



Couple partnership and divorce in domestic and non-European international adoptees. A Swedish national cohort study with follow up until 36 to 45 years

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ABSTRACT

Adoption research shows a growing interest in adopted persons in their adult years. This article examines couple partnerships and divorce among adult adoptees and non-adoptees. Using population-based Swedish register data with follow-up until age 36–45 years, domestic and international adoptees were compared with the general population, as well as with immigrants who settled in Sweden in their early years and share with international adoptees a non-European physical appearance. Given their preadoption adversities and associated increased mental health problems, as well as postadoption experiences of perceived discrimination, adoptees were expected to have more problems in the formation and breakdown of partner relationships, particularly in the case of international adoptees. The study used data from national registers on Swedish national cohorts born 1972–83, including two study groups with a non-European origin who settled in Sweden at age 0–8 years (14,761 international adoptees and 11,085 immigrants) as well as 906 domestic adoptees and 936,988 Swedish born with a Swedish-born mother from the general population. In contrast with international adoptees, who have a 14 % lower adjusted rate of couple compared with the general population, domestic adoptees were more like the Swedish general population in terms of couple partnership formation. However, in terms of divorce, domestic and international adoptees share a significantly higher incidence than the general population and the immigrants study groups. Both in the formation and breakdown of couple relationships, international adopted men present less favorable outcomes than international adopted women. Further research is needed to elucidate the reasons behind these patterns.

1. Introduction

Adoption research is growing with adoptees. For a long time, this research focused mainly on the childhood and adolescent years, as attested in the review by Palacios and Brodzinsky (2010). But the baby boomers of international adoption in the last decades of the 20th century are reaching adulthood, opening new venues for adoption research. So far, that research has been mostly concerned with adoption-related issues, such as contact with the family of origin (Cashen et al., 2021), with incipient interest in the experience of parenting in adopted persons (Perez, Sala & Ortega, 2015; Despax et al., 2021). Instead of the

convenience samples of some of these studies, the present article uses the population data allowed by the Swedish registers. Furthermore, our focus is not on tasks that are specific to adoption, but common to the adult population: relationship formation (marriage and cohabitation) and divorce. The data analyzed include domestic and international adoptees. The inclusion, in addition, of non-adoptees with physical traits different from those of the general population (immigrants), attempts to untangle factors linked to adoption from those related to differences in appearance associated with origin.

Researchers from diverse fields, including sociology and life sciences, have described a phenomenon known as homogamy by virtue of which

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humans typically mate with those resembling themselves (Versluys et al., 2021). Although this principle could be expected to be valid across class and ethnic lines, particularly in open and diverse modern societies, research has identified several gaps showing this not to be always the case. For example, in the United States lower rates of marriage have been reported for those with lower education (educational gap) as well as for members of minority populations (Parker & Stepler, 2017). A more equalitarian society like Sweden seems to be no exception, since country of birth has also been found to be a boundary in the native marriage market: while educational and age homogamy are more characteristic of native-native marriages, Swedes with lower economic and demographic characteristics (e.g., older adults) are more open to marry non-Swedes (Elwert, 2020), an ethnic gap suggesting more difficulties for the non-Swedes to mate with members of the majority Swedish population. When native Swedes mate with foreign-born, there seems to be a preference for partners from Europe and other Western countries, while those from Asian and Latin American countries, and, even more strongly, from African and the Middle Eastern countries are the less preferred (Elwert, 2020, Osanami Törngren et al., 2018). All this probably also applies to cohabitating couples with different cultural backgrounds and/or racial physical traits, as several characteristics of the experiences with partners have been reported to be similar in married and cohabitating couples (Hohmann-Marriott & Amato, 2008). While this gap should not affect either domestic adoptees who mate with people born in Sweden like themselves, or immigrants who have the option of mating also with people of a similar cultural background, it could affect international adoptees in their chances to mate with native Swedes.

If marriages between majority and minority members are more difficult to form, they also seem to be more at risk of breakdown, since, in the general population, they are 40 % (Smith et al., 2012) or 50 % (Kreider, 2000) more likely to divorce than endogamous couples. Research has identified a gender gap whereby couples with the husband from a minority group are more vulnerable, with a 59 % higher risk of divorce compared with other couples (Bratter & King, 2008). In the Netherlands, Smith et al. (2012) interpreted the higher divorce propensity between immigrants and natives in terms of homogamy, since differences in national origin relate to different preferences, norms and values, leading to a less satisfying marriage. In fact, research has shown that while being in a marriage between a majority and a minority member increases the odds of divorce, it is less important as predictor than other variables such as educational status, age or religiosity (Kreider, 2000). Among couples with different sociocultural backgrounds, acculturation in a similar context may decrease cultural barriers and dissimilarities leading to relationships dissatisfaction (Uhlich et al., 2021). In the case of international adoptees, the country of rearing (in our case, Sweden) is probably the same as the country of those they marry or cohabit with (their Swedish partners). Our study may help clarify whether the gap in partnership formation described in previous research in relation to people originally educated in different countries also applies to couples who have grown up in the same country and have been educated in the same culture but have diverse racial physical traits.

Physical appearance is not the only factor at play in the comparisons between adoptees and the general population. In the case of Swedish domestic adoptees, according to Vinnerljung and Hjern (2011), 36 % of birth mothers and 25 % of birth fathers had indications of either psychiatric illness or substance abuse, the same being true for only 7 % and 9 %, respectively, in the general population. Even if they grew up in well-off families, the percentage of adoptees with very low grades from primary school or on any social welfare at age 25 was twice as high as in the general population, showing the long-term impact of early adversity. Although detailed information about the pre-adoption circumstances is lacking in the case of international adoptees, most of them experienced neglect and institutional care, with negative impact on their physical, intellectual and socioemotional development not only at the time of placement, but in some domains and for some individuals also in their adult years (van IJzendoorn et al., 2020).

