al., 2024). Six within-profile

variance-covariance structures were initially examined, but only two converged, resulting in a total of 13 models (Masyn, 2013). Detailed description of the structures, representing various assumptions regarding the variance and covariance of the indicators within and between the profiles is provided in appendix 3. As the most suitable within-profile variance-covariance structure is not known beforehand, it is necessary to test all different structures to identify the best model (Masyn, 2013).

To select the optimal latent profile model from the 13 candidates, we combined statistical indicators with theoretical considerations. The model with the lowest Akaike information criterion (AIC), Bayesian information criterion (BIC), and sample size-adjusted BIC (aBIC) values was considered the best relative fit across all within-profile variance-covariance structures. In addition, Lo-Mendell-Rubin likelihood ratio test (LMR-LRT), Lo-Mendell-Rubin adjusted LRT test (A-LRT), entropy values to measure classification accuracy, and profile prevalence (i.e. dismissing profiles with less than 5% of participants) were used to select the best model. Moreover, theoretical interpretability of the profiles and the principle of parsimony (a more parsimonious model should be chosen if an additional profile in a k -profile model represents only a slight variation from a profile in the $k-1$ model) were considered. All analyses were performed using the maximum likelihood estimation with robust standard errors (MLR). We requested 500 random sets of starting values, with 100 initial stage iterations and 50 final stage optimizations, ensuring that the highest log-likelihood value was replicated in at least two final stage iterations to confirm the global solution.

Second, three-step procedure with BCH weights was used to examine mean differences between profiles regarding the demographic and contextual determinants. The BCH method is suitable for analysing both categorical and continuous variables (Vermunt, 2010). BCH weighing adjusts for the downward bias in the SEs, avoids shifts in latent class in the final stage, and seems to be robust to non-normality in the outcome variables (Asparouhov & Muthén, 2021). For further information on the three-step BCH method, see Nylund-Gibson et al. (2019) and Asparouhov and Muthén (2014). To account for familywise error rates for multiple hypothesis tests, Holm’s Sequential Bonferroni Procedure was followed separately for each outcome (Holm, 1979). All variables considered were unstandardized. Missing data was handled using the Full Information Maximum Likelihood (FIML) (Muthén & Muthén, 1998/2017).

3. Results

The descriptive statistics and intercorrelations of the study variables are presented in Table 1. In the sample,

Table 1. Demographic characteristics and intercorrelations of the study variables.

Measure	Min	Max	Missing (%)	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Gender ^a	–	–	2.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2 Age (years)	11	24	1.0	15.26	2.15	.04	–	–	–	–	–	–	–	–	–	–	–	–
3 Migration status ^b	–	–	11.8	–	–	–0.02	–.27**	–	–	–	–	–	–	–	–	–	–	–
4 Time in country (years)	0	18	6.0	2.64	2.97	.02	–.02	–.12**	–	–	–	–	–	–	–	–	–	–
5 Daily stress ^c	1	4	2.2	3.49	0.69	.04	–.21**	.18**	.11**	–	–	–	–	–	–	–	–	–
6 Discrimination	1	4	6.4	1.45	0.48	–.07*	–.05	.12**	.16**	–.17**	–	–	–	–	–	–	–	–
7 Family social support	1	4	4.2	3.49	0.65	.07*	–.11**	–.08**	–.05	.25**	–.26**	–	–	–	–	–	–	–
8 Friend social support	1	4	4.4	3.00	0.84	.09**	–.11**	.02	.05	.22**	–.16**	.38**	–	–	–	–	–	–
9 Externalization	0	2	2.7	0.47	0.38	–.02	.01	.04	.08**	–.17**	.38**	–.28**	–.11**	–	–	–	–	–
10 Internalization	0	2	2.6	0.61	0.47	.16**	.10**	.01	–.01	–.23**	.31**	–.29**	–.19**	.50**	–	–	–	–
11 PTSD-intrusion	0	5	2.4	1.47	1.40	.06*	.21**	–.12**	–.11**	–.21**	.20**	–.18**	–.12**	.28**	.40**	–	–	–
12 PTSD-avoidance	0	5	3.5	1.82	1.58	.04	.21**	–.18**	–.09**	–.17**	.13**	–.11**	–.10**	.17**	.29**	.69**	–	–
13 Resilience	1	5	3.7	4.03	0.65	.06*	–.02	–.13**	–.04	.26**	–.33**	.51**	.46**	–.30**	–.31**	–.15**	–.06*	–

