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Research Article

Gender preferences and fertility: Investigating the case of Turkish immigrants in Germany

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Contents

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Abstract

BACKGROUND
A plethora of emergent literature is investigating the prevalence of gender preferences among immigrant communities in Western industrialized countries. Such research not only sheds light on fertility preferences of immigrants but also unearths immigrant assimilation versus persistence processes. Germany has a long history of immigration but has maintained an ethnic assimilationist regime. Turkish immigrants form the largest immigrant community in Germany. We investigate the extent to which Turkish immigrants in Germany mirror the fertility preferences of the native population.

OBJECTIVE
We analyse whether the gender of the first and, subsequently, gender of the first and second child affect transition to second and third births, respectively, for non-immigrant and immigrant (Turkish) women in Germany. We further assess whether the significance of gender as a determinant of fertility progression varies across subsequent generations of immigrants.

DATA AND METHODS
We use Waves 1 and 2 of both the main German Generations and Gender Survey and the supplementary German-Turkish Generations and Gender Survey. We apply Kaplan–Meier survival analysis and Cox regression models to the non-immigrant (native) and immigrant (Turkish) sample in order to examine transitions to second and third births by gender of the first and first two children and immigration status.

RESULTS
We have two main results. First, Turkish immigrants in Germany exhibit son preference at the second and third birth parity. Second, son preference declines across subsequent generations of Turkish immigrants in Germany.

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CONCLUSION/CONTRIBUTION
Although our results suggest that fertility preferences of Turkish immigrants in Germany converge with those of the native population over subsequent generations, we cannot conclusively deduce this given the unique nature of our data.

1. Introduction

Parental gender preferences for offspring are a universal phenomenon. Substantial literature has documented their persistence in both Asian (e.g., China, India, and Vietnam; Guilmoto 2009) and Western countries (e.g., Canada, Sweden, and the United States; McDougall, DeWit, and Ebanks 1999; Andersson et al. 2006; Tian and Morgan 2015). A plethora of emergent literature also investigates these preferences among immigrants in Europe and North America (e.g., Adamou, Drakos, and Iyer 2013; Almond, Edlund, and Milligan 2013; Singh, Brekke, and Stray-Pedersen 2010; Mussino, Miranda, and Ma 2018). Nevertheless, there is scant research on this phenomenon among immigrants in Germany. An important exception is the research conducted by Carol and Hank (2019) comparing German native and immigrant (Turkish and Polish) parental gender preferences for their offspring. Our paper seeks to add to this line of research by comparing parental gender preferences for offspring between native German women and immigrant Turkish women. In so doing we make four contributions to literature: First, the proximity of immigrant gender preferences for offspring to those of the host country allows an examination of the extent of immigrant integration in the host country as many of the institutional arrangements governing immigrants' native country gender preferences are replaced by those of the host country (Almond, Edlund, and Milligan 2013). This contributes to a more general debate on immigrant adaptation/assimilation or persistence and may help inform policy. Second, parental gender preferences for offspring within immigrant communities have the potential to both affect fertility (Carol and Hank 2019) and create demographic distortions (Dubuc and Coleman 2007; Abrevaya 2009) in the host country. Examining these patterns would thereby lead to a better understanding of childbearing attitudes in immigrant groups (Carol and Hank 2019) and perhaps allow for remedial policies in the case of the latter. Third, in examining gender preferences, our analysis considers transitions to higher birth parities rather than the number of children alone. This allows us to incorporate the role of duration in measuring son preference in addition to the number and gender of existing children. Finally, our use of survey rather than census data, while limiting the number of observations, allows us to incorporate several interesting control variables that are not available in the German census but remain

relevant when examining gender preferences. These latter two contributions allow our analysis to further expand the work of Carol and Hank (2019).

