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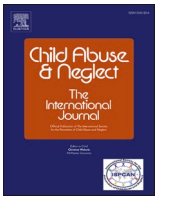

Educational outcomes of care leavers and their matched peers: A gender perspective☆

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ABSTRACT

Background: Educational gaps between care leavers and their same-age peers not in care are well documented. However, little is known about gender disparities in educational outcomes between care leavers and their matched peers.
Objectives: To examine and predict secondary school educational attainments (EA) and enrollment in postsecondary education (PSE) by (1) *study group:* care leavers versus their matched peers, (2) *gender:* men versus women, (3) *interaction* between study group and gender.
Participants and setting: Participants were alumni of educational (n = 21,654) and therapeutic (n = 3765) residential care facilities from 16 consecutive birth cohorts and same-age doubled-sized matched comparison groups (n = 43,308; n = 7530, respectively).
Methods: Bivariate analyses examined differences in secondary school EA and PSE enrollment, and multinomial and binary logistic models predicted secondary school EA and PSE enrollment.
Results: Care leavers from both residential settings showed poorer secondary school EA and lower PSE enrollment rates than their matched peers. Gaps between the study groups were far more pronounced in therapeutic facilities than in educational facilities. Women from all study groups outperformed men in both outcomes. Generally, there were greater disparities between female care leavers and their same-sex peers than between male care leavers and their same-sex peers, particularly in therapeutic settings. A complex pattern of interaction between study group and gender emerged in both residential settings.
Conclusions: Greater efforts and resources should be allocated to promote adolescents' academic performance in both types of settings to minimize the gaps between care leavers and their matched peers and between women and men, with special attention to men in therapeutic facilities.

1. Introduction

Enhancing the educational outcomes of youth in care is a central task of out-of-home care (OHC) agencies and social and welfare policies that aim to reduce poverty, socioeconomic marginality, and intergenerational transmission of educational disadvantages (e.g., Parsons et al., 2023). Education remains the most important gateway to a fulfilling and productive adult life in democratic societies. In

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addition to its contribution to labor market stability and progress, positive educational outcomes are associated with good physical and mental health (e.g., Raghupathi & Raghupathi, 2020), high quality-of-life indicators, such as social relationships (Gil-Lacruz et al., 2020), and psychological well-being and autonomy (Melendro et al., 2020). Consequently, good educational outcomes significantly contribute to care leavers' integration into mainstream life (Achdut et al., 2023; Gypen et al., 2022).

Numerous studies across Western countries have documented poorer educational achievements upon leaving care and much lower participation rates of care leavers in PSE compared to their same-age peers in the general population (e.g., Brännström et al., 2020; Cameron et al., 2018; Kääriälä et al., 2018; Okpych, 2024; Okpych & Courtney, 2019), children and young people matched by family socioeconomic background (Sinclair et al., 2020), and peers from adverse family backgrounds, such as those served by child welfare services in the community (Forsman & Brännström, 2023). Furthermore, studies have pointed to gender disparities in educational achievements among children and adolescents placed in OHC, with women typically outperforming men while in care and afterward (e.g., Geiger & Okpych, 2022; Harrison, 2020; O'Higgins et al., 2017; Okpych & Courtney, 2021; Rosenberg & Kim, 2018; Watt & Kim, 2019). This gender gap is not unique to care leaver populations. It has also been identified among comparison groups in studies on care leavers (Brännström et al., 2020; Harrison, 2020) and the general population in multiple countries (cf. Hermann & Kopasz, 2021), revealing the central role of gender in predicting educational achievements.

The literature on educational gaps between care leavers and their same-age peers without OHC experience is extensive. In the present study, we take a step forward and employ a unique gender perspective to investigate educational gaps between care leavers and same-age matched comparison groups in two types of OHC settings in Israel: educational youth villages and therapeutic youth villages. We focus on two outcomes: secondary school educational attainments (EA) at age 18 and postsecondary education (PSE) enrollment. Drawing on longitudinal administrative data from 16 consecutive birth cohorts (1982–1997) of alumni of educational (n = 21,654) and therapeutic (n = 3765) residential care facilities and same-age doubled-sized matched comparison groups (n = 43,308; n = 7530, respectively), we examined three effects on educational outcomes: (1) *study group effect*, i.e., differences between care leavers and their same-age matched peers, (2) *gender effect*, i.e., differences between men and women, and (3) *interaction effects of gender and study group:* study group differences within gender, i.e., differences between care leavers and their same-sex matched peers. Next, controlling for potential confounders, we predicted secondary school EA and enrollment in PSE among care leavers and their matched peers. This study is one of the few that has compared care leavers with a carefully matched group of youths with similar background characteristics.

2. Literature review

Focusing on large-scale quantitative studies, we first review studies that examined secondary school academic achievements and PSE enrollment and compared care leavers with other groups. We then review evidence on gender differences in educational outcomes among care leavers and, when available, in a care leavers' comparison group.

2.1. Comparative studies on care leavers' educational outcomes

Empirical research from around the Western world consistently shows that children and adolescents in OHC (i.e., foster family or residential care) have very low levels of academic achievement while at school and later in life, and their academic performance is well below that of their peers from the general population (for reviews of findings across different countries see Cameron et al., 2018; Gypen et al., 2017; Kääriälä & Hiilamo, 2017; Okpych & Courtney, 2019).

Based on the Stockholm Birth Cohort study, Brännström et al. (2020) report wide gaps in educational achievement in the final year of compulsory school (ninth-grade test score, age 16) and midlife educational attainment (pseudo years of schooling, age 50). The mean difference in predicted (log) outcome between the two study groups indicates that the OHC group had approximately 13 % lower grades than the non-OHC group in the final year of compulsory school, and the difference in midlife educational attainment was 9 % (Brännström et al., 2020). In an updated version of the SBC Multigenerational Study, Forsman and Brännström (2023) found that by age 50, care leavers were less likely than their peers in the general population to have postsecondary vocational or academic education of two years or more. Results from pairwise comparisons across different types of child welfare involvement (OHC at age 0–12; OHC at age 13–19; child welfare contact (CWC) at age 0–12; CWC at age 13–19) showed that the odds of receiving higher education did not significantly differ between the younger OHC and the younger CWC groups, but teens in OHC had approximately 33 % lower odds compared to teens in CWC.

National registry data from three Nordic countries (Denmark, Finland, and Sweden) on an entire birth cohort (born in 1987) revealed that the propensity of children placed in OHC to lack secondary education by age 23 (i.e., post-compulsory education after age 16) was far higher than that of their same-age peers. After adjusting for maternal background (socioeconomic indicators and health status), it was found that young adults who experienced out-of-home care were more likely than their peers who were never in care not to have completed secondary education (Kääriälä et al., 2018).