Note: $N = 1607$; ^a 0 = male ($n = 891$), 1 = female ($n = 891$), 1 = refugee ($n = 871$), 1 = immigrant ($n = 546$); ^b 0 = refugee ($n = 871$), 1 = immigrant ($n = 546$); ^c Higher values represent less stress; ** Correlation is significant at the 0.001 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

42.3% were girls, with mean age of 15.3 years (SD 2.15). A majority of the adolescents were refugees ($n = 871$, 54.2%) and a third were immigrants ($n = 546$, 34.0%). The remaining 190 (11.8%) adolescents' migration status could not be determined based on the information provided. The adolescents had resided in the host country on average for 2.6 years (SD 2.97). Gender correlated with internalizing symptoms and PTSD-intrusion with girls reporting more symptoms. Female gender also correlated with more resilience, less discrimination, and more social support from family and friends. Age correlated with migration status with refugee adolescents being younger than the immigrant adolescents. Age correlated also with the number of daily stressors, internalizing symptoms and PTSD-intrusion and PTSD-avoidance, with older participants reporting more stressors and symptoms. Migration status correlated with the length of stay in the host country with refugees having longer residences. Migration status correlated with daily stressors, discrimination, PTSD-symptoms, and resilience with refugees having more daily stressors, more PTSD-intrusion and PTSD-avoidance, and more resilience, but less discrimination than immigrants (Table 1).

The results of the latent profile models with all 6 within-profile variance-covariance structures with $k = 2$ to $k = 8$ profiles are presented in Table 2. Only 13 of the models converged and could replicate the highest log-likelihood. Overall, the profiles in the within-profile variance-covariance structure C (Class Invariant θ_{mm} , Class Invariant Unrestricted Σ_k) yielded the lowest AIC, BIC, and aBIC values and for this reason, the within-profile variance-covariance structure A (Class Invariant θ_{mm} , diagonal Σ_k) was dismissed. The Lo-Mendell-Rubin likelihood ratio tests (LMR-LRT) were significant until $k = 7$, but after $k = 4$ the class sizes were reduced to less than 5% of the sample. For this reason, the $k = 4$ profile model, with an acceptable classification accuracy according to the entropy value, was selected (Table 2).

Graphical representation of the profiles is presented in Figure 1, and descriptive information on mental health symptoms and resilience across the profiles is available in Table 3. All profile indicator variables were standardized, so each measure in Figure 1 represents the degree to which it was below or above the average sample mean. Results revealed four distinct wellbeing profiles: The *Low symptoms with average resilience* ('Low symptoms') profile included 49.7% ($n = 791$) of the participants, characterized by less than average mental health symptoms (externalization, internalization, PTSD-intrusion and PTSD-avoidance) and an average level of resilience. The *High intrusive symptoms with average resilience* ('High symptoms with intrusion') profile included 10.6% ($n = 169$) of participants, showing high levels of all

mental health symptoms and a markedly high level of intrusive PTSD symptoms, but an average level of resilience. The *Moderate Symptoms with low resilience* ('Moderate symptoms') profile included 26.9% ($n = 428$) of participants, characterized by moderately elevated level of all mental health symptoms and slightly less than average resilience. Finally, the *Avoidant symptoms with high resilience* ('Resilient avoidant') profile included 12.8% ($n = 203$) of participants, with less than average externalization, internalization and PTSD-intrusion, but markedly high PTSD-avoidance symptoms and more than average resilience. The differences in unstandardized profile indicators between the profiles are shown in Appendix 4 and the division of participants in the profiles per country are presented in Appendix 1.