The case of Turkish immigrants in Germany is expected to reveal particularly insightful results. Germany has been a country of immigrants since the 1960s when large numbers of labour immigrants started to arrive in the country (Jones 2010). As of 2015, more than 15% of the 80 million people living in Germany were foreign born, with this figure rising to 20% when accounting for children of immigrants (Rietig and Müller 2016). As of 2017, Germany hosted the third largest immigrant population worldwide, amounting to approximately 12 million people (United Nations 2017). The five most prominent immigrant groups in Germany are Turks, Poles, Syrians, Romanians, and Italians (DESTATIS 2019). Despite hosting a large and diverse immigrant population, Germany has maintained an ethnic assimilationist regime characterized by difficult access for immigrants to individual citizenship rights, little accommodation of diversity, and particularly low scores on policies of anti-discrimination (Ersanilli and Koopmans 2011; Huschek, de Valk, and Liefbroer 2012). This approach contrasts with that of countries like Sweden, Belgium, and the Netherlands, who have adopted a multiculturalist model that allows generous procedures for immigrants such as political rights, security of residence, state support, and possibilities to uphold cultural norms (Huschek, de Valk, and Liefbroer 2012).

Turkish migrants form the largest immigrant group in Germany (DESTATIS 2019). Turkish immigration to Germany began in 1961 when large numbers of Turks arrived as guest workers and were later joined by their families (Jones 2010). Between 1961 and 2016 the number of Turkish nationals living in Germany grew from a few thousand to 1.5 million (Aydin 2016). As of 2014, of the estimated five million people with a Turkish background forming the Turkish diaspora worldwide, approximately three million resided in Germany (Aydin 2016). This makes Germany the top emigrant destination country for Turks (United Nations 2013).

The intersection of Germany's assimilationist regime with the large Turkish diaspora in the country provides an ideal bedrock for investigating native and immigrant women's gender preference for offspring by revealing how the two effects compete or converge to impact immigrant's fertility preferences. We pursue this analysis by using the Generations and Gender Survey (German Waves and supplementary German-Turkish Waves) to examine transitions to second childbirths and subsequently third childbirths, while accounting for the gender of existing children, for native (German) and Turkish immigrants in Germany. The paper is organized as follows: Section 2 provides the theoretical background of the study, Section 3 gives an overview of our methodology, Section 4 describes the results, Section 5 provides our discussion, and Section 6 our conclusions and limitations.

2. Theoretical background

2.1 Universal gender preferences

Parents may manifest their gender preferences for offspring by continuing to have children till the birth of at least one child of their desired gender or by using technological means (e.g., sex-selective abortions) to ensure the birth of a child of the desired gender at their preferred parity (Hank 2007; Guilmoto 2009). Substantial research has established the persistence of son preference in several Asian countries (e.g., China, India, and Vietnam; Guilmoto 2009). Reasons forwarded for this include patrilocality, patrilineality, social norms (i.e., dowry payments and perseverance of family honour), and nature of inheritance laws (Chung and Das Gupta 2007; Guilmoto 2009). In Western countries, where economic motives do not generally dictate gender roles and children are primarily desired for psychological and social reasons, research has established the persistence of different permutations of parental gender preferences that may change over time (Hoffman and Hoffman 1973; Hank 2007; Mussino, Miranda, and Ma 2018).

Evidence of a parental preference for a gender mix of children has been documented across several Western countries. For example, upon using Family and Fertility Surveys to examine transitions to third births for 17 European countries, Hank and Kohler (2000) find a parental preference for a gender mix of children in Austria, Belgium, Hungary, Italy, Latvia, Slovenia, Spain, and Switzerland. Similarly, using the European Social Survey to analyse transitions to a third birth, Mills and Begall (2010) find mixed gender preferences among parents to prevail across 24 European countries. Nevertheless, their results emphasize the role of cultural and institutional factors by showing that countries where there is a high risk of old-age poverty and low-gender equity, a preference for boys may be evident at the third parity (Mills and Begall 2010). Parental preference for a gender mix of children has also been documented in Australia (Gray and Evans 2005), Canada (McDougall et al. 1999), Denmark (Jacobsen, Møller, and Engholm 1999), the United States (Dahl 2003; Tian and Morgan 2015), and the United Kingdom (Dahl 2003). Parents may opt for a gender mix of children due to distinct values ascribed to sons and daughters in terms of expansion of self, affiliation, stimulation, accomplishment, and social comparison (Hank 2007; Hoffman and Hoffman 1973).

Changes in the societal gender system that lead to equal opportunities among men and women may decrease the effect of gender on parents' childbearing decision, leading to the emergence of parental gender indifference (Pollard and Morgan 2002). Such a gender indifference, albeit fleeting, emerged in the United States in the 1980s

and 1990s only to be reversed in favour of mixed gender preferences in the 2000s (Pollard and Morgan 2002; Tian and Morgan 2015).

Rather, as evident by parental gender preferences for offspring in Denmark, Norway, and Sweden, changes in the societal gender system emerging from modernization, increased female labour force participation and division of family responsibilities within the household are leading to the emergence of a daughter preference (Miranda, Dahlberg, and Andersson 2018). From the 1980s onwards, mothers in the three Scandinavian countries were more likely to have an additional child if they had sons rather than daughters at the preceding two parities (Andersson et al. 2006; Saaerla and Finnas 2014). In Sweden, this daughter preference has become even stronger in the new millennium so that in addition to the third birth, the likelihood of a second birth is also driven by a daughter preference (Miranda, Dahlberg, and Andersson 2018).

Given the absence of economic motives behind parental gender preference in Western countries and the role of social norms in altering existing gender preferences, gender preferences of immigrants in Western countries may be affected by the gender norms in the host society (Almond, Edlund, and Miligan 2013; Mussino, Miranda, and Ma 2018). As the duration of stay in the host country increases over an extended time horizon, possibly including several generations of children, fertility preferences of a group of immigrants may change to mirror those of the host population reflecting a process of cultural assimilation (Kahn 1988; Andersson 2004). Over a short time horizon, fertility preferences of immigrants may adapt to those of the host country by responding to its political, social, labour market, and gender systems, thereby reflecting a process of cultural adaptation (Andersson 2004). Therefore, the fertility differentials that continue to prevail between immigrant and host society are a reflection of the fertility norms, values, and attitudes regarding childbearing in the sending country (Kahn 1988).

Some evidence from Norway and Sweden points towards cultural adaptation of gender preferences in the fertility behaviour of immigrants. Tønnessen, Aalandslid, and Skjerpen (2013) find that Indian-born women in Norway gave birth to more girls than boys at higher orders in the 2006–2012 period compared to the 1969–2005 period, the latter of which witnessed a heavy concentration of male births at higher parities. Mussino, Miranda, and Ma (2018) find a positive effect of gender egalitarian values and universal welfare on Chinese, South Korean, and Indian immigrants' fertility preferences so that their sex ratios at birth (male/female) for the period 2000 to 2015 were lower than their significantly male-skewed sex ratios at birth for the period 1980 to 1999.

The majority of literature on immigrant gender preferences for offspring, however, shows that immigrant preferences continue to mirror the cultural norms in their home

country and therefore adheres to the theory of cultural persistence (Mussino, Miranda, and Ma 2018). This literature largely shows that Asian immigrant populations originating from son-preferring countries (e.g., China, India, South Korea, and Pakistan) hosted in the United Kingdom, United States, Canada, Sweden, Norway, Italy, Greece, and Spain have lower fertility than their counterparts in their country of origin and adopt son-preferring behaviour in a manner parallel to their country of origin (Dubuc and Coleman 2007; Abrevaya 2009; Gill and Mitra-Kahn 2009; Lillehagen and Lygstad 2018; Verrapoulu and Tsimbos 2010; Singh, Brekke, and Stray-Pedersen 2010; Adamou, Drakos, and Iyer 2013; Almond, Edlund, and Miligan 2013; Gonzalez 2014; Ambrosetti et al. 2015; Mussino, Miranda, and Ma 2018). For Chinese, Indian, and South Korean immigrants this implies the adoption of enabling technology in favour of sons at higher birth orders and a masculinized sex ratio at birth trajectory over time parallel to that of their home countries (Dubuc and Coleman 2007; Abrevaya 2009; Adamou, Drakos, and Iyer 2013; Almond, Edlund, and Miligan 2013; Mussino, Miranda, and Ma 2018). For Pakistani immigrants this implies the adoption of the fertility-stopping rule until the final birth parity to ensure the birth of a least one son (Almond, Edlund, and Miligan 2013).

2.2 Germany and Turkish immigrants

Until the early 2000s, evidence on parental gender preferences for offspring in Germany remained contradictory (Carol and Hank 2019). For example, Hank and Kohler (2000, 2003) find a daughter preference to prevail among East German women and a son preference to prevail among West German women upon transitioning from first to second births. However, they found these effects to disappear upon transitioning from second to third births, so that the former exhibited a mixed-gender preference and the latter no gender preference. Brockman (2001) points to the changing nature of gender preferences in Germany by showing the persistence of son preference before 1910, the absence of gender preferences among West Germans, the prevalence of a daughter preference among East Germans after World War II, and the eventual role of the welfare regime and modernization in moulding rather than neutralizing gender preferences. These findings are in line with Carol and Hank (2019), who find recent evidence for changing gender preferences in Germany by showing that in the new millennium mothers in both East and West Germany exhibit a daughter preference, i.e., they are more likely to have a further birth if the first child is a boy.

Conversely, gender preference for offspring among Turkish immigrants in Germany indicates a son preference at higher birth parities, i.e., mothers who have two daughters are more likely to proceed to an additional birth than mothers who have two

sons (Carol and Hank 2019). This tendency is more pronounced among first-generation than second-generation immigrants, with the latter also having a proclivity towards a gender mix of children (Carol and Hank 2019). This preference within an immigrant group that has the same institutional and educational background as German natives points to cultural persistence and incomplete cultural assimilation (Carol and Hank 2019). Nevertheless, these results are similar to gender preferences for offspring among Turkish immigrants in other Western host societies where a daughter preference is emerging. For example, research from Sweden shows that Turkish-born mothers have an elevated third-birth risk if they have daughters versus sons at the preceding birth parities (Mussino, Miranda, and Ma 2019). This pattern is also congruent with that observed within the native population in Turkey, wherein the third-birth risk is elevated for parents who have daughters at the first two parities (Altindag 2016).

Research has shown that immigrants in Germany both assimilate with the fertility norms of the native German population (Mayer and Riphahn 2000; Milewski 2010a, 2010b, 2011) and maintain the fertility trends of their countries of origin (Cygan-Rehm 2014). The fertility of Turkish immigrants in Germany is strongly associated with their migration history, i.e., the duration of their stay in Germany (Wolf 2014). Turkish immigrants in Germany have an elevated birth risk immediately after migration, with this risk being higher for males than for females. This is natural since they arrive from high-population societies and hence have a higher first-birth risk than other population subgroups and hence Germans (Kulu et al., 2017). This behaviour may be driven by a stronger orientation towards marriage and a higher number of children among Turkish immigrants than native West Germans (Milewski 2010b). Nevertheless, descendants of Turkish immigrants in Germany have the same second-birth risk as native Germans (Milewski 2011). This behaviour of Turkish immigrants in Germany is similar to that of Turkish immigrants in Switzerland, France, and Sweden (Milewski 2011; Scott and Stanfors 2011; Kulu et al. 2019). It points to the tendency of descendants of Turkish immigrants to adopt to host society fertility behaviour (Kulu et al. 2017). Among the different generation of Turkish immigrants in Germany (including non-immigrants), the 1.5 generation of immigrant has the highest probability of a first and second childbirth, non-immigrants have the lowest probability, and the second generation lies in between (Krapf and Wolf 2015). However, by the time of the third childbirth, the fertility patterns of the Turkish second generation converge to local non-immigrant patterns (Krapf and Wolf 2015).

Given the scarcity of research on parental gender preferences among immigrants in Germany, the potential of Turkish immigrants to mirror host country fertility patterns across subsequent generations and the changing nature of non-immigrant gender preferences, we formulate three research questions to explore the gender preferences of non-immigrants (native) and immigrant (Turkish) women in Germany: (1) How does

the gender of the first child affect transition to second births for native (non-immigrant) versus immigrant women in Germany? (2) How does the gender of the first and second child affect transition to third births for native versus immigrant women in Germany? and (3) How does migration status of immigrant women affect the transition to second births and third births contingent upon the gender of first child and first and second child, respectively? Hence, our analysis, by using the German Generations and Gender Survey and its Turkish supplementary sample, adds to the analysis of Carol and Hank (2019) by using an alternate dataset and methodology. We believe this analysis to be especially useful because this dataset presents a special subsample of the Turkish population, i.e., those Turkish immigrants who have not acquired German citizenship (Wolf 2014), and therefore allows useful insights not only into fertility preferences but also immigrant assimilation and persistence processes. The Generations and Gender Survey further allows us to incorporate several additional control variables that are not available in the German census but may nevertheless be relevant when examining gender preferences (Section 3.3.3 provides a discussion of the control variables in our analysis).

3. Methodology

3.1 Data

Our analyses are based on Waves 1 and 2 of the Generations and Gender Survey (GGS) for Germany. The GGS is a nationally representative individual-level fixed panel conducted across 25 European countries (Gauthier, Cabaço, and Emery 2018). It collects data on fertility, partnership histories, work/life balance, gender relations, intergenerational relations, care, and later life (Gauthier, Cabaço, and Emery 2018). The GGS for Germany, in addition to including two nationally representative waves of the German population (GGS: German), includes two supplementary waves that represent Turkish nationals (GGS: German-Turkish) in Germany (Gauthier, Cabaço, and Emery 2018; BiB 2019). Wave 1 of GGS: German was first conducted in 2005 and constituted a sample of 10,000 German-speaking participants aged 18 to 79 living in private German households (BiB 2019). Wave 2 of this survey was conducted in 2008/2009 and constituted 3,226 participants who took part in Wave 1 and declared themselves willing to be contacted for Wave 2 (GGP 2016; BiB 2019). Wave 1 of GGS: German-Turkish was conducted in 2006 and constituted 4,000 Turkish nationals aged 18 to 79 living in Germany (BiB 2019). Wave 2 of this survey took place in 2009/2010 and constituted 997 participants from Wave 1 who declared themselves willing to be followed in Wave 2 (GGP 2016; BiB 2019).

The subjects of the study are women aged 16 to 45 who have given birth to at least one child. These respondents are either non-immigrants (i.e., native Germans from GGS: German) or Turkish nationals who live in Germany (from GGS: German-Turkish).[3] Data from the survey is used to construct fertility histories for first, second, and third childbirths for the respondents of interest. Respondents with multiple births and fostered and adopted children up to the third parity are excluded from the sample, as are respondents who present missing information on their own date of birth, date of birth of children at the first, second, or third parity, and migration status. Tables A-1–4 in the appendix provide an overview of the final sample to be analysed.

3.2 Methods

This paper adopts two specific event history analysis techniques, i.e., Kaplan–Meier survival analysis and multivariate Cox hazard regression models. These techniques allow us to investigate the time between exposure (i.e., the birth of a child at a given parity) and event (i.e., the birth of a child at a subsequent parity) while accounting for incomplete fertility histories and attrition (Ferreira and Patino 2016). We first use Kaplan–Meier analysis to investigate if there are differences between non-immigrant (i.e., native German) and immigrant (Turkish) women's transitions (in terms of timing) to second and third births, and whether within each group of women the timing of these transitions is contingent upon the gender of existing children. Subsequently, we use Cox models to examine transition to second and third births for native and immigrant women while incorporating the gender of the first and first two children, respectively, and identifying how the analysis for immigrant women changes when incorporating immigration status. To further our analysis, we subdivide both samples (immigrant and non-immigrant) by gender of the first (boy/girl) and first two (boy/girl/mix) child(ren) and apply Cox models to these subsamples in order to assess transition to second and third births, respectively, while accounting for the role of migration status for immigrant women.

[3] We excluded immigrants of Turkish origin in the GGS: German Survey because we expect the sociodemographic characteristics (and hence fertility decisions) of these immigrants to be distinct from those in the GGS: German-Turkish survey as the latter are characterized by not having acquired German nationality (Wolf 2014).

3.3 Variables

3.3.1 Dependant variables

The analysis requires two types of dependent variables for each of the two scenarios of interest (transition to second births and transition to third births): the survival time between transitions and the occurrence of the event. The survival time is the time that has elapsed between the transitions, between first and second births and subsequently between second and third births, and is calculated in months. Event occurrence is an indicator variable to depict whether or not the second or third childbirth has occurred. To obtain these dependent variables the fertility trajectories of the sample of interest is followed till the occurrence of the second and/or subsequently third childbirth in the case of event occurrence. Alternatively, the sample of interest is followed till the respondent turns 45 years of age or till the date of last interview (right censoring) in the case of event non-occurrence.

3.3.2 Independent variables

The main independent variable of interest is immigration status. Immigration status has four categories: non-immigrant, first-generation immigrant, 1.5-generation immigrant, and second-generation immigrant. The non-immigrant category comprises both German-born individuals with two German-born parents and non-German-born individuals with two German-born parents who moved to Germany before the age of 15. The non-immigrant category is distinct from all the other immigrant categories as it refers to the native German population. The analysis is therefore conducted separately for the non-immigrant category and the remaining three immigrant categories (first, 1.5, and second generation) combined. First-generation immigrant refers to Turkish-born individuals with Turkish-born parents who migrated to Germany at age 15 or later. Next, 1.5-generation immigrant refers to individuals with Turkish-born parents who migrated to Germany before the age of 15. Second-generation immigrant refers to German-born individuals with one or two Turkish-born parents. Different levels of gradation in migration status allow us to account for the effect of assimilation on son preference.

3.3.3 Control variables

We incorporate six control variables in our analysis: age at time of first childbirth, age square at time of first childbirth, education, employment history, relationship status at time of first or second childbirth, and mother's employment. Relationship status is incorporated as single, cohabiting with partner, or married at the time of first birth when considering transition to second births and at the time of second births when considering transition to third births. Education is included in the data in terms of attainment of highest education level at time of first birth and is coded at the primary, secondary, or tertiary level. Employment history is incorporated in the analysis as a binary variable to represent whether the respondent has ever been employed. Due to the nature of the data, employment history files for the respondents, to attain employment status at time of second or third birth, could not be constructed. Mother's employment, which captures the respondent's mother's employment status when the respondent was 15, is incorporated as a graded variable at three levels: not engaged in paid employment, engaged in paid employment, and engaged in a highly skilled paid employment. An overview of these variables is depicted in Tables A-1–4 in the appendix.

4. Results

4.1 Descriptive results

By the time of the last interview (either 2006 or 2009), 71% of the women in the non-immigrant sample and 76% of the women in the immigrant sample had transitioned to second births, with median survival times of 163 months and 105 months, respectively. Within the non-immigrant sample, 71% of the women who had a girl and 71% of the women who had a boy as a first child transition to a second birth, both with median survival times of 163 months. Hence, a higher percentage of women in the immigrant versus non-immigrant sample transitioned to second births, with transition percentages being roