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RESEARCH ARTICLE

The Structure of Child Adoption Based on the Relationship Between Adoptive Parents and Adoptive Children in Finland

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Abstract
Humans, like many other primates, possess the ability to adopt, and the practice of child adoption exists across human societies. It is well-known that there are three distinct categories of child adoption—kin adoption (i.e., when a relative adopts a child), intrafamilial adoption (i.e., when a stepparent adopts a child) and stranger adoption (i.e. when a child is unrelated to the adoptive parents). However, there is a lack of studies providing exact information on the relationship between adoptive parents and children. We calculated the relative frequencies of the adoption types using high-quality register data covering all child adoptions in Finland between 1999 and 2021 ($n = 7422$). Stranger adoption was the most common category of child adoption, followed by intrafamilial adoption, with kin adoption being the least frequent. Among stranger adoptions, it was found that single females were more likely to become adoptive parents than single males. In intrafamilial adoptions, stepfathers were more frequently adoptive parents than stepmothers, and female same-sex couples were more likely to be adoptive parents than male same-sex couples. In the case of kin adoptions, grandparents were the most common adoptive parents, followed by aunts and uncles. Maternal kin were more likely to become adoptive parents than paternal kin. The findings are discussed regarding evolutionary theories on parental investment and substitute parenting.

Keywords Adoptions · Kin · Parental investment · Register data

Introduction

According to parental investment theory (Trivers, 1972), it is beneficial for individuals to invest time and other resources in their genetically related children because this may increase the investors' genetic fitness. Child adoption is often viewed as an evolutionary puzzle, involving substantial investment in children to whom the adoptive parents are not genetically related (Daly & Wilson, 1980; Hrdy, 2009; Silk, 1990). When people think of adoption, they often imagine adopting an unrelated child from another country, a relatively recent phenomenon that began to grow after World War II (Mignot, 2019; United Nations, 2009). In reality, child adoption is more diverse than many might think.

Generally, there are three main categories of child adoption: kin adoption (i.e., when a relative adopts a child), intrafamilial adoption (i.e., when a stepparent adopts a child), and stranger adoption (i.e., when the child is unrelated to the adoptive parents). Different evolutionary logic tends to apply to each category (Daly & Perry, 2020). First, a child may be adopted by relatives (kin adoption), which is consistent with inclusive fitness theory, as individuals can increase their fitness by investing in close kin (Hamilton, 1964). Second, adoption can occur within a family, such as when a child is adopted by a stepparent (intrafamilial adoption). Intrafamilial adoption may be attributed to "mating effort" rather than parental investment, i.e., individuals may adopt stepchildren primarily because they aim to be supportive and caring spouses to their partners (Daly & Perry, 2020). Third, individuals can adopt an unrelated child (stranger adoption) and these adoptions could be either domestic or international (Davis, 2019). Stranger adoption often arises from couples facing infertility, allowing adoptive parents to

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fulfill their desire to have a child and being the "second best" option (Franklin & Volk, 2021; Jennings et al., 2014). It has been argued that stranger adoption may be a by-product as in ancestral societies, adopted children were almost always adoptive parents' close relatives (Volk, 2011).

Regarding kin adoptions, intrafamilial adoptions, and stranger adoptions, several hypotheses (H) about the structure of child adoption can be derived from evolutionary theories. In the case of kin adoptions, due to paternity uncertainty and the "nepotistic value of mothers," maternal kin are expected to invest more in children compared to paternal kin (Perry & Daly, 2017; Perry et al., 2014). Therefore, according to the matrilateral effect, it can be predicted that maternal relatives will adopt children more often than paternal relatives (H1). Furthermore, maternal grandmothers have usually been shown to be the most important alloparents for young children (Daly & Perry, 2017; Danielsbacka et al., 2011), suggesting that they may adopt children more frequently than other kin (H2).

In the case of intrafamilial adoptions, the greater parental investment from biological mothers compared to biological fathers implies that the stepfathers, in particular, can strengthen their relationships with stepchildren's mothers by investing in stepchildren (Daly & Perry, 2020). Divorced mothers may also be more likely than divorced fathers to select a new partner based on the partners' willingness to invest in stepchildren (Anderson, 2011). Thus, according to the mating effort hypothesis, stepfathers can be expected to adopt their spouses' children more often than stepmothers (H3). Moreover, as women typically display greater empathy and provide more care, even to children who are not genetically related to them, compared to men (Hrdy, 2009), it can be predicted that partners in female same-sex families may adopt their spouses' children more often than partners in male same-sex families (H4). Finally, women's tendency to be, on average, more caring toward children than men may also influence the structure of stranger adoptions. Based on this sex effect, it could be hypothesized that single women adopt children more often than single men (H5).

Adoption is regulated by laws and policies, and who is approved to adopt a child varies both between countries and over time (Selman, 2023; United Nations, 2009). Thus, not everyone who wishes to adopt may be able to do so due to adoption regulations and processes that determine who is considered suitable as adoptive parents. This may also influence the structure of child adoption by either strengthening or weakening evolutionary tendencies.

Here, we use data from Finland covering all child adoptions between 1999 and 2021. The Finnish Adoption Act stipulates, for instance, that if the adoptive child is a minor (i.e., under the age of 18), the applicant cannot be over the age of 50. This may result in some older adults, such as grandmothers, not being approved to adopt a child due to age restrictions. Moreover, same-sex couples (female or male) living in a registered partnership were granted the right to adopt their partner's child in 2009, meaning that such family types did not exist before then. Finally, the Maternity Act, which came into effect in 2019, allows a child born through fertility treatments to have two mothers legally recognized even before the child's birth. This may mean that after 2019, fewer partners in female same-sex families will adopt their spouse's child, likely leading to a decrease in these family types.

Data and Methods

To study the structure of child adoption we use Statistics Finland's high-quality census data covering all child adoptions in Finland between 1999 and 2021. In this period census datasets covered 7422 adoptions that occurred when children were under the age of 18. We calculated relative frequencies of the type of child adoptions of all adoptions. The adoptions were classified based on the relationship between adoptive parents and children. Categories with fewer than five cases were excluded, as Statistics Finland does not provide such data. To note, the data does not include stranger adoptions of same-sex couples (i.e., couples in which neither adoptive parent is related to the child) because it was forbidden until 2017. Since then, there have been only a few such adoptions.

In the present sample, the mean adoption age was 3.9 (83% of children were adopted before the age of 7), and 49% of adoptive children were females. 45% of the child adoptions were domestic and 55% were international. In Finland, more people are willing to adopt a domestic child than there are children available for adoption, which can be one reason for a higher number of international than domestic adoptions. International adoptions occurred most frequently from China (13%), Thailand (9%), Russia (8%), South Africa (7%) and Columbia (5%).

Results

Figure 1 describes adoptions according to three main categories: stranger adoptions (64%), intrafamilial adoptions (35%) and kin adoptions (0.5%). Further, Fig. 1 shows the results of the child adoptions by the relationship between adoptive parents and children under these three main categories. In total, 58.7% of adoption orders were made for non-biological mothers and non-biological fathers, 5% for non-biological single mothers, and 0.5% for non-biological single fathers. Thus, 64% of adoptions were stranger adoptions (78% of the stranger adoptions were international). Stepfathers were adoptive parents in 17.7% and stepmothers in 1.2% of cases. 16.4% of adoption orders were made for partners in female

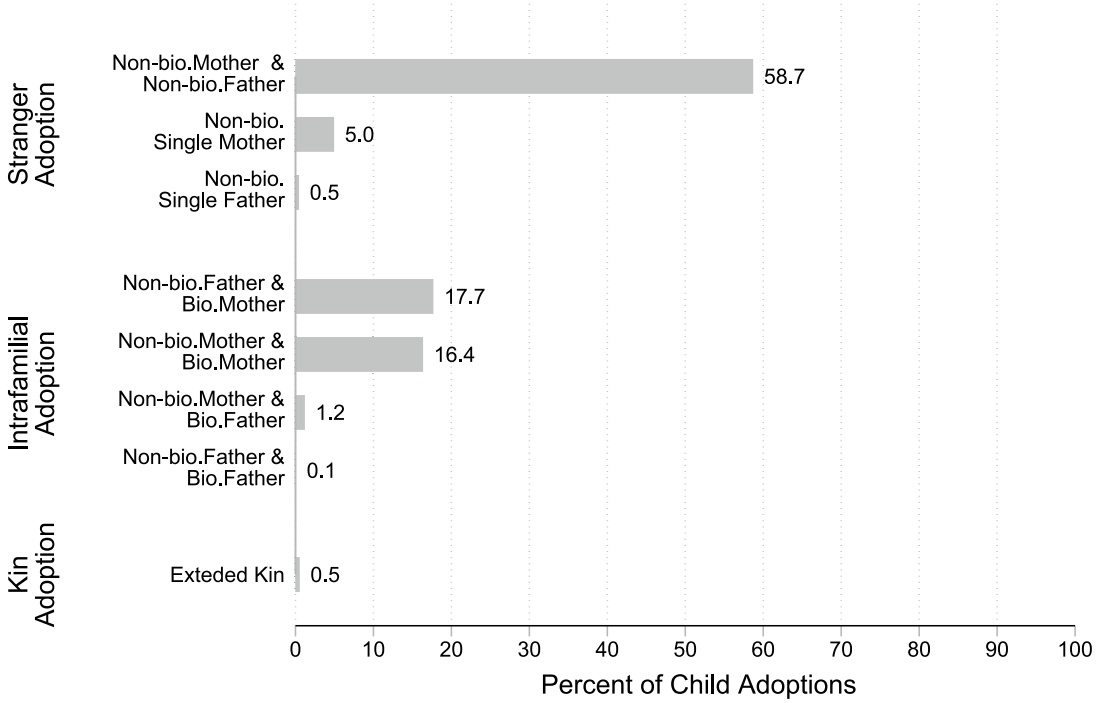

Fig. 1 Relative frequencies of the type of child adoptions ($n = 7422$). Notes. Bio. = Biological, Non-bio. = Non-biological

same-sex families and 0.1% for partners in male same-sex families. Finally, 0.5% of adoption orders were made for extended kin.

Figure 2 shows the results of the extended kin adoptions. 45% of kin adoption orders were made for maternal aunts, 7.5% for paternal aunts, 32.5% for maternal grandmothers and 15% for paternal grandmothers. However, it is important to note that kin adoptions were quite rare in the study sample.

Conclusions

In our evolutionary past, most adoptions have probably been conducted by close relatives (Daly & Perry, 2020). However, stranger adoption was the largest category of adoptees in contemporary Finland, accounting for 64% of all child adoptions. This poses something of an evolutionary puzzle, as raising an unrelated child requires a substantial parental investment without yielding direct fitness returns for the caregivers (Daly & Perry, 2020). It has been argued that stranger adoption may be a by-product of natural selection, as people have a high desire to take care of children, and it provides the second-best option for individuals who cannot have biological children (Volk, 2011). However, future studies are needed to provide a more nuanced picture of the evolutionary reasons for stranger adoption in contemporary societies.

It was also detected that maternal kin adopted children more often than paternal kin. Prior research has consistently detected a matrilateral bias in kin relations, such as the way that, for instance, maternal grandparents invest more in children than paternal grandparents (e.g., Coall & Hertwig, 2010; Danielsbacka et al., 2011; Euler 2011) and maternal aunts and uncles more than paternal ones (e.g., Tanskanen & Danielsbacka, 2021; McBurney et al., 2002). Hence, our findings are in line with predictions derived from paternity uncertainty and the nepotistic value of mothers, which assume that maternal kin invest more in children than paternal kin (Perry & Daly, 2017). However, it was also found that maternal aunts adopted children more often than maternal grandmothers, even though it is well known that maternal grandparents typically serve as the most important alloparents (Hrdy, 2009, 2024). This finding could be related to the fact that, in Finland, individuals over the age of 50 are restricted from adopting children, meaning that some grandmothers may be unable to adopt due to their age. Additional studies are required to examine more precisely why this difference between maternal aunts and maternal grandmothers exists.

Stepfathers adopted their spouses' children more often than stepmothers. This finding is in line with mating effort prediction, meaning that the investment is focused on building a new partnership with the child's mother rather

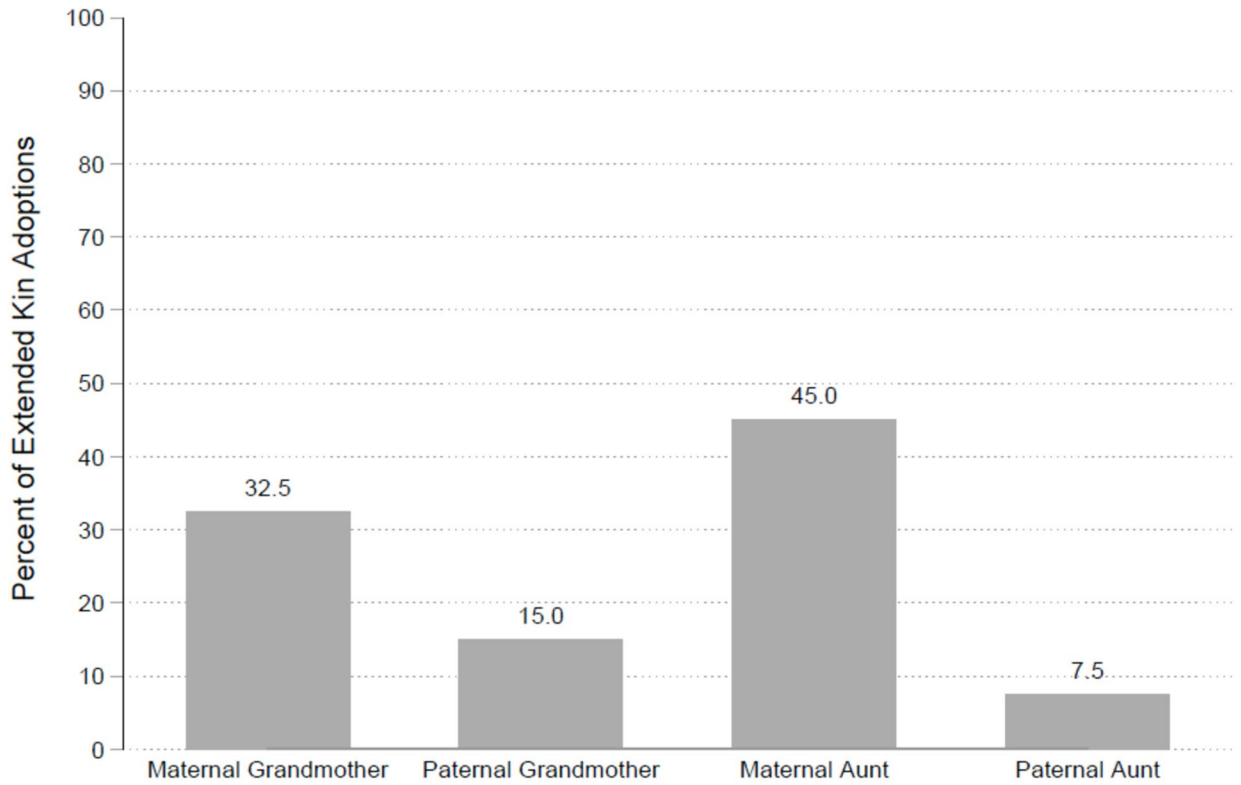

Fig. 2 Relative frequencies of child adoptions by extended kin ($n = 40$)

than directly investing in the child itself (Gray & Anderson, 2010). Moreover, single females adopted children more often than single males and female same-sex couples adopted children more often than male same-sex couples. The latter-mentioned findings align with the sex effect, indicating that women are typically more empathetic and provide more care, even to children not related to them, in contrast to men (Hrdy, 2009). The findings may also suggest that, when potential adoptive parents are assessed, women are often viewed as more suitable candidates than men, which may lead to women receiving adoption permissions more frequently than men.

The findings of the present study highlight the importance of future research. We have predicted that stepfathers adopt their spouses' children as a result of mating effort, but one could further investigate whether this pays off in terms of stepfathers' own fitness. Does adopting stepchildren increase a stepfather's likelihood of later having biological children with their spouse? One could also explore, from an evolutionary perspective, how child adoptions relate to the characteristics of the adoptive parents. For instance, do childless aunts and uncles gain fitness benefits by adopting their nieces and nephews? An interesting question is how child adoption influences family dynamics. For instance, in female same-sex families, are the birth mothers' relatives closer to the child compared to the adoptive mothers' relatives? Finally, while this study outlines the structure of child adoption in Finland, it is well known that there is considerable variation in adoption policies, regulations and practices across countries (Selman, 2023; United Nations, 2009). Therefore, it is important to examine the structure of child adoption in other countries as well.

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Author Contributions All authors contributed to the study's conception and design. Hannu Lehti performed material preparation, data collection, and analysis. Antti Tanskanen wrote the first draft of the manuscript. All authors commented on previous versions. All authors read and approved the final manuscript.

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Finnish register data that cannot be shared in any circumstances according to the strict rules of Statistics Finland. Requests to access register data should be directed to Statistics Finland.

Data Availability In this study, Finnish register data on adoptions were used. These data cannot be shared under any circumstances due to the strict rules of Statistics Finland. Requests to access the register data should be directed to Statistics Finland.

Declarations

Ethics Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publication Not applicable.

Competing Interest The authors have no relevant financial or non-financial interests to disclose.

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