Table 4 presents the mean differences between profiles regarding all demographic and contextual factors. Age was significantly associated with profile membership ($\chi^2 = 43.515$, $p < .001$), with adolescents in the Low symptoms profile being younger than those in the profiles with High symptoms with intrusion or Moderate symptoms. Gender distribution was not significantly different between the profiles. Migration status was significantly associated with profile membership ($\chi^2 = 28.268$, $p < .001$), as there were more immigrants in the Low symptoms profile compared to all other profiles. The time spent in the host country also had a significant effect on profile membership ($\chi^2 = 38.864$, $p < .001$), with adolescents in the Low symptoms profile having resided in the host country longer than those in the other profiles.

The profiles differed also according to the exposure to daily stress ($\chi^2 = 15.902$, $p = .001$) and discrimination ($\chi^2 = 23.698$, $p < .001$). Adolescents in the Low symptoms profile had a lower level of daily stressors than those in the High symptoms with intrusion profile. Further, the High symptoms with intrusion profile had experienced more daily stressors than the Moderate symptoms and Resilient avoidant profiles. Regarding discrimination, adolescents in the Low symptoms profile had experienced less discrimination than adolescents in the High symptoms with intrusion and Moderate symptoms groups. The Resilient avoidant profile reported less discrimination than the High symptoms with intrusion profile. In addition, social support received from the family was significantly associated with profile membership ($\chi^2 = 27.990$, $p < .001$). Adolescents in the Resilient avoidant profile reported more familial social support than adolescents in the High symptoms with intrusion and Moderate symptoms profiles. The Low symptoms group also had significantly more family support than the High symptoms with intrusion profile. Social support from friends did not show significant differences between the profiles.

Table 2. Latent profile analyses results for externalizing symptoms, internalizing symptoms, PTSD-intrusion, PTSD-avoidance, and resilience.

Model	#Class	Conv	#Par	LL	LL Rep	AIC	BIC	aBIC	LMR-LRT	A-LRT	Entropy	Number of students in each profile					
												1	2	3	4	5	6
A: Class invariant θ_{mm} , diagonal Σ_k																	
	2	Yes	16	-10469.1	Yes	20970.3	21056.3	21005.4	<.001	<.001	0.776	1021	570				
	3	Yes	22	-10250.1	Yes	20544.2	20662.4	20592.5	<.001	<.001	0.806	735	586	270			
	4	Yes	28	-10081.7	Yes	20219.4	20369.8	20280.9	<.001	<.001	0.762	437	617	272	265		
	5	Yes	34	-10007.1	Yes	20082.1	20264.8	20156.8	0.138	0.143	0.795	619	164	234	411	163	
	6	Yes	40	-9908.4	Yes	19896.9	20111.8	19984.7	0.010	0.011	0.802	547	194	160	361	210	119
	7	Yes	46	-9838.3	Yes	19768.5	20015.6	19869.5	0.047	0.050	0.796	216	191	542	186	186	158
	8	Yes	52	-9784.2	Yes	19672.5	19951.8	19786.6	0.016	0.017	0.806	195	523	170	156	223	21
B: Class varying θ_{mm} , diagonal Σ_k																	
	2	No			No												111
C: Class invariant θ_{mm} , Class invariant unrestricted Σ_k																	
	2	Yes	26	-10052.3	Yes	20156.6	20296.3	20213.7	<.001	<.001	0.818	1176	415				
	3	Yes	32	-9924.8	Yes	19913.5	20085.4	19983.8	<.001	<.001	0.858	955	450	186			
	4	Yes	38	-9823.2	Yes	19722.4	19926.6	19805.9	0.004	0.004	0.831	791	169	428	203		
	5	Yes	44	-9751.8	Yes	19591.6	19828.0	19688.2	0.019	0.020	0.842	760	30	426	207	168	
	6	Yes	50	-9690.7	Yes	19481.4	19750.0	19591.1	0.004	0.004	0.841	28	99	727	347	239	151
	7	Yes	56	-9628.1	Yes	19368.2	19669.0	19491.1	0.084	0.091	0.841	28	724	184	246	187	140
	8	Yes	62	-9592.3	No	19308.6	19641.7	19444.7	0.270	0.276	0.859	107	137	63	17	156	323
D: Class invariant θ_{mm} , Class varying unrestricted Σ_k																	
	2	No			No												148
E: Class varying θ_{mm} , Class invariant unrestricted Σ_k																	
	2	No			No												
F: Class varying θ_{mm} , Varying unrestricted Σ_k																	
	2	No			No												