Using linked administrative data in England, Sinclair et al. (2020) charted the educational progress of four groups of children (ages seven and 16) from the same birth cohort: children in “out-of-home care” (CLA), children deemed in social need (CIN), a matched comparison group for the CLA group, and an unmatched comparison group. Using national standardized test scores, they found that the CLA, CIN, and matched comparison groups were severely disadvantaged at age seven, with lower attainments than the unmatched comparison group. When the researchers controlled for a wide range of confounders, the CLA group performed far below its matched peer group. In addition, the study showed that despite the strong correlation among all groups between attainments at ages seven and 16, the matched group exhibited improved attainments at age 16, while the CLA and the CIN groups exhibited downward trajectories.

A similar trend was reported by Harrison (2020) in three studies from England that examined care leavers' participation in higher education (HE). A comparison of trends in participation rates over time in HE at age 19 between care leavers and a disadvantaged comparison group (young people living in areas with historically low participation rates in HE) revealed that while there has been a steady rise in participation among young people from the comparison group—from 11.2 % in 2006 to 20.5 % in 2017—care leavers have vacillated around the 6 % mark throughout the same period. Furthermore, based on a different dataset comprising two birth cohorts (aged 16 in 2007/08), Harrison compared rates of HE participation across three groups and found that by age 23 (2014/15), 11.8 % of care leavers had participated in HE. In contrast, the corresponding rate for those previously receiving free school meals (indicating very low family SES) stood at 26.1 %, and for the cohorts as a whole, at 43.1 %. Thus, young people who were not care leavers were nearly four times more likely to participate in HE, and even those from economically disadvantaged families were more than twice as likely to do so. Multivariate analysis controlling for demographics and earlier educational attainment confirmed these results (Harrison, 2020).

Finally, using the National Student Clearinghouse records that were cross-checked with self-reported survey data (Midwest Study data), Okpych and Courtney (2021) found that by age 29–30, care leavers who enrolled in college were less than half as likely as low-income first-generation students from a nationally representative study to earn a two- or four-year degree (12 % vs. 28 %, respectively). Based on the U.S. National Youth in Transition Study and the CalYOUTH Study, Okpych (2024) found large disparities in PSE enrollment (at age 21): young people across the United States were approximately 2.4 times as likely to be enrolled than their peers with foster care backgrounds (22 % vs. 53 %). Additionally, care leavers fell short of a comparison group of first-generation college students from low-income families in first-semester college academic performance and retention rates (Day et al., 2011, 2021; Unrau et al., 2012; White et al., 2015).

2.2. Gender differences in educational outcomes of care leavers and comparison groups

Most studies on care leavers that analyze educational attainment by gender show that while in care and afterward, men are at particular risk of poorer attainment (e.g., see O'Higgins et al., 2017). Brännström et al. (2020) found that women with OHC experience had higher grades than men in both the final year of compulsory schooling (ninth-grade test score, age 16) and midlife educational attainment (pseudo years of schooling, age 50). The same pattern was found for the same-age comparison group. Based on a regression analysis that included care leavers and a same-age comparison group from the general population, Harrison (2020) found that women from both study groups were more likely to enter HE by age 23.

Several studies on care leavers in the United States also indicated higher PSE enrollment rates among women (Courtney & Hook, 2017; Geiger & Okpych, 2022; Rosenberg & Kim, 2018; Watt & Kim, 2019). Courtney and Hook (2017) analyzed Midwest Study data to examine predictors of care leavers' highest level of educational attainment at age 25–26 (no secondary credentials, completed a secondary credential, and completed one or more years of college). Controlling for a set of confounders, they found that women were more likely than men to have advanced to a higher level of education. A gender gap in the PSE enrollment rate was also evident in the CalYOUTH study, which found that the rate of women with foster care experience enrolled at age 21 was higher than that of men (28.1 % vs. 21.1 %, respectively; Okpych, 2024). Furthermore, the Midwest Study, which included degree completion records (two- and four-year college degree at age 29/30), indicated that women were likelier than men to earn a college degree (Okpych & Courtney, 2021).

We reviewed the relevant literature and found no study that examined gender differences in educational outcomes among care leavers and same-sex members of a comparison group. Nor did we find comparative studies that explored the possible differential effect of OHC (compared to young people never in care) on educational attainment across gender (i.e., the interaction between OHC and gender). We aimed to address this knowledge gap.

3. Youth villages in Israel

Two separate yet complementary systems provide out-of-home care services in Israel. The Ministry of Welfare and Social Affairs regulates one of them, which is responsible for removing children from their homes in cases of immediate risk. Placement follows a process based on professional discretion with or without a court order. Data on this population was not available for our study. The Ministry of Education manages the second system, which serves a far larger population of middle-school- and high-school-aged adolescents (12–18 years old) in residential care facilities called youth villages (Zeira & Grupper, 2023). Here, we focus on young people from the educational system, who typically enter youth villages at age 12 (seventh grade) and leave after completing secondary school (about age 18).

Youth villages aim at promoting the educational achievements of vulnerable youth with complex needs by offering high-quality education and implementing a unique model of residential education and care (Grupper & Zagury, 2019). Placement in a youth village is viewed as an effective pathway to integration and upward mobility in Israeli society for immigrants and Israeli-born adolescents from families struggling with multiple challenges (Grupper, 2013; Zeira & Grupper, 2023).

Adolescents are placed in youth villages because they experience personal difficulties (e.g., behavioral problems, emotional problems, and poor educational achievements) or because their families experience difficulties in raising and supporting them due to a crisis, immigration situations, or poverty that may affect their children's development. Among the young people being educated in youth villages are new immigrants in cross-cultural transition, children and youths in need because of family and social problems, young people seeking a second chance after having failed at a local school, and those who have experienced an emotional crisis (Grupper, 2013). Therefore, the family backgrounds of adolescents in youth villages are heterogeneous, as are adolescents' difficulties,

challenges, and needs.

The Ministry of Education generally divides youth villages into two types of residential facilities: educational and therapeutic. Whereas educational youth villages aim to address adolescents' developmental gaps and maximize personal excellence and self-fulfillment, therapeutic youth villages have a preponderance of youth at high risk with more complex and intense needs. Therapeutic villages are considered more treatment-oriented residential settings, and the welfare system also places (and finances) children in them (Zeira & Grupper, 2023). Previous studies in Israel used pooled samples of care leavers from both welfare residential care and therapeutic youth villages due to similarities in the characteristics of adolescents in these two settings (e.g., Dinisman et al., 2013; Zeira et al., 2023). The professional teams in both types of youth villages include child and youth care workers, social workers, psychologists, psychiatrists, and occupational therapists, according to needs and available resources (Zeira & Grupper, 2023). In light of the substantial differences in the characteristics of the young people placed in these two types of residential settings, we treat them separately.

4. The study objectives

The study had two main objectives. The first was to compare secondary school educational attainment (EA at age 18) and enrollment in postsecondary education (PSE) between (1) study groups: care leavers versus their same-age matched peers, (2) gender: men versus women, and (3) study groups by gender, to determine whether study group effects differ between the two genders. The second is to predict secondary school EA (at age 18) and PSE enrollment by study group, gender, and study group-gender interaction, controlling for a set of potential confounders.

The research objectives are examined separately among (a) care leavers from educational youth villages and their same-age matched peers and (b) care leavers from therapeutic youth villages and their same-age matched peers.

5. Method

5.1. Research population

The research population included two groups. The first included all the alumni of residential youth villages in 16 consecutive birth cohorts (1982–1997) aged out of care from 2000 to 2015 upon reaching age 18. This group comprised 25,419 participants, 21,654 of whom had aged out of educational youth villages and 3765 of whom had aged out of therapeutic youth villages. Each birth cohort aged out of care in the same calendar year (i.e., participants born in 1982 aged out of care in 2000, those born in 1983 aged out of care in 2001, and so on); the second was a double-sized matched comparison group of young people from the same birth cohorts from the general population. This group comprised 50,838 participants, of whom 43,308 served as a comparison group for educational youth village care leavers, and 7530 served as a comparison group for therapeutic youth village care leavers. The total number of participants in this study was 76,257.

The four youngest cohorts (born 1994–1997 and aged out 2012–2015) were excluded from all analyses on PSE enrollment because, at the time of measurement, many were still serving in the military or had recently been discharged. Thus, these analyses are based on 12 cohorts (born 1982–1993). The care leavers group comprised 18,093 participants, of whom 16,251 had aged out of educational youth villages, and 2652 had aged out of therapeutic youth villages. The matched comparison group comprised 37,806 participants. Of these, 32,502 formed the comparison group for educational youth village care leavers, and 5304 formed the comparison group for therapeutic youth village care leavers.

5.2. Data sources

The study was based on an integrated longitudinal administrative data file created by the research team in collaboration with the Israeli Central Bureau of Statistics (CBS). The dataset combines administrative files from the Ministry of Education, the Population and Immigration Authority, the Ministry of Labor, the Ministry of Welfare and Social Affairs, the Ministry of Public Security, the CBS, and the National Insurance Institute (NII). A detailed description of the construction of the dataset can be found in Authors (2023).

Based on this integrative dataset, three sets of information items were recorded for the entire study population: (1) invariant demographic characteristics and family background indicators measured at age 12 upon entrance to the youth village; (2) information measured at relevant points in time (e.g., type of residential care setting at placement [age 12], postsecondary EA at the end of residence [age 18]); and (3) information measured in the last year of our follow-up, 2015 (e.g., PSE enrollment).

5.3. Design

This study employed a quasi-experimental longitudinal design following 16 sequential birth cohorts of youth village alumni (treatment group) and their same-age matched peers (comparison group) and compared their secondary school EA and PSE enrollment. The comparison group was formed using the propensity score matching (PSM) method. The comparison group was drawn from the general population registry, excluding care leavers (the treated group). Given the substantially larger size of the untreated group compared to the treated group, we followed Caliendo and Kopeinig (2008) to improve the precision of estimates by employing double nearest-neighbor (NN) matching without replacement. This approach is recommended in the context of educational research (e.g., Blankenberger et al., 2021; Graham & Kurlaender, 2011) and has been widely used to study various educational attainments (e.g., Sondergeld et al., 2020; Yamada & Bryk, 2016).

We employed a binary logistic model to estimate the probability of placement in residential care (= 1) using the following variables, all measured at age 12 (before entry into the care system): (1) participants' characteristics: gender, country of birth (Israel, Former Soviet Union, Ethiopia, other), school religious type (secular, religious, ultra-Orthodox); (2) family background: father's and mother's country of origin (Israel, Former Soviet Union, Ethiopia, other), parents' marital status (married, divorced, single, widowed, other), parents' education (elementary, secondary, post-secondary, academic); parental use of welfare services (at least one parent, none); parental criminal record (at least one parent, none); and socioeconomic cluster of the locality in which the parents lived according to the CBS classification (1−10) (CBS, 2018). Post-matching results revealed high levels of similarity between the study group and the matched comparison group in almost all characteristics.

5.4. Measurement

5.4.1. Outcome variables

(1) Secondary school educational attainments (EA) were assessed by the type of matriculation certificate (*teudat bagrut*) the participant obtained at the end of high school (approximately age 18). Three levels were specified: not entitled to a matriculation certificate (= 0); entitled to a regular matriculation certificate meeting minimal requirements (= 1); entitled to a matriculation certificate meeting the threshold for university entrance (henceforth, quality matriculation certificate) (= 1).

(2) Enrollment in PSE institutions by the end of 2015 (= 1) reflects enrollment at different ages across the study birth cohort, for the youngest cohort (born in 1994) by age 21 and for the oldest cohort (born in 1982) by age 34. PSE institutions include both post-secondary and academic institutions (non-tertiary and tertiary).

5.4.2. The independent variables

Were study group (care leavers = 1); gender (male = 1); and study group by gender.

5.4.3. The control variables

Were family background at age 12, just before entering residential care; participants' country of birth (Ethiopia = 1, Former Soviet Union = 1. The reference category consisted of Israeli-born and others); mother's marital status (single-parent [divorced, single, widowed, and other statuses] = 1, and the reference category consisted of married mothers); parents' use of welfare services (at least one parent was registered as receiving care from the local welfare department = 1), and parent with a criminal conviction (at least one of the parents with a conviction = 1); and time corresponding to year of end of high school (2000–2015). Due to the absence of data on the calendar year participants enrolled in PSE, we did not incorporate a time variable in the corresponding models. Thus, the models predict the probability of enrollment in PSE at any time during the study period (2000–2015).

Table 1 presents the demographic and family background characteristics in each residential setting by study group and gender. As mentioned, the two study groups were matched on demographic characteristics, family background, and locality SES. Only minor demographic and family background differences were observed between the two matched study groups. Two exceptions should be noted: a) the rate of single-parent families was higher among care leavers from both residential settings than among their matched peers, and b) the rate of parents' use of welfare services was higher among care leavers from therapeutic youth villages than among their matched peers.

Table 1 shows the expected differences between care leavers from the two residential settings. For example, the rate of immigrants from Ethiopia is higher in educational youth villages than in therapeutic youth villages (27.4 % and 13.9 %, respectively), while a reverse trend was found for immigrants from the FSU (19.9 % and 26.9 %, respectively). Moreover, the rate of parents' use of welfare services and the rate of parents with criminal convictions was far higher among care leavers from therapeutic youth villages than among those from educational youth villages (50.5 % and 8.5 % compared to 25.9 % and 4.4 %, respectively). These differences indicate that youths placed in therapeutic facilities come from relatively weaker family backgrounds than those placed in educational facilities.

5.5. Data analysis

Analyses were performed separately for educational and therapeutic youth villages (and their matched peers). In the *first stage*, we conducted a descriptive bivariate analysis to examine differences in secondary school EA and PSE enrollment between (1) study groups: care leavers versus matched comparison group, (2) gender, and (3) differences between study groups *within the same gender*.

In the *second stage*, we employed two multinomial logistic models (MNL) to predict secondary school EA. The reference category consisted of participants who received a quality matriculation certificate. These models included two steps. In the first step, we included the control variables (not shown in the tables) as detailed in the measurement section (participants' country of birth, mother's marital status, parents' use of welfare services, parent with a criminal conviction, time corresponding to year of end of high school [2000–2015]), study group (care leavers = 1), and gender (male = 1). In the second step, we added a two-way interaction term between study group and gender.

Next, we employed two binary logistic regressions to predict PSE enrollment. These models included two steps. In the first step, we included the control variables (not shown in the table), study group (care leavers = 1), gender (male = 1), and participants' secondary school EA. In the second step, we added a two-way interaction term between study group and gender. Due to the large sample size, the statistical significance of all analyses was set at $p < .001$. Significant levels shown in all models were corroborated by BIC analyses (Schwarz, 1978).

Table 1
Demographic and family background characteristics by study group, overall and by gender (%; $N = 76,257$).

	Educational youth villages						Therapeutic youth villages					
	Care leavers			Matched Peers			Care leavers			Matched Peers		
	Overall	Women	Men	Overall	Women	Men	Overall	Women	Men	Overall	Women	Men
N	21,654	9227	12,427	43,308	18,695	24,613	3765	1555	2210	7350	3125	4405
Demographic and family background (at age 12)[a]												
Country of birth												
Israel and others (ref.)	52.7	53.4	52.1	57.9	57.1	58.4	59.2	58.7	59.5	61.5	59.1	63.2
Ethiopia (= 1)	27.4	28.6	26.6	25.0	25.4	24.7	13.9	16.9	11.9	15.4	17.0	14.2
Former Soviet Union (= 1)	19.9	18.0	21.3	17.1	17.5	16.9	26.9	24.4	28.7	23.2	23.9	22.6
Mother's marital status (single = 1)	41.9	43.4	40.7	31.7	32.3	31.2	38.9	43.3	35.7	27.0	28.8	25.7
Parents' use of welfare services (= 1)	25.9	26.6	25.4	24.9	24.7	25.0	50.0	49.7	50.1	42.7	41.6	43.4
Parent with a criminal conviction (= 1)	4.4	5.0	4.0	3.6	3.4	3.7	8.5	10.6	7.0	5.4	5.2	5.6

[a] Matching indicators.

5.6. Ethics

The ethics committee of the second and third author's university approved the study and its procedures. In addition, the study was conducted according to the CBS requirements for merging the data file. The database on which the statistical analyses were performed contains no identifying data. All the statistical analyses reported here were performed within the facilities ("research room") of the CBS.

6. Findings

We first present bivariate analyses of secondary school EA and PSE enrollment rates by study group and gender. Next, we show the results of multivariate analyses predicting secondary school EA and predicting PSE enrollment. For each analysis the results are presented first for educational youth villages and then for the therapeutic youth villages.

6.1. Bivariate analyses

6.1.1. Secondary school EA and PSE enrollment

Educational youth villages. Table 2 presents bivariate analyses of secondary school EA and PSE enrollment rates by study group and gender among care leavers from educational youth villages and their matched peers. It shows *(1) Study group differences:* The proportion of care leavers from educational youth villages who did not qualify for a matriculation certificate was lower than that of their matched peers (49.7 % vs. 55.4 %). Care leavers were significantly more likely to earn a regular certificate than their peers (18.9 % vs. 9.9 %) and slightly less likely to achieve a quality matriculation certificate (32.2 % vs. 34.7 %). Additionally, care leavers were less likely than their matcher peers to enroll in PSE (23.7 % and 29.0 %, respectively). *(2) Overall gender differences:* Large gender differences were observed across all groups, with women outperforming men. In both study groups, the proportion of men without a matriculation certificate was higher than that of women (59.4 % vs. 47.5 %). Additionally, men were less likely than women to obtain a regular matriculation certificate (11.2 % vs. 14.5 %) and much less likely to achieve a quality matriculation certificate (29.4 % vs. 39.8 %). The rate of PSE enrollment was higher among women than men (35.7 % vs. 20.9 %).

Therapeutic youth villages. Table 3 presents bivariate analyses of secondary school EA and PSE enrollment rates by study group and gender among care leavers from therapeutic youth villages and their matched peers. It shows *(1) Study group differences*: Care leavers were slightly more likely than their matched peers to graduate without a matriculation certificate (62.2 % vs. 58.3 %). They were significantly more likely to earn a regular certificate (22.6 % vs. 11.4 %) but much less likely to attain a quality certificate (15.2 % vs. 32.3 %). Only 12.4 % of care leavers from therapeutic youth villages enrolled in PSE during the study period, compared to 23.8 % of their matched peers, a nearly twofold difference. *(2) Overall gender differences*: Large gender differences were found among all groups, with women outperforming men. The rate of men without a matriculation certificate, both care leavers and their matched peers, was far higher than that of women (65.3 % vs. 51.5 %). Additionally, men were far less likely to attain a quality matriculation certificate (21.3 % vs. 31.0 %). The PSE enrollment rate was almost twice as high among women than men (27.5 % vs. 14.4 %).

6.1.2. Study group differences within gender: Secondary school EA

Fig. 1 shows that care leavers from educational youth villages have better EA than those in therapeutic facilities. Among care leavers from educational and therapeutic youth villages and their matched peers, women have higher secondary school EA than men. Specifically, in educational settings (a) the gap in rates of not earning a matriculation certificate was larger for male care leavers compared to their same-sex matched peers (54.2 % vs. 62.0 %) than for female care leavers compared to their peers (43.6 % vs. 46.8 %), and (b) differences in earning a quality matriculation certificate were small for male care leavers compared to their matched peers, while female care leavers showed a slightly larger gap.

In therapeutic settings, female care leavers were much more likely to graduate without a matriculation certificate than their matched peers (60.2 % vs. 47.1 %) and far less likely to earn a quality certificate (16.7 % vs. 38.1 %). In contrast, male care leavers

Table 2
Educational youth villages: Secondary school EA and PSE enrollment by study group and gender.