Besides pre-adoption adversities and their long-term impact, post-adoption circumstances may add complexity to how adopted persons appraise their adoptive identity and experience social and emotional relationships (Brodzinsky et al., 2021). Even if most Swedes hold anti-racist opinions, research indicates that non-white persons growing up and living in Sweden are rarely seen and treated as being “fully Swedish” and are less preferred as long-term relationship partners (Osanami Törngren et al., 2018). Several studies have reported that international adoptees in Sweden experience repeated discrimination and racialization (Hubinette and Tigervall, 2009) and are confronted with recurring degrading attitudes addressed to a group they do not identify with (migrants) (Lindblad & Signell, 2008). Similar results have been reported from several other Western countries; Denmark (Henze-Pedersen & Fuglsang-Olsen, 2017), Norway (Riley-Behringer et al., 2014), Finland (Koskinen et al., 2015), Italy (Ferrari et al., 2017a), (Ferrari et al., 2021) and the US (Lee et al., 2015; Arnold et al., 2016). Moreover, international and domestic adoptees alike may experience explicit and implicit microaggressions which can undermine their psychological adjustment and the development of a well-integrated and healthy sense of self, such as being questioned about their “real mother” or watching media portraits of adoption as problematic (Baden, 2015, Brodzinsky et al., 2021). Of interest for our purposes in this article is the fact that perceived discrimination and social identity threats can have detrimental effects on the romantic relationships of members of devalued groups, with negative implications for family stability among members of stigmatized groups (Doyle & Molix, 2014a, 2014b).

Research evidence regarding the impact of all previous circumstances on partnership formation and stability in adult adoptees is still scarce. In a Dutch study comparing social functioning of 24- to 30-year-old international adoptees to that of non-adoptees, the former were less likely to forge intimate relationships, live with a romantic partner and be married (Tiemann et al., 2006), a tendency also reported for Swedish international adoptees in a similar age range born outside Northern Europe (Lindblad et al., 2003, Rooth, 2002). At least in the case of young adult (mean age, 30 years) adoptees from Korea into various Western countries, adopted men expressed more difficulty in finding a partner and were more likely to be single than their female adopted peers (Dijkstra et al., 2011).

With the recognition of important methodological shortcomings (e.g., purposive sampling) in the reviewed studies, a systematic review of the evidence about the nature and quality of adult adoptees’ intimate relationships with their partners and children reported that, for some individuals, complexities of attachment, experiences of separation and loss, anxiety, and ambivalence may have a negative influence on their relationships with partners and experiences of parenting across the lifespan (Field & Pond, 2018). This conclusion contrasts with evidence from other studies indicating no differences between adopted and nonadopted adults regarding dyadic adjustment and relationship commitment (Despax et al., 2020), and with the fact that attachment quality was more predictive of relationships attitudes and functioning than adoptive status per se (Feeney et al., 2007). So far, scientific evidence seems inconclusive.

Previous Swedish register studies of international adoptees have described increased risks of depression (Hjern et al., 2018), psychotic disorders (Hjern et al., 2021) and suicidal behavior (Hjern et al., 2020) in adult age. Increased risks of suicidal behavior (von Borczyskowski et al., 2006) and use of psychotropic drugs (Vinnerljung & Hjern, 2014) have also been found in domestic adoptees in Sweden in adulthood, associated with high rates of mental health problems in their birth parents. This increased burden of mental health problems may also influence the formation of partnerships, since a review by Braithwaite and Holt-Lunstad (2017) has demonstrated evidence indicating that mental health problems can impair the establishment of partnership relations, and furthermore that aloneness can increase the risk of depression and suicide.

During large parts of the 1970’s and early 1980’s Sweden had the

highest per capita reception of international adoptees (Kane, 1993), as well as one of the most generous immigrant policies in Europe. In this study we exploited this window of opportunity to study the establishment and maintenance of couple relationships in the comprehensive Swedish high-quality national registers (Rosen, 2002). Although our particular interest in this study is adopted adults, non-European immigrants settled in Sweden in their early years serve as a comparison group, since they share with persons adopted from outside Europe (the vast majority of international adoptions in Sweden) their non-white physical appearance. Comparisons between international adoptees and immigrants are relatively common in adoption literature (e.g. Lee et al., 2010; Arnold et al., 2016; Ferrari et al., 2017b).

For non-European immigrants, Swedish research has documented elevated levels of first marriage formation (particularly those from Africa, Middle East and South Asia), as well as high rates of divorce and remarriage (Andersson et al., 2015). The authors interpret that the stress associated with the migration act and the exposure to new gender and social norms may be responsible for the elevated divorce risks in some groups of immigrants.

In view of the evidence described above, we hypothesise that the incidence of difficulties in establishing and maintaining couple relationships among adults with a history of adoption, particularly those from international adoption with a non-European physical appearance, should be higher than in the general population. Domestic adoptees are expected to be more similar to the general population in establishing partner relationships, since they are similar in physical appearance, although their exposure to preadoption adversities, their increased burden of mental health problems and their perceived discriminations not experienced by nonadopted majority adults may have a negative impact on their relationships with partners.

2. Method

This study was based on information from the Swedish national registers, linked through the unique personal identity number assigned to all Swedish residents at birth (or time of immigration). The linkage for this study was made by Statistics Sweden, a national state-funded government agency that produces official statistics and prepares register data for researchers. Before the data were made accessible for this research project, they were anonymized by replacing the personal IDs with random numbers and re-categorizing variables that may be used to identify individuals in the dataset, like date of birth and country of origin, into broad categories. Because of the anonymization and the large study population, obtaining informed consent was not possible. However, Swedish legislation makes it possible to access anonymized data from national registers for research under certain conditions, one being the approval of an approved ethics committee. This study was approved by the regional ethics committee in Stockholm region (No. 2014/415–31/5).

2.1. Study groups

The study population was comprised of individuals born 1972–1983 who, according to the Register of the Total Population (Ludvigsson et al., 2016) were alive and residents in Sweden on the 31st of December 2017, had at least one adoptive or birth parent registered in the Multi-Generation Register (Ekblom, 2011) and no register record of emigration from Sweden. The age range of the study population was then 34–45 years.

Information about calendar year of residency/adoption and continent of birth was retrieved from the Register of the Total Population. Based on this information we created four study groups. *Non-European international adoptees* ($n = 14,761$) fulfilled the criteria of being born outside of Europe, having at least one Swedish-born adoptive parent and no birth parent in the Multi-Generation Register, and a recorded age of adoption, based on immigration records, of 0 to 8 years. *Non-European*

immigrants ($n = 11,085$) were born in Asia, Africa or Latin America and had immigrated in Sweden at age 0–8 years and had no adoptive parent or Swedish-born parent in the Multi-Generation Register. Considering Swedish migration history, we have reason to believe that the large majority of the immigrant children had been granted residency in Sweden as refugees or children of refugees. *Domestic adoptees* ($n = 906$) had two registered adoptive parents (so that step parent adoptions were excluded), an age of less than 8 years when taken into out of home care and had spent less than five years in foster care before being adopted, according to the National Child Welfare Register. The exact age at adoption was not available in the registers. Finally, the general population consisted of all Swedish-born with a Swedish-born birth mother, but no adoptive mother, in the same birth cohorts ($n = 936,988$).

2.2. Outcomes

We used two different register sources to create two outcome variables for both men and women: (1) marriage and cohabiting partnerships and (2) divorce. Firstly, we retrieved data on marriage from the Register of the Total Population (Ludvigsson et al., 2016) from 1990 until 2017. From 1990 to 2008, marriage in Sweden included heterosexual partnerships only, but from 2009 same-sex partnerships were also included. Since cohabitation without marriage has become a very common choice for long-term partnerships in Sweden (Andersson et al., 2015), we complemented this information with variables on cohabiting relations from the National Dwelling Register in 2011–2017. This register is a comparatively new data source, nationally complete from 2011 onwards, which connects all Swedish residents with the apartment or house where they have their registered domicile. Based on both these data sources, we created a summarised outcome variable (marriage and cohabiting partnership), defined as ever having been married and/or having had at least one cohabiting partnership in 2011–2017. Divorce was defined as having been married at least once during 1990–2016, but not having a register record of being married in 2017.

2.3. Socioeconomic and educational covariates

Gender, single parent household, and annual disposable household income were retrieved from the Longitudinal Integration Database for Health Insurance and Labour Market Studies (Ludvigsson et al., 2019) in the year of the 17th birthday for the birth cohorts 1973–1983 and the 18th birthday for those born 1972. Disposable household income was calculated by Statistics Sweden with an algorithm that includes all taxable income in the household deducted by paid taxes divided by consumer units and was further divided into quintiles by annual birth cohort of the entire study population. Highest completed education, employment and chronic illness and disability benefits were retrieved from this same database in 2017.

2.4. Analytical strategy

We used Cox regression analysis with a constant time variable to estimate relative risk ratios (RR) as our main statistical method in this study. This method approximates a correct risk ratio (Barros & Hirakata, 2003, Skov et al., 1998).

The analysis had a hierarchical strategy where firstly men and women were analyzed together in relation to the two outcome variables (1) marriage and cohabiting partnerships, and (2) divorce after marriage. In this analysis we used two consecutive Cox regression models. Model 1 was adjusted only for year of birth (in four categories) and gender. In Model 2 we added household disposable income in quintiles at age 17, single parent household in 2017 and own education in 2017. The analysis of divorce was only made in those who were recorded to have been married at least once during 1990–2016, and to this analysis the time in years between the first recorded marriage and 2017 was added to Model 2 to adjust for the increase in risk of divorce over time

Table 1
Sociodemographic characteristics of the study population.

	International Adoptees		Domestic adoptees		Immigrants		Gen pop	
	N	%	N	%	N	%	N	%
Gender								
Male	6164	41.8	620	54.2	5763	52.0	482 006	51.2
Female	8597	58.2	512	45.8	5322	48.0	454 982	48.8
Year of birth								
1972–75	4496	30.5	606	53.1	2152	19.4	344 071	36.7
1976–79	5067	34.3	313	28.2	2674	24.1	299 165	31.9
1980–83	5198	35.2	212	18.7	6258	56.5	293 662	31.3
Region of origin								
Asia	10 255	69.6	–	–	7349	67.1	–	–
Latin America	3395	23.0	–	–	3034	26.6	–	–
Africa	384	2.6	–	–	697	6.3	–	–
Age at adoption/immigration								
0 year	5871	39.8	–	–	290	2.6	–	–
1 year	5262	35.6	–	–	662	6.0	–	–
2–3 years	2252	15.3	–	–	1846	16.7	–	–
4–8 years	1376	9.3	–	–	8287	74.8	–	–
Single parent household at age 17								
yes	2177	14.7	120	10.6	3390	30.6	183 617	19.6
Disposable income of family at age 17 (Quintiles)								
1 (Low)	1434	9.7	147	13.0	5513	49.8	153 295	16.4
2	2018	13.7	152	13.4	2750	24.8	189 227	20.2
3	2694	18.3	205	18.1	1431	12.9	197 625	21.1
4	3578	24.2	241	21.3	856	7.7	199 641	21.3
5 (High)	5037	34.1	387	34.2	530	4.9	197 036	21.0
Own educational level in 2017								
0–9 years	1318	8.9	140	12.4	1376	12.4	65 565	7.1
10–12 years	1497	10.1	210	18.6	1326	12.0	10 3087	11.0
13–14 years	7257	49.2	515	45.5	4984	45.0	420 000	44.8
15 years	4689	31.8	267	23.6	3399	30.7	348 246	37.1
Employed in 2017								
yes	12 502	84.7	947	83.7	9404	84.8	863 717	92.2
Chronic illness and/or disability benefits received in 2017								
yes	1057	7.1	84	10.2	399	3.6	30 327	3.2
Total	14 761	100	1132	100	11 080	7270	936 898	100

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Table 2
Percentage of family indicators by study group and gender.

	Men				Women			
	Int'l Adoptees	Domestic adoptees	Immigrants	Gen Pop	Int'l Adoptees	Domestic adoptees	Immigrants	Gen Pop
	N=	N=	N=	N=	N=	N=	N=	N=
	6164	620	5763	482 006	8597	512	5322	454 892
Ever married	33.4	46.1	45.5	48.8	51.5	49.4	60.7	56.8
Divorced, if married	22.6	25.2	21.7	13.9	23.0	27.8	27.4	16.4
Any partnership between 2011 and 2017	61.9	70.3	68.6	78.9	73.2	72.9	73.3	83.6
Any partnership and/or marriage	64.1	73.5	74.1	80.7	77.1	77.7	78.8	86.5

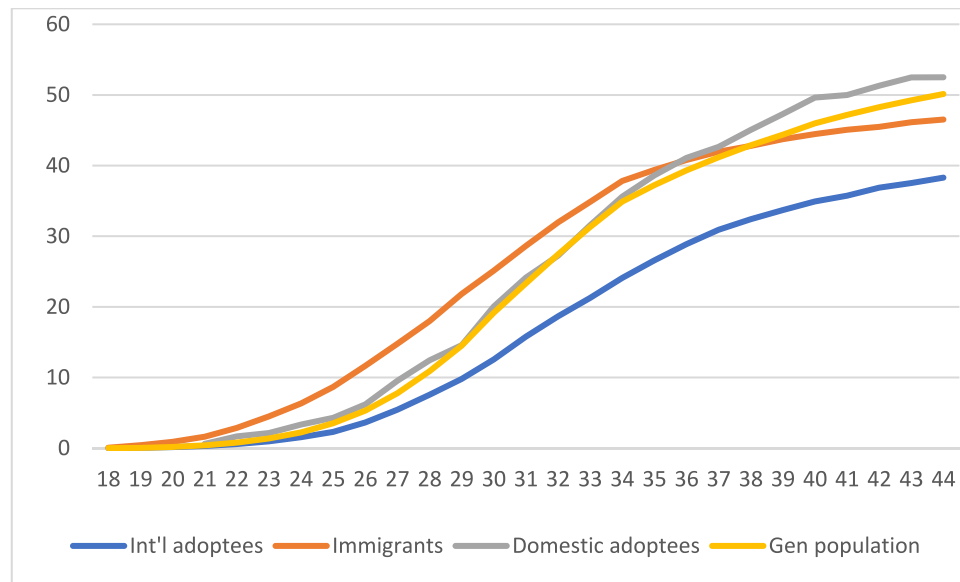


Fig. 1. Cumulative percentage of first marriage by age (years). Males. *To be published in color.*

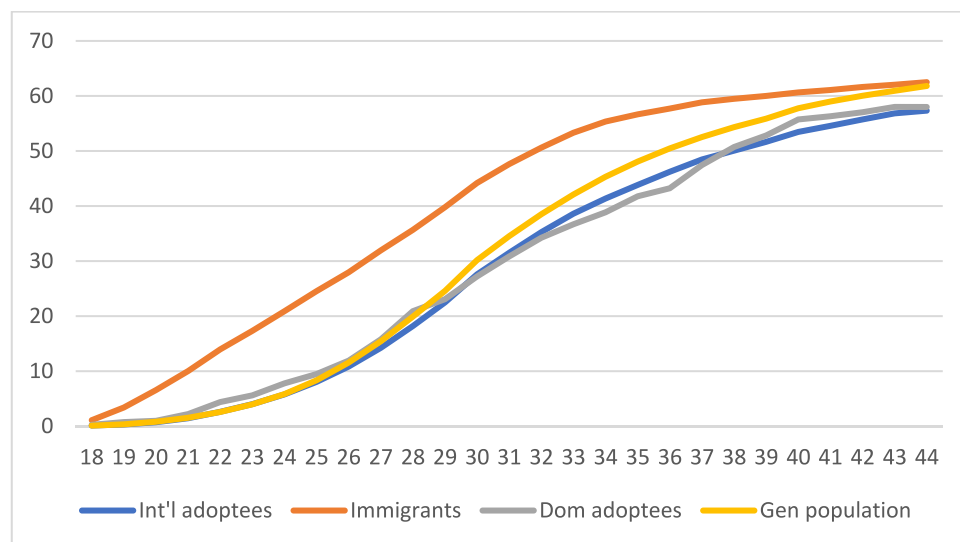


Fig. 2. Cumulative percentage of first marriage by age (years). Females. *To be published in color.*

after marriage.

Secondly, we performed gender interaction analyses for both outcomes and all four study groups. When statistically significant gender differences at the $p < 0.05$ level were identified, gender stratified analyses were performed to calculate gender specific estimates for the study

groups where interactions were identified.

Thirdly, we made within-group analyses within the international adoptee and immigrant study group, with the addition of age at adoption/immigration and continent of origin to the variables included in Model 2 in the analysis of the entire study population. In the non-

Table 3
Origin of partners (born 1972–1986) to those who were cohabiting in 2017 in the birth cohorts 1977–1981.

	Int'l Adoptees		Immigrants		Domestic adoptees		Swedish general population	
	Male N = 1227 %	Female N = 1847 %	Male N = 1018 %	Female N = 942 %	Male N = 123 %	Female N = 142 %	Male N = 123 150 %	Female N = 115 798 %
Swedish	85.5	87.2	35.9	38.8	86.0	86.0	88.3	89.6
European	2.4	1.4	27.4	25.8	2.5	2.8	1.4	1.4
Non-European	1.1	2.7	22.6	24.1	2.3	3.5	2.3	1.6
Sec gen	8.2	6.8	13.2	10.6	7.5	5.6	6.6	6.6
Int'l Adoptee	2.8	1.9	0.9	0.7	1.7	2.1	1.4	0.8
Age in 2017	37.8	39.1	37.6	38.6	38.2	38.0	38	39.2
Age_partner	35.2	37.9	34.6	37.5	36.2	39.0	36.1	37.9

European international adoptees, the age at adoption categories were 0 years, 1 year, 2–3 years and 4–8 years, while in the immigrants it was dichotomised into 0–3 and 4–8 years. Country of origin was categorized into Asia, Latin America or Africa.

Fourthly, we made a sensitivity analysis to account for the increased burden of mental health problems in the adoptee study groups. This analysis was restricted to those who were employed in 2017 and thus active on the labour market and had no record of being a recipient of a societal benefit because of a disability or chronic illness that year. We assumed that this selected population would exclude most individuals with chronic mental health problems, since previous studies have shown that mental health problems is the main reason for receiving such benefits, affecting 82 % in the age 36–45 years that receive such benefits (Ishtiak-Ahmed et al., 2014), and that the burden of mental health problems is high also in other adults who are not active on the labor market (Bäckman & Franzén, 2007; Gariepy et al., 2021). Statistical analysis was conducted using SPSS (IBM SPSS Statistics version 27.0, [SPSS, Inc., IBM Corp., Armonk, NY, USA]).

3. Results

Descriptive socio-demographic information about the four study groups is presented in Table 1. There were more women, 59.3 %, than

men in the international adoptee group, while the opposite was true for immigrants, 52.1 % men. The levels of disposable income were highest in the adoptee groups and lowest among the immigrants. The rate of single parent household at age 17 was lowest for international and domestic adoptees, 14.7 % and 10.6 % respectively, compared with 19.6 % in the general population and 30.6 % in the immigrant study group. Asia was the most common origin of the international adoptees, while the immigrants mostly originated from both Asia and Latin America. Among the international adoptees, 40 % were adopted during their first year of life, and another 36 % during their second year. The adoptee study groups had the highest rates of being recipients of a societal benefit because of a disability or chronic illness, 10.2 % for the domestic and 7.1 % for the international adoptees, compared with 3.2 % in the general population.

Table 2 presents the percentage of the outcome variables by study group and gender. Women generally had higher percentages of marriage and cohabiting partnerships than men. As Fig. 1 demonstrates, male international adoptees had the lowest marriage rates among the men, 33.4 % compared with 48.8 % in the general population (Table 2), while marriage rates were more similar between study groups for the women (Fig. 2), ranging from 49.4 % among domestic adoptees to 60.7 % for the female immigrants (Table 2).

There were altogether 86.5 % of the women and 80.7 % of the men

Table 4
Family indicators in 2017 by covariates.

	Men				Women			
	All		Married		All		Married	
	Total N	Married or cohabiting %	Total	Divorced	Total N	Married/ cohabiting %	Divorced if married N	Divorced if married %
Study group								
International Adoptees	6164	64.1	1925	22.6	8597	77.1	4291	77.1
Swedish adoptees	620	73.5	286	21.7	512	78.8	259	77.7
Immigrants	5763	72.2	2652	23.2	5322	80.1	3252	80.1
Swedish-born	482 006	80.7	236 192	13.9	454 892	86.5	259 082	86.5
Year of birth								
1972–1975	46 074	82.3	102 438	16.7	43 917	86.7	108 571	19.4
1976–1979	45 186	81.1	78 345	13.4	43 232	83.8	86 715	15.8
1980–1983	45 833	77.5	60 272	10.8	43 447	75.4	71 598	13.5
Completed education in 2017 (years)								
0–9	36 303	65.7	15 282	25.1	20 022	71.5	9 927	35.5
10–12	59 884	78.2	30 792	21.3	37 472	84.5	21 802	27.8
13–14	201 560	80.8	113 987	14.6	157 075	81.8	100 367	19.0
15+	118 793	85.1	80 994	8.6	181 602	83.3	134 788	11.7
Single parent household at age 17 years								
yes	608 90	76.2	40 035	17.9	119 326	82.8	48 692	22.1
Family disposable income at age 17 years (Quintiles)								
1 (Low)	608 90	79.1	35 758	17.6	119 326	90.2	45 136	21.4
2	70 918	80.4	45 907	15.5	123 288	89.4	51 968	18.3
3	103 918	81.4	49 776	14.2	90 899	82.7	54 686	16.2
4	125 843	82.6	52 934	13.1	71 684	71.2	56 387	14.9
5 (High)	133 347	80.4	56 680	11.8	64 508	65.2	58 707	13.6
Total	494 916	80.4	241 055	14.1	469 705	86.2	266 884	16.6

Table 5

Relative risk of having or having had a long term partnership (at age 34–45 years).

	N	Incidence (%)	Model 1 RR (95% C.I.) ¹	Model 2 RR (95% C.I.) ²
Study group				
Int'l adoptees	14 761	71.7	0.86 (0.84–0.87)	0.86 (0.84–0.88)
Domestic adoptees	1132	75.4	0.90 (0.85–0.97)	0.92 (0.86–0.98)
Immigrants	11 085	76.0	0.91 (0.89–0.93)	0.93 (0.91–0.95)
Swedish-born	936 898	83.5	1	1
Gender				
Men	494 553	80.4	1	1
Women	469 413	86.2	1.07 (1.07–1.08)	1.06 (1.05–1.06)
Year of birth				
1972–75	84.5		1.04 (1.04–1.05)	1.05 (1.04–1.05)
1976–79	84.0		1.03 (1.03–1.04)	1.03 (1.03–1.04)
1980–83	81.1		1	
Education				
0–9 years	68 500	63.1	–	0.78 (0.77–0.79)
10–12 years	10 6260	75.9	–	0.92 (0.91–0.92)
13–14 years	433 116	80.7	–	0.96 (0.95–0.96)
15 + years	356 745	86.0	–	1
Family disposable income at age 17 years (Quintiles)				
1 (Low)	160 389	78.8	–	0.99 (0.98–0.99)
2	194 147	81.7	–	0.99 (0.99–1.00)
3	201 955	84.6	–	1.00 (0.99–1.00)
4	204 316	85.1	–	1.00 (0.99–1.01)
5 (High)	202 990	86.5	–	1
Single parent household at age 17 years				
yes	189 304	79.5	–	0.96 (0.96–0.97)

¹ Model adjusted for gender and year of birth.² Model adjusted for year of birth, gender, family income at age 17, single parent household at age 17.

who had ever had a marriage and cohabiting partnership. Male international adoptees had the lowest percentage, 64.1 %, compared with 80.7 % for men in the general population, and again the percentages between study groups were more similar among women, ranging from 77.1 % in the female international adoptees to 86.5 % in women in the general population.

Divorce was analyzed only for those married, since our register source did not allow for an analysis of separation in those cohabiting without being married. Divorce was recorded for 13.9 % of the ever-married men and 16.4 % of the ever-married women in the study population. The percentages were considerably higher in the two adoptee study groups and the immigrants compared with the general population (Table 2).

As demonstrated in Table 3, the partners of the international and domestic adoptees had an origin like the general population, with 86–89 % of partners of these study groups being Swedish-born with Swedish-born mothers. The partners of the immigrants had a radically different pattern of origin, with about half being foreign-born.

The percentages of the two main indicators in the study, marriage/cohabiting partnerships and divorce after marriage, are presented by covariates in Table 4. As could be expected, the rates of both indicators were higher in the oldest birth cohorts compared with the younger ones. There were large differences for both indicators and both genders by

Table 6

Relative risk of divorce in individuals with a history of marriage (at age 34–45 years).

	N	Incidence (%)	Model 1 RR (95 % CI) ¹	Model 2 RR (95 % CI) ²
Study group				
Int'l adoptees	6 216	22.8	1.47 (1.39–1.55)	1.47 (1.40–1.52)
Domestic adoptees	545	26.4	1.56 (1.33–1.84)	1.49 (1.27–1.76)
Immigrants	5 904	25.8	1.44 (1.37–1.51)	1.25 (1.19–1.31)
Swedish-born	495 274	15.2	1	1
Gender				
Men	241 055	14.1		1
Women	266 884	16.6		1.09 (1.08–1.11)
Year of birth				
1972–75	211 009	18.0		1.64 (1.61–1.67)
1976–79	165 060	14.6		1.34 (1.31–1.37)
1980–83	131 870	12.2		1
Education				
0–9 years	25 209	29.2		2.30 (2.24–2.37)
10–12 years	52 594	24.0		1.91 (1.87–1.96)
13–14 years	214 354	16.6		1.52 (1.50–1.55)
15 + years	215 782	10.6		1
Family disposable income at age 17 years (Quintiles)				
1 (Low)	80 894	20.1		1.13 (1.11–1.16)
2	97 875	16.9		1.08 (1.06–1.11)
3	104 462	17.6		1.05 (1.02–1.07)
4	109 321	13.3		1.02 (1.00–1.04)
5 (High)	115 387	9.5		1
Single parent household at age 17 years				
yes	88 727	20.2		1.31 (1.29–1.33)
Age at first marriage (per year)				
				1.10 (1.10–1.10)

¹ Model adjusted for year of birth and gender.² Model adjusted for year of birth, gender family income at age 17, single parent household at age 17, and age at first marriage.

educational levels. Only 65.7 % of the men and 71.5 % of the women in the study population with no more than nine years of completed education had ever had a marriage or cohabiting partnership compared with 85.1 % of men and 83.3 % women with at least 15 years of education. Divorce rates were also higher among men and women with lower educational levels compared with higher levels of education.

The Relative Risk (RR) models of marriage and cohabiting partnerships are presented in Table 5. In the age and gender adjusted Model 1, the RR for international adoptees was 0.86 (0.83–0.87) compared with the general population. Adjusting for socioeconomic confounders did not change this estimate. In the fully adjusted Model 2, the RR of the domestic adoptees and the immigrants compared with the general population were 0.92 (0.86–0.98) and 0.93 (0.91–0.95), respectively, with similar RRs in men and women.

In a gender stratified analyses in the fully adjusted Model 2 (Supplementary Table S1), the RR for long-term partnerships was lower in internationally adopted men than in the internationally adopted women, 0.80 (0.77–0.83) vs 0.90 (0.88–0.92) in the internationally adopted women, $p < 0.001$ in a multiplicative interaction analysis, while RRs were similar in men and women in the immigrants and domestic adoptees.

A sensitivity analysis of Model 2 in Table 5 (see Supplementary Table S2), that included only individuals who were active on the labor market and had not received any economic compensation of disability or chronic illness during 2017, produced slightly higher RRs in the international adoptee and immigrant study groups compared with the general population, 0.88 (0.87–0.90) and 0.94 (0.92–0.96), respectively. For couple partnership in the domestic adoptees, the RR was considerably attenuated in this analysis, to RR 0.97 (0.90–1.04).

In an analysis of adoption and immigrant specific factors, age at adoption/immigration was not found to influence the RRs in neither the international adoptee nor the immigrant study groups. Having an origin in Africa was associated with lower RRs of ever having been married and/or having had a cohabiting relation compared with other origins in both the internationally adopted and immigrant study groups, RR 0.87 (0.76–0.99) for international adoptees and 0.89 (0.79–0.99) for immigrants compared with an origin in Asia (not in table).

Table 6 presents the multivariate analysis of divorce in individuals with a history of marriage. The two adoptee study groups had the highest RRs compared with the general population; in the fully adjusted Model 2, 1.47 (1.40–1.52) for the internationally adopted and 1.49 (1.27–1.76) for the domestic adoptees, with the immigrants having a RR of 1.25 (1.19–1.31). Within the international adoptees study group there were significant gender differences ($p < 0.01$ in a multiplicative interaction analysis) with men having divorce RRs of 1.68 (1.53–1.84) and 1.38 (1.29–1.47) for women, while RRs were similar between men and women in the domestic adoptees and the immigrants (Supplementary Table S3). Age at adoption/immigration did not influence the RR estimates within neither the internationally adopted nor the immigrants. An origin in Africa or Latin America increased the RR for divorce among the international adoptees and immigrants compared with an Asian origin, with RRs of 1.35 (1.00–1.82) and 1.21 (1.07–1.37), respectively, among the international adoptees and 1.47 (1.18–1.83) and 1.31 (1.16–1.49) among the immigrants (not in table).

A sensitivity analysis of Model 1 in Table 6 (see Supplementary Table S4), that included only individuals who were active on the labor market and had not received any economic compensation of disability or chronic illness during 2017, only marginally attenuated the estimates in the analysis of the entire married study population.

4. Discussion

This register study in national Swedish cohorts, with adopted adults as our main interest, aligns with the incipient current international research interest on adoption beyond the childhood and adolescent years. Our main interest here was on the formation and breaking of partner relationships characteristics of adult life. Immigrants served as a group of comparison since they share with international adoptees a non-Swedish physical appearance. Our results present a rich characterization of the adoptees, including their favorable childhood SES and educational level. The multivariate analyses have unveiled interesting patterns of partnership formation (more difficult in the case of international adoptees, particularly among men), and divorce (higher in both domestic and international adoptees compared with the general population). In this section, we reflect on the reported results, with a particular interest on the topics that are the main focus of this article.

Some of our demographic findings are similar to previous research regarding a number of different issues. For instance, the educational gap referred to by Parker and Stepler (2017) is reflected in the fact that those with the lowest educational level in our total sample are the ones with the lowest percentage of marriage and the highest percentage of divorce. For the immigrants, at least for the women, the higher incidence of marriage and divorce identified by Andersson et al. (2015) was also present here.

We can only speculate on what is behind our results, but our conjecture is that our descriptive results for the two groups of adoptees reflect both the long-term impact of early adversities (compared with

the general population, the percentage of adoptees being recipient of illness and disability benefits was twice as high in the international adoptees and three times higher in the domestic adoptees), as well as the protective role of adoption (5 % less single-parent household in international adoptees and 10 % less in domestic adoptees compared with the general population). Contrary to a common finding in adoption research (e.g., Brodzinsky et al., 2021), age at adoption was not relevant for our outcome measures, but most of the international adoptees in this study were placed in their infancy years, and the same has been described for domestic adoptees in these birth cohorts in a previous study (Vinnerljung & Hjern, 2011).

In line with our hypotheses, our main interest in this discussion concerns patterns of couple partnership, parenthood and divorce in both domestic and international adoptees. For marriage and cohabitation, in the case of international adoptees (mainly from Asia, but also from Latin America and Africa), their partners were Swedish-born persons in more than 85 % of the cases. Added to the small percentage of those whose partners were of European origin, this involves around 90 % of the cases. This was very similar to the patterns in the domestic adoptees and the general population, in contrast to the immigrants, where only 40 % of the partnerships were with Swedish-born. Our hypothesis was that the incidence of difficulties in establishing partner relationships would be higher for international adoptees due to their non-European physical appearance, but not in the case of domestic adoptees, physically like the general population. The results were congruent with this hypothesis: in the adjusted and gender stratified models, as well as in the sensitivity analysis, domestic adoptees were more like the general population, in contrast to the lower incidence of partnership in international adoptees. A gender difference (20 % lower for men, 10 % lower for women) was identified among international adoptees when compared to the general population, but was not present among either domestic adoptees and immigrants. This gap in partner relationships for international adoptees replicates at an older age (34–45 years in our study) previous findings for international adoptees at a younger age (20–35 years) in the studies by Tieman et al. (2006) in the Netherlands and by Rooth (2002) and Lindblad et al. (2003) in Sweden. Also, the gender asymmetry consisting of a lower probability of marriage in internationally adopted men is similar to findings by Dijkstra et al. (2011) in a survey of Korean adoptees in various Western countries. Moreover, our finding that African origin was associated with more difficulties to form partner relationships was reported previously by Swedish researchers (Elwert, 2020; Osanami Törngren et al., 2018). Given the similarity of domestic adoptees with the general population, the clear implication is that it is not primarily adoption per se that seems to be behind the fact that some adopted persons have more difficulty in forming partner relationships in their adult years, but rather the non-European physical traits.

If in contrast to their international peers, domestic adoptees were quite similar to the general population when it came to forming relationships, in the case of divorce domestic adoptees were more similar to their international peers, with about 50 % higher incidence than in the general population (in the case of immigrants, the increased incidence was 25 %). As in the case of couple relationship formation, internationally adopted men had less favorable divorce outcomes than internationally adopted women. If adoption per se was not likely associated with relationship formation, it seems to be associated with relationship breakdown. In the case of international adoptees, this could be interpreted in light of the higher incidence of divorce reported for inter-ethnic couples unrelated with adoption (Kreider, 2000; Smith et al., 2012). However, that the international adoptees in our study were acculturated in Sweden since their early years should theoretically decrease problems in maintaining stable relationships compared to couples from diverse cultural backgrounds (Uhlich et al., 2021). But our results did not support this logic, perhaps because of other intervening adoption-related factors.

The higher incidence of divorce in married adopted persons seems to be well established in our results, but with the limitation of the

information available in the population registers we can only speculate on the reasons for this based on characteristics that domestic and international adoptees have in common. First, both groups experienced the early adversities that made them available for adoption, experiences that typically include a variety of circumstances (neglect, maltreatment, institutionalization, separation and loss) that, according to the review by [Field and Pond \(2018\)](#), may have an influence on their attachment experiences in the early years and their relationships with partners in adulthood.

Second, domestic and international adoptees have an increased prevalence of psychiatric disorders and suicidal behavior ([Hjern et al., 2018](#); [Hjern et al., 2020](#); [Hjern et al., 2021](#); [Vinnerljung and Hjern, 2014](#); [von Borczyskowski et al., 2011](#)) that might impair the formation and maintenance of partnerships as suggested by [Braithwaite and Holt-Lunstad \(2017\)](#). To account for this factor, we made a sensitivity analysis where we excluded individuals with indications of severe mental health problems. This analysis indicated that much of the slight difference between domestic adoptees and the general population with regards to establishing partnerships could possibly be linked to mental health problems, while this statistical effect was only marginal for the international adoptees. For divorce, the change in the sensitivity analysis compared with the analysis of the total study population was marginal for the domestic adoptees and non-existent for the international adoptees, indicating that mental health problems were not an important factor here. However, there is considerable evidence that the link between mental health and partnerships goes both ways ([Braithwaite & Holt-Lunstad, 2017](#)). Thus, some of the increased risk for suicide and depression previously demonstrated in international adoptees in Sweden ([Hjern et al., 2018](#), [Hjern et al., 2020](#)) might be associated with problems in obtaining and maintaining partnerships.

Third, international as well as domestic adoptees may have been exposed to experiences of discrimination that can take the form of explicit degrading attitudes as described for international adoptees in Sweden ([Lindblad & Signell, 2008](#); [Osanami Törngren et al., 2018](#); [Tigervall & Hübinette, 2010](#)), as well as for adoptees in general in the form of adoption-related microaggressions ([Baden, 2015](#)). Following [Brodzinsky et al. \(2021\)](#), these experiences may have a negative impact on the appraisal of the adoption identity, with repercussions on social and emotional relationships. Also, research by [Doyle and Molix \(2014a, 2014b\)](#) has documented the negative impact of perceived discrimination on the family stability of the stigmatized groups.

The gender asymmetry observed among international but not domestic adoptees reinforces the hypothesis of influencing factors other than adoption per se. Compared with internationally adopted women, the less favorable outcomes in both couple formation and divorce for international (but not domestic) adopted men, are comparable to those reported in previous research regarding mating in Korean international adoptees ([Dijkstra et al., 2011](#)) and divorce in the general population ([Bratter & King, 2008](#)).

4.1. Strengths and limitations

To the best of our knowledge, this is the first study of marriage/cohabitation and divorce in adopted persons beyond their early adulthood years. The information presented herein provides a rich unprecedented picture of couple formation and breakdown for domestic and international adoptees well into their adulthood (36–45 years). The main strength of this study is the use of data with high quality from the Swedish national registers ([Ludvigsson et al., 2016](#), [Ludvigsson et al., 2019](#)), which allowed us to create large representative study groups of adoptees based on national cohorts. The outcome measure used included the overwhelming majority of spousal relationships, excluding couple partnerships without shared household. However, there is no reason to believe that this living arrangement is more common among adoptees.

Information on couple relationship breakdown is available only for divorce, meaning only for married couples. For those cohabitating

without marriage there is no equivalent information, and this is a limitation.

4.2. Implications

Further studies are needed to confirm the speculations we have presented above about potential explanations for the lower percentage of couple partnership and gender gap in international adoptees and the higher risk of divorce in both adoptee study groups. This calls for a design with a combination of a sociological perspective (to interpret inter-ethnic relationships) and a psychological perspective (to interpret experiences of relationships) for a more complete understanding of these similarities and differences. Such smaller purposive studies need to use data with variables covering psychological individual and relational characteristics to complement the sociodemographic variables included in this register study.

In a review of clinical practice with adult adoptees, [Baden and O'Leary Wiley \(2007\)](#) identified three domains relevant to counseling practice: identity, search and reunion, and long-term outcomes. The results of this article suggest that the domain of couple relationships is equally relevant. The difficulties of some internationally adopted persons to establish such relationships, as well as the higher risk of divorce between domestic and international adoptees should be included in the agenda of counseling interventions, as well as among the concerns and initiatives of adoption-related organizations.

4.3. Conclusions

In summary, this register study in national Swedish cohorts demonstrates both similarities and differences between domestic and international adoptees, as well as in comparison with the general population. In terms of partnership formation, domestic adoptees resemble their non-adopted Swedish peers, while international adoptees have considerably lower rates of partnerships. In terms of divorce, both domestic and international adoptees present a significantly higher incidence than the general population. A gender differential has been observed only in international adoption, with less favorable outcomes for men. Further studies are needed to elucidate the reasons for these patterns.

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Author contributions

AH initiated and designed this study, created the database for it and made all analyses. AH and JP created the framework for the interpretation of the results and wrote the first draft of the manuscript together with JD. All authors revised the manuscript and have read and approved the final version.

Declaration of Competing Interest

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

Data availability

The authors do not have permission to share data.

Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chy.2023.107215>.

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