Note. $N = 1591$ students; Model = Estimated variance-covariance structure; #Class = Number of estimated profiles; Conv = Convergence of the model; #Par = Number of estimated parameters; LL = Log-Likelihood; LL Rep = Log - Likelihood replicated at least 3 times; AIC = Akaike information criterion; BIC = Bayesian information criterion; aBIC = sample size adjusted BIC; LMR-LRT = Lo-Mendell-Rubin likelihood ratio test; A-LRT = Lo-Mendell-Rubin adjusted LRT test. Models B, D, E, and F did not converge and were thus not reported.

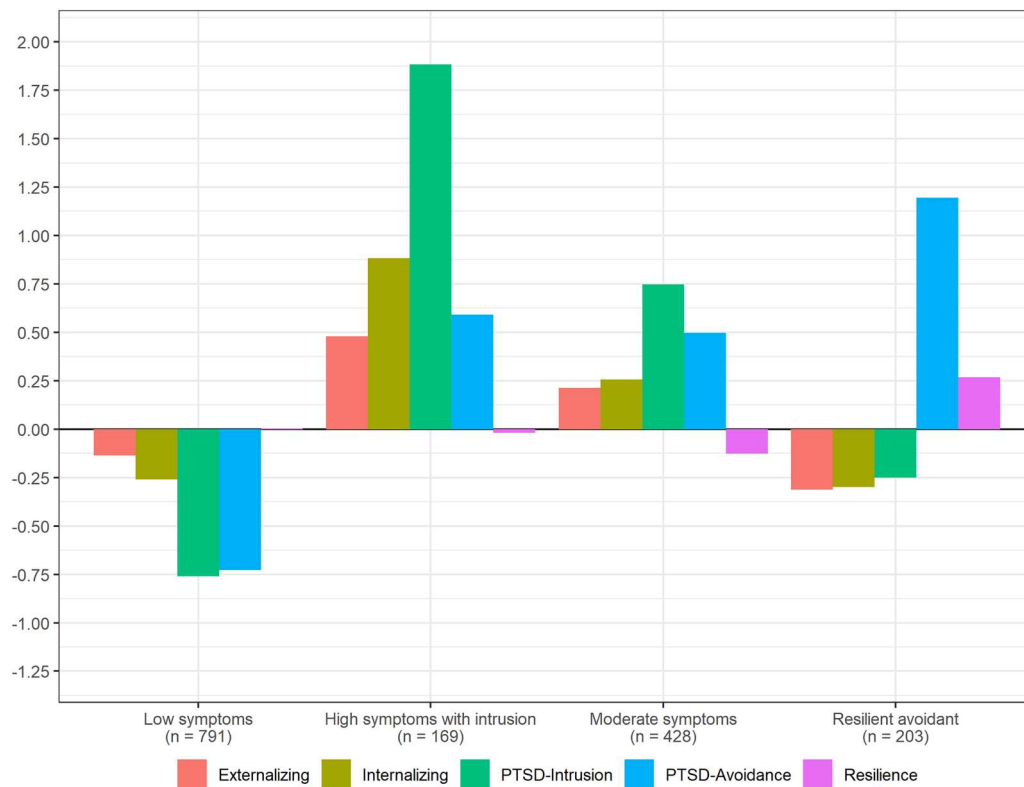


Figure 1. Identified four wellbeing profiles with externalizing symptoms, internalizing symptoms, PTSD-intrusion, PTSD-avoidance, and resilience.

Note. All variables are presented as standardized z-scores.

4. Discussion

Our study aimed to understand what kind of wellbeing profiles arise among immigrant and refugee youth and identified four profiles with both quantitative and qualitative differences. As suggested by previous research (Janousch et al., 2022; Kassis et al., 2021; Moore et al., 2019), we found profiles characterized by quantitative differences in the level of all mental health symptoms, i.e. profiles with low, moderate and high symptomatology. In addition, we distinguished a qualitatively different profile with differing levels of mental health symptoms. Interestingly, resilience did not consistently correspond with symptom levels, and it appeared more nuanced, existing along

a separate continuum. This finding suggests the need to view mental health and resilience as co-occurring yet distinct elements, which lays a foundation for further exploration in the paragraphs that follow.

In our analyses the distinguished profiles could be split into two categories. We identified two ‘Flourishing’ profiles; Low symptoms profile with low levels of all mental health symptoms and average resilience, and Resilient avoidant profile characterized by low externalization, internalization, and PTSD-intrusion, but at the same time high PTSD-avoidance and high resilience. In addition, we identified two ‘Languishing’ profiles; High symptoms with intrusion characterized by high level of all mental health symptoms but especially marked PTSD-intrusion, and Moderate symptoms showing moderately elevated symptomatology on all scales and low resilience.

Our findings show a distinct differentiation between the PTSD symptom dimensions of avoidance and intrusion across the wellbeing profiles. Avoidance symptoms were pronounced in the profile with higher resilience, while intrusion symptoms were more prevalent in profiles marked by higher levels of distress. While previous research has shown that avoidance can serve as a short-term coping mechanism for traumatic experiences, potentially leading to increased PTSD symptoms over time (Thompson et al., 2018), this relationship remains complex and warrants further investigation. Additionally, it is possible that adolescents displaying avoidance symptoms

Table 3. Standardized means of profile indicator variables.

	1: Low symptoms M (SE)	2: High symptoms with intrusion M (SE)	3: Moderate symptoms M (SE)	4: Resilient avoidant M (SE)
Externalizing	-0.14** (0.04)	0.48** (0.11)	0.21** (0.06)	-0.31** (0.07)
Internalizing	-0.26** (0.04)	0.88** (0.11)	0.26** (0.07)	-0.30** (0.08)
PTSD-Intrusion	-0.76** (0.03)	1.88** (0.06)	0.75** (0.08)	-0.25** (0.05)
PTSD-Avoidance	-0.73** (0.04)	0.59** (0.16)	0.50** (0.07)	1.20** (0.06)
Resilience	0.01 (0.04)	-0.02 (0.08)	-0.13* (0.05)	0.27** (0.09)

Note: M = Arithmetic mean; SE = Standard error; ** Value differs significantly from zero at the 0.001 level (2-tailed); * Value differs significantly from zero at the 0.05 level (2-tailed).

Table 4. Differences between wellbeing profiles in demographic and contextual factors.

	1: Low symptoms <i>M (SE)</i>	2: High symptoms with intrusion <i>M (SE)</i>	3: Moderate symptoms <i>M (SE)</i>	4: Resilient avoidant <i>M (SE)</i>	Significant post-hoc differences ^b
Gender (% girls)	0.41 (0.02)	0.54 (0.04)	0.42 (0.03)	0.46 (0.04)	
Age	14.89 (0.08)	15.80 (0.18)	15.67 (0.11)	15.40 (0.19)	1 < 2, 3
ReMi (% immigrant)	0.46 (0.02)	0.32 (0.04)	0.34 (0.03)	0.25 (0.04)	1 > 2, 3, 4
Time (years)	3.19 (0.13)	2.08 (0.23)	2.23 (0.15)	1.96 (0.19)	1 > 2, 3, 4
Daily stress ^a	3.53 (0.03)	3.36 (0.06)	3.43 (0.04)	3.60 (0.05)	1 > 2; 2, 3 < 4
Discrimination	1.40 (0.02)	1.59 (0.05)	1.51 (0.03)	1.40 (0.04)	1 < 2, 3; 2 > 4
Family social support	3.54 (0.02)	3.40 (0.06)	3.35 (0.04)	3.64 (0.05)	1 > 3; 2, 3 < 4
Friend social support	3.07 (0.03)	2.85 (0.08)	2.91 (0.05)	3.07 (0.07)	

Note. ^a Higher values represent less stress; ^b significant differences at $p < .05$ level in a BCH weighted mean difference test with Holm's Bonferroni-adjusted p -value (6 comparisons/outcome); M = Arithmetic mean; SE = Standard error.