	Gender		Study group					
	Female	Male	Care leavers			Matched Peers		
			Overall	Women	Men	Overall	Women	Men
Secondary School EA								
N	27,922	37,040	21,654	9227	12,427	43,308	18,695	24,613
Not entitled to a matriculation certificate	45.7	59.4	49.7	43.6	54.2	55.4	46.8	62.0
Entitled to a regular matriculation certificate	14.5	11.2	18.1	19.4	17.1	9.9	12.1	8.2
Entitled to a quality matriculation certificate	39.8	29.4	32.2	37.0	28.6	34.7	41.1	29.8
PSE Enrollment								
N	20,788	27,965	16, 251	6862	9389	32,502	13,926	18,576
Enrolled	35.7	20.9	23.7	31.7	17.8	29.0	37.6	22.5

Table 3
Therapeutic youth villages: Secondary school EA and PSE enrollment by study group and gender.

	Gender		Study group					
	Female	Male	Care leavers			Matched Peers		
			Overall	Women	Men	Overall	Women	Men
Secondary School EA								
N	4680	6615	3765	1555	2210	7350	3125	4405
Not entitled to a matriculation certificate	51.5	65.3	62.2	60.2	63.5	58.3	47.1	66.2
Entitled to a regular matriculation certificate	17.5	13.4	22.6	23.2	22.2	11.4	14.8	9.0
Entitled to a quality matriculation certificate	31.0	21.3	15.2	16.7	14.3	30.3	38.1	24.8
PSE Enrollment								
N	3388	4568	2652	1125	1527	5304	2263	3041
Enrolled	27.5	14.4	12.4	14.5	10.9	23.8	34.0	16.2

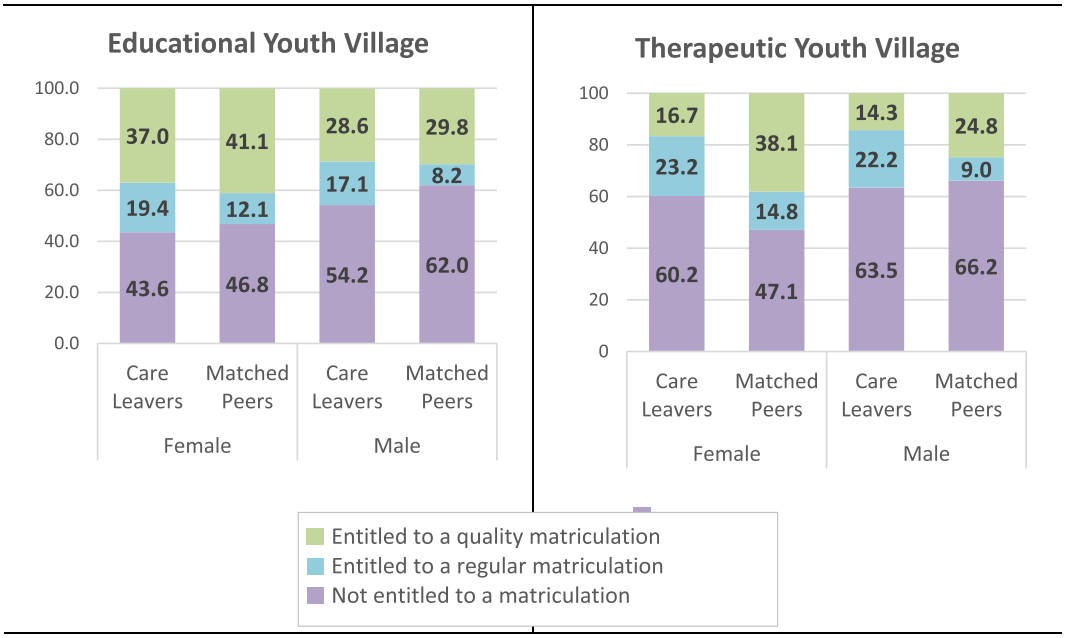

Fig. 1. Educational and therapeutic Youth Villages: Secondary school EA by gender and study group (%).

were slightly less likely than their matched peers to graduate without a matriculation certificate (63.5 % vs. 66.2 %), but, like their female counterparts, they were less likely to attain a quality certificate (14.3 % and 24.8 %, respectively).

6.1.3. Study group differences within gender: PSE enrollment

Fig. 2 shows that among care leavers from the educational setting, both men and women were less likely to enroll in PSE than their matched peers, with similar gaps: 31.7 % vs. 37.6 % for women and 17.8 % vs. 22.5 % for men.

In therapeutic youth villages, the gaps between care leavers and their matched peers were much wider for women (14.5 % among female care leavers vs. 34.0 % among matched peers) than for men (10.9 % among male care leavers vs. 16.2 % among matched peers).

6.2. Predicting secondary school EA

Table 4 shows the results for the MNL model predicting secondary school EA among care leavers from educational youth villages and their matched peers. Step 1 includes the main effects (study group, gender). In step 2, we added an interaction variable between *study group* and *gender*. Coefficients (standard error) and odds ratios (OR) are displayed for the predictors.

According to step 1, care leavers were less likely than their matched peers to graduate from secondary school without a matriculation certificate than to earn a quality certificate (OR = 0.87). However, they were more likely to obtain a regular certificate than a quality one (OR = 1.87). Thus, compared to their peers, care leavers were more likely to earn a certificate but a regular certificate that did not meet university entry requirements. Men were more likely than women to graduate without a matriculation certificate than to

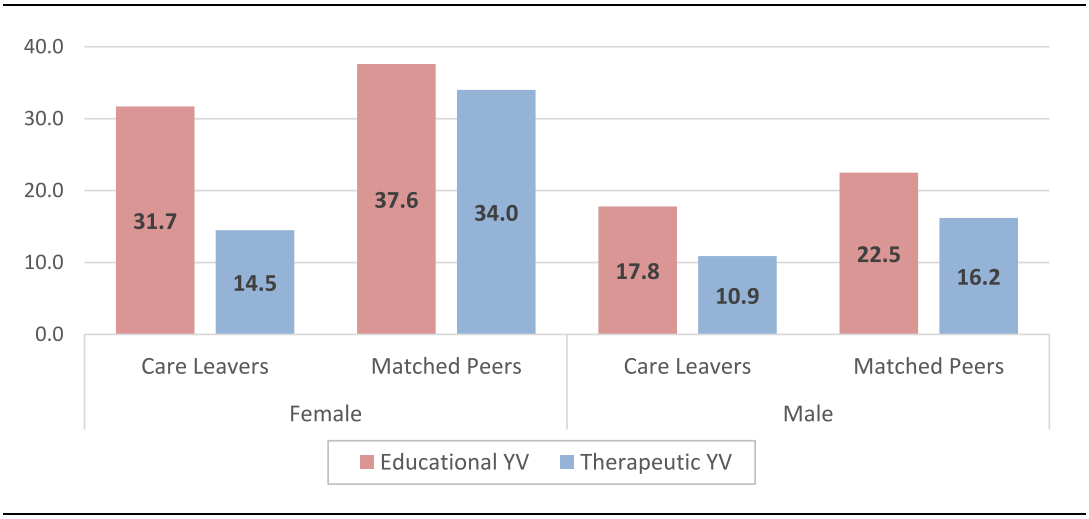

Fig. 2. Educational and therapeutic Youth Villages: Enrolled to PSE by gender and study group (%).

Table 4
Multinomial logistic regression: Prediction of secondary school EA among care leavers from educational youth villages and their matched peers, $N = 64{,}962$[a].

	Step 1[b]				Step 2[b]			
	Not entitled to a matriculation certificate N = 34,769		Entitled to a regular matriculation certificate N = 8196		Not entitled to a matriculation certificate *N* = 34,769		Entitled to a regular matriculation certificate *N* = 8196	
	53.5 %		12.6 %		53.5 %		12.6 %	
	B (SE)	OR	B (SE)	OR	B (SE)	OR	B (SE)	OR
Study group (care leavers = 1)	−0.14** (0.01)	0.87	0.63** (0.02)	1.87	−0.05 (0.03)	0.95	0.55** (0.03)	1.73
Gender (Male = 1)	0.59** (0.01)	1.81	0.05 (0.02)	1.04	0.64** (0.02)	1.90	−0.03 (0.03)	0.96
Gender*study group					−0.14** (0.03)	0.86	0.15** (0.05)	1.73
Intercept	−0.15** (0.02)		−1.33** (0.03)		−0.18** (0.02)		−1.29** (0.02)	
Pseudo R^2	0.124				0.135			

OR = odds ratio.
[a] Models control for family background and demographic factors as detailed in Table 1.
[b] Reference group consisted of 21,997 (34.0 %) participants eligible for a quality matriculation certificate.
** $p < .001$.

Table 5
Multinomial logistic regression: Prediction of secondary school EA among care leavers from therapeutic youth villages and their matched peers, $N = 11{,}295$[a].

	Step 1[b]				Step 2[b]			
	Not entitled to a matriculation certificate *N* = 6730		Entitled to a regular matriculation certificate *N* = 1708		Not entitled to a matriculation certificate N = 6730		Entitled to a regular matriculation certificate N = 1708	
	59.6 %		15.1 %		59.6 %		15.1 %	
	B (SE)	OR	B (SE)	OR	B (SE)	OR	B (SE)	OR
Study group (care leavers = 1)	0.64** (0.05)	1.89	1.29** (0.06)	3.64	0.97** (0.08)	2.64	1.22** (0.10)	3.40
Gender (Male = 1)	0.67** (0.04)	1.95	0.14** (0.06)	1.15	0.83** (0.05)	2.29	−0.01 (0.08)	0.98
Gender*study group					−0.58** (0.11)	0.55	0.12 (0.13)	1.13
Intercept	−0.20**(0.07)		−1.28** (0.09)		−0.29** (0.07)		−1.20** (0.09)	
Pseudo R^2	0.132				0.138			

OR = odds ratio.
[a] Models control for family background and demographic factors as detailed in Table 1.
[b] Reference group consisted of 2857 (25.3 %) participants eligible for a quality matriculation certificate.
** $p < .001$.

earn a quality certificate (OR = 1.81). That is, women were more likely than men to attain a quality certificate than to graduate without one. There were no significant gender differences in obtaining a regular certificate compared to a quality one. Step 2 reveals a statistically significant interaction between study group and gender with a complex pattern. First, the negative coefficient (b = −0.14; OR = 0.86) suggests that the decrease in the likelihood of graduating without a matriculation certificate compared to earning a quality certificate was greater for male care leavers than for female care leavers. Second, the effect of study group (i.e., treatment) on the likelihood of earning a regular certificate compared to a quality one was greater for male care leavers than female care leavers (OR = 1.73). Thus, while residential care was more beneficial for women in terms of attaining a quality certificate than for men, it was less helpful in reducing women's likelihood of graduating without a certificate.

Table 5 shows the results for the MNL model predicting secondary school EA among care leavers from therapeutic youth villages and their matched peers. Step 1 revealed that care leavers were significantly more likely than their matched peers to graduate without a matriculation certificate (OR = 1.89) or earn a regular certificate (OR = 3.64) rather than a quality certificate. Additionally, men were more likely than women to graduate without a matriculation certificate (OR = 1.95) or earn a regular certificate rather than a quality one (OR = 1.15). Step 2 shows that the interaction between study group and gender is statistically significant when comparing the likelihood of graduating without a matriculation certificate to attaining a quality certificate. The negative coefficient (b = −0.58; OR = 0.55) suggests that the decrease in the likelihood of not matriculating at all, relative to attaining a quality certificate, is greater for male care leavers than females, i.e., while care leavers were generally more likely to graduate without a certificate than to achieve a quality one, this trend was less pronounced for men. Residential care had a greater positive impact on reducing the likelihood of graduating without a certificate for male care leavers than their female counterparts.

6.3. Predicting PSE enrollment

Table 6 shows the results of a binary logistic model predicting PSE enrollment. Step 1 revealed that care leavers are less likely to enroll in PSE than their matched peers (OR = 0.69 in educational facilities and OR = 0.57 in therapeutic facilities). Additionally, men were significantly less likely than women to enroll in PSE (OR = 0.51 in educational facilities and OR = 0.52 in therapeutic facilities). As expected, earlier educational attainments were powerful predictors of PSE enrollment. Step 2 reveals that the interaction term between study group and gender is statistically significant only for therapeutic youth villages, indicating that while care leavers from therapeutic facilities were less likely to enroll in PSE, this association is weaker among male care leavers than female care leavers (OR = 1.59). Thus, in terms of PSE enrollment, female care leavers benefit less from residential care than men.

7. Discussion

Despite extensive knowledge about the educational outcomes of care leavers, little is known about these outcomes from a gender perspective. In this quasi-experimental study, we found disparities in educational outcomes, with care leavers falling short of their matched peers. In addition, we found a large gender gap, with women outperforming men. Furthermore, this is the first study to show that, in several cases, the study group effect (i.e., treatment) on educational outcomes varies by gender. By focusing on two types of residential facilities, our study also revealed the vulnerability of adolescents in therapeutic youth villages in terms of their educational outcomes, not only relative to their matched peers but also compared to care leavers from educational youth villages.

Table 6
Binary logistic regressions: Prediction of enrollment to PSE among care leavers their matched peers[a].

	Educational youth villages[b]				Therapeutic youth villages[c]			
	N = 48,753				*N* = 7956			
	Step 1		Step 2		Step 1		Step 2	
	B (SE)	OR	B (SE)	OR	B (SE)	OR	B (SE)	OR
Study group (care leavers = 1)	−0.37** (0.02)	0.69	−0.34** (0.03)	0.71	−0.55** (0.08)	0.57	−0.78** (0.11)	0.45
Gender (male = 1)	−0.65** (0.02)	0.51	−0.63** (0.03)	0.52	−0.65** (0.07)	0.52	−0.77** (0.08)	0.45
Secondary School EA								
Not entitled to a matriculation certificate (ref.)								
Entitled to a regular matriculation certificate (=1)	1.79** (0.03)	6.02	1.79** (0.03)	6.02	2.10** (0.10)	8.20	2.09** (0.10)	8.12
Entitled to a quality matriculation certificate (=1)	1.06** (0.03)	2.88	1.06** (0.03)	2.89	0.97** (0.08)	2.64	0.97** (0.08)	2.66
Gender*study group			−0.06 (0.05)	0.94			0.47** (0.15)	1.59
Intercept	−1.78** (0.03)		−1.79** (0.03)		−2.14** (0.09)		−2.08** (0.09)	
Pseudo R^2	0.414		0.414		0.423		0.434	

OR = odds ratio.
[a] Models control for family background and demographic as detailed in Table 1.
[b] Reference group consisted of 35,489 (72.7 %) participants who did not enroll.
[c] Reference group consisted of 6364 (80.0 %) participants who did not enroll.
** $p < .001$.

7.1. Educational outcomes among care leavers and their matched peers

We found disparities in secondary school EA and PSE enrollment between care leavers and their matched peers, particularly among those from therapeutic youth villages. While educational facilities are somewhat successful in helping care leavers achieve matriculation certificates, the proportion of those attaining quality certificates remains low at both types of facilities. Care leavers from therapeutic facilities face even greater challenges, with higher rates of graduating without any matriculation certificate and significantly lower odds of attaining quality certificates or enrolling in PSE. These trends held for both types of facilities when we controlled for demographic and pre-care family background.

Compared to studies that used matched or vulnerable comparison groups, we found relatively smaller disparities in educational outcomes between care leavers from educational facilities and their matched peers, particularly at the end of secondary school (e.g., Forsman & Brännström, 2023; Okpych & Courtney, 2021; Sinclair et al., 2020). PSE enrollment rates among care leavers from educational youth villages (23 %) are similar to those reported in the U.S. National Youth in Transition Database for youth with foster care history (enrolled at age 21; 22 %) and the CalYOUTH study (enrolled at age 21; 25 %; Okpych, 2024).

Care leavers from therapeutic facilities exhibit much larger disparities, similar to or exceeding previous findings (Harrison, 2020; Sinclair et al., 2020). Comparisons between studies should be made with caution due to differences in design, measurement, and measurement timing (i.e., age of participants). Nevertheless, rates of PSE enrollment among our care leavers from therapeutic facilities were similar to Harrison's (2020) (11.8 % and 12.4 %, respectively), whereas the corresponding rates among same-age peers from very low-income families in his study were 26.1 % and 23.8 % in our study. Young people in the comparison groups were more than twice as likely to be enrolled in higher education, and the results were consistent in both studies after controlling for demographics and earlier educational attainment.

7.2. A gender perspective on educational outcomes

Our findings revealed that women consistently outperformed men in educational outcomes across all groups. These patterns were further supported by the multivariate analysis, highlighting a robust gender gap favoring women in academic achievement and educational progress. The findings here echo those of cross-country studies among the general population, pointing in the same direction, with women closing previous gaps at all stages of education and in all fields (e.g., in math test scores while in school, enrollment in HE, and attaining a post-secondary degree; see Encinas-Martín & Cherian, 2023; Hermann & Kopasz, 2021; Stoet & Geary, 2020).

Focusing on the care leavers group, the findings here are also congruent with previous evidence, suggesting that female care leavers outperform male care leavers at all levels of education while in school (Brännström et al., 2020; O'Higgins et al., 2017), in PSE enrollment (Courtney & Hook, 2017; Geiger & Okpych, 2022; Okpych, 2024; Rosenberg & Kim, 2018; Watt & Kim, 2019), and in earning postsecondary degrees (Okpych & Courtney, 2021). Our findings are in line with Brännström et al. (2020), who demonstrated a gender gap (in favor of women) in the final year of compulsory school and midlife educational attainments among individuals with OHC experience and their same-age peers from the general population. Our findings also align with those of Harrison (2020), which indicated that both female care leavers and same-age women from a vulnerable comparison group were more likely than men to enter HE. A previous care leavers' study also demonstrated that female care leavers had higher HE aspirations than men (Zeira et al., 2019). A similar gender gap in aspiration was found among other vulnerable youths (Agger et al., 2018).

Focusing on within female disparities, our findings underscore significant challenges, particularly for women in therapeutic facilities. First, the educational outcomes of female care leavers from educational facilities were far better than those of their counterparts in therapeutic facilities. Second, female care leavers from both types of facilities were more likely than their same-sex matched peers to receive a regular matriculation certificate but significantly less likely to attain a quality certificate. This gap was particularly striking in therapeutic facilities, where it was twice as large or more than in educational facilities. Even more disturbing is the gap between female care leavers who completed 12 years of education without a matriculation certificate and their same-sex matched peers, which was five times higher in the therapeutic group than the educational group. Consequently, gaps in PSE enrollment between female care leavers and their female peers are much wider in therapeutic facilities than in educational facilities.

7.3. The interaction between study group and gender: secondary school EA and PSE enrollment

In educational facilities, gender differences between care leavers and their same-sex peers vary in magnitude. First, while female and male care leavers are less likely than their same-sex matched peers to graduate without a matriculation certificate, the difference is greater for men from the two study groups than for women. Second, compared to men, there is a smaller gap between female care leavers from educational facilities and their same-sex peers in terms of attaining a regular matriculation certificate but a larger gap in attaining a quality certificate. The MNL interaction model showed that the effect of study group varied by gender in a complex manner. Educational facilities are better at helping male care leavers avoid failing altogether, while they are more effective at supporting female care leavers in achieving a quality matriculation certificate.

For therapeutic facilities, the patterns showed notable differences, especially among women. Greater differences in secondary school EA were found between female care leavers and their same-sex matched peers than those found between men from the two study groups. The results from the MNL interaction model confirm these findings: regarding the probability of graduating without a certificate, men from therapeutic facilities benefit more from residential care than women.

This pattern may result from the particular life circumstances and difficulties that brought the women to therapeutic facilities in the

first place. Despite the better results of women in therapeutic facilities, the relatively large gap between them and their matched female peers suggests that other factors, not included here, shape their educational achievements. Finally, disparities in the PSE enrollment of care leavers from therapeutic facilities were much greater among women than men. In line with this finding, our MNL interaction model showed that therapeutic facilities are more successful in promoting men than women in terms of PSE enrollment.

8. Strengths and limitations

The current study has several strengths. Using data on 16 consecutive birth cohorts of care leavers and a matched comparison group, we employed a quasi-experimental design to explore educational disparities between care leavers and similar youth not in public care across genders. Most studies in this realm have not directly compared care leavers with similarly vulnerable youth who were not in public care. A notable exception is the work of Sinclair et al. (2020). Instead, researchers have typically used comparison groups drawn from the general population (e.g., Brännström et al., 2024) or youth from low-income families (e.g., Harrison, 2020). Employing a carefully matched comparison group provides a more accurate means of identifying differences in outcomes between care leavers and their similar peers.

Nevertheless, the study had several limitations. First, we had no information on PSE graduation and, therefore, could not determine the odds of care leavers dropping out or earning a degree compared to their matched peers or verify whether gender differences persisted. Second, as with many other administrative studies, we were limited to a specific set of available variables. Important information (e.g., parental physical and mental health, childhood health issues, pre-care educational achievements, and learning disabilities) was unavailable. Such information is important for improving the matching procedure's accuracy and predicting educational outcomes. Finally, our findings revealed substantial disparities between the two types of youth villages. Additional characteristics of the facilities (e.g., size, child-to-staff ratio, availability and type of academic assistance) may shape both in-care and post-care educational achievements. Unfortunately, due to ethical considerations and administrative reasons, such information was not available.

9. Conclusions and recommendations

Given the importance of education to a better future, we suggest that greater effort be made and more resources allocated to promote the academic performance of adolescents in youth villages. Education is a basic and central component in the mission of the youth villages (Zeira & Grupper, 2023), and despite the academic deficits of young people arriving at these facilities, they should be guided toward attaining a quality matriculation certificate. This goal can be achieved by implementing targeted educational support programs that encourage care leavers to enhance their academic achievements. Ideally, these programs should begin as early as possible to facilitate the gradual development of both cognitive and noncognitive skills. Early intervention allows care leavers to build foundational learning habits, such as effective study techniques, and fosters essential noncognitive skills, such as persistence, time management, and planning. By systematically addressing these areas over time, such programs can significantly improve care leavers' academic performance and long-term educational prospects. A quality matriculation certificate, a ticket to postsecondary education, is also a key determinant of care leavers' labor market integration and economic (e.g., Achdut et al., 2023; Achdut, Benbenishty, & Zeira, 2022; Gypen et al., 2022) and psychological (Sulimani-Aidan et al., 2022) well-being.

Additionally, only educational achievements upon leaving care that comprised a ticket to quality higher education were predictive of care leavers' general life satisfaction and domain-specific life satisfaction, including the domain of work/financial/housing (Achdut, Sulimani-Aidan, et al., 2022). Moreover, beyond their low secondary school attainments, care leavers face more barriers to pursuing PSE than their matched peers. Previous studies have indicated that such barriers include financial hardships, difficulty accessing information on financial aid for college, and a lack of access to college preparation and guidance (e.g., Harrison, 2020; Matheson, 2019). It has been well documented that more guidance in accessing PSE and substantial financial aid is needed to help care leavers move forward in the educational system. To address these multiple barriers, we recommend formal mentorship and counseling programs tailored to college preparation for care leavers (Okland & Oterholm, 2022; Sulimani-Aidan, 2022). These programs should focus on helping participants maximize their educational potential by setting goals, exploring PSE options, and identifying the best pathways to achieving their aspirations. Guidance on securing financial support, such as scholarships, grants, and other funding opportunities, and personalized assistance with the application process are critical. These targeted interventions can empower care leavers to navigate the complexities of higher education and improve their chances of academic and professional success. A system of ongoing support for care leavers after transitioning out of residential facilities could mitigate disparities.

Our findings demonstrate the severe vulnerability of adolescents in therapeutic youth villages in terms of their family backgrounds and educational achievements. These youths face significant personal challenges, emotional and behavioral, and we can assume that the pre-care experiences that brought them to therapeutic facilities in the first place affect their educational progress while in care and later. It is reasonable to assume that when they were placed, they were characterized by relatively wide educational gaps that could not be fully bridged. Without data on pre-care educational achievement, we cannot directly address this question, but our results suggest that this is the case. Their initial educational gaps and academic difficulties during care must be fully addressed, and a major effort must be made during care and afterward. Given the length of time these adolescents spend in care—from four to six years— this mission may be achievable. The task is not limited to closing the gap between care leavers and their matched peers but entails improving the educational outcomes of adolescents from vulnerable backgrounds. As the demand for low-skilled workers declines and the demand for higher education in the labor market rises, the earning prospects of young people with secondary education are extremely limited, as are their odds of escaping socioeconomic marginality and breaking the cycle of poverty.

That said, it is clear that despite in-care academic support, many care leavers will still struggle to attain a quality matriculation certificate. Even among those who do, many may lack interest in pursuing PSE or feel unprepared or unable to commit to such a long-term endeavor. Additionally, some care leavers may face challenges in gaining acceptance into their desired fields of study and abandon their educational aspirations. Alternative pathways should be offered to these care leavers within a unified program. Such a program could focus on creating networks that connect care leavers to vocational training opportunities and job placement. Subsidized participation in vocational training alongside academic and financial support during studies, job search assistance, and more careful employment placement are needed to help these vulnerable young people. By providing access to practical skills development and direct employment pathways, these alternatives can empower care leavers to build stable and fulfilling careers, even if PSE is not a feasible route or their chosen path.

Our findings point to a gender gap in educational outcomes across the two study groups and in both residential settings, but the differences between care leavers and their same-sex matched peers suggest that in several cases, the study group effect varies by gender. We revealed that male care leavers from both educational and therapeutic facilities are more protected than their female counterparts from graduating without a certificate. Furthermore, male care leavers from educational facilities are less likely than women to be guided toward a quality matriculation certificate. Male adolescents may arrive at educational facilities with a wider educational gap than women. They may also be less cooperative when receiving academic assistance and support during care. Moreover, in-care practices and educational expectations may differ for men and women depending on the intensity of other needs (e.g., behavioral problems) and their accompanying challenges. In any case, in-care practices of encouraging men to acquire a regular matriculation certificate should be reconsidered.

Finally, therapeutic facilities seem to be more successful in encouraging men than women to enroll in PSE. Nevertheless, the enrollment rates of both genders are extremely low among care leavers compared with their matched peers. Therefore, more efforts should be made to understand the reasons for this trend and enable better access to PSE. We recommend that future studies include interviews with care leavers who completed higher education to explore the support they received, identify any gaps in assistance, and determine the barriers that other care leavers may face in pursuing PSE. Such studies could provide deeper insights into the gender disparities observed in our research, highlighting the factors that contribute to these differences and how they may be addressed.

CRediT authorship contribution statement

Netta Achdut: Writing – original draft, Methodology, Formal analysis, Conceptualization. **Rami Benbenishty:** Writing – review & editing, Conceptualization. **Anat Zeira:** Writing – review & editing, Supervision.

Declaration of competing interest

None.

Data availability

The data that has been used is confidential.

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