may underreport or be less aware of their distress in self-reported measures, which could have influenced our results. Also, as this study did not measure trauma exposure, it is possible that the avoidance symptoms represent a more general avoidance of adversities instead of diagnostic avoidance symptoms of PTSD. Intrusions, however, are a core symptom of PTSD (Bar-Haim et al., 2021) and therefore the group with significant intrusions could better represent the group with PTSD symptoms. Intrusions are also known to share aetiology and prevalence with a range of other mental health symptoms, which is likely to indicate a general vulnerability to poor mental health (Lawrence-Wood et al., 2016). Longitudinal studies and explicit inquiry of trauma exposure would thus be needed to better understand how avoidance and intrusion symptoms of PTSD evolve in relation to other mental health outcomes.

Our finding also revealed multiple contextual factors that were important in determining the wellbeing profile membership. Immigrants, younger adolescents, and those who had resided longer in the new host country belonged more often to the Low symptoms profile. Furthermore, adolescents with lower amount of daily material stress, less discrimination experiences, and high social support from family were more often members of either of the flourishing groups. While a direct comparison with previous studies on wellbeing profiles among immigrant and refugee youth is not possible due to the lack of similar research, our findings are consistent with existing evidence that highlights refugees' increased susceptibility to mental health symptoms (Betancourt et al., 2017; Spaas et al., 2021). Mental health of immigrant and refugee youth also appears to increase as they have had the chance to integrate into the new home country, and create social ties. In accordance with previous research, lacking access to sufficient resources such as money, food, or housing, or experiencing discrimination were serious threats to adolescent wellbeing (Benner et al., 2018; Hynie, 2018). This highlights the need to create supportive and stable life conditions with sufficient resources in order to

support wellbeing, as socioeconomic daily stressors can also become an obstacle to how youth can benefit from wellbeing interventions (Peltonen et al., 2022). Among immigrant and refugee youth, especially support from the family seems to contribute to flourishing, as these youth may not yet have had the chance to create trustful friendships in the new country, and migrating as a family may create a sense of unity while navigating the new cultural surroundings together.

4.1. Strengths and limitations

Our study has several strengths, such as providing new insights into the wellbeing of immigrant and refugee adolescents and achieving a substantial sample size for this hard-to-reach population. However, there are limitations to consider. First, although we aimed to analyse both positive and negative aspects of wellbeing, our profiles were mainly shaped by varying levels of PTSD and other mental health symptoms, as resilience showed low variance. While the lack of symptoms can be interpreted as an indicator of wellbeing, future research should include more nuanced measures of resources. Second, while our data is enriched by participants from multiple European countries, small sample sizes in some countries prevented country-specific comparisons, limiting the generalizability of our findings. The results should therefore be considered as initial, general findings, and future studies should seek to replicate the results in different contexts. Third, the categorization of migration status was based on somewhat subjective inferences from the country of origin, which may have introduced classification errors. Lastly, although the CRIES-8 scale aims to measure explicitly PTSD symptoms, which should by definition be the consequence of a traumatic event, the survey lacked a question of traumatic experiences. Therefore, the measures of avoidance and intrusions could also indicate more general tendency to avoid adversities or engage in imagery-related intrusive rumination that may also be present in other mental health conditions (Bar-

Haim et al., 2021). In future studies to better distinguish PTSD symptoms from related symptomatology in other mental health conditions, it would be of utmost importance to also inquire about the exposure to traumatic events.

In conclusion, despite some limitations, our study shows interesting differences in the wellbeing profiles of European immigrant and refugee youth especially related to PTSD symptoms. It seems that experiencing fewer daily stressors and discrimination and receiving substantial family support may collectively bolster resilience and help adolescents manage symptoms effectively, while avoidance may also initially aid in coping. In contrast, higher levels of discrimination and stress, coupled with minimal family support is associated with more pronounced symptoms and intrusive experiences. This study highlights that PTSD symptoms are importantly related to resources and life circumstances and that they have an important role in the interplay of resilience and mental health symptoms. Future interventions should utilize the new person-centered information to create more differentiated support that is tailored to address the specific requirements for the different profiles of these young people.

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Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work authors used ChatGPT in condensing the text and increasing its readability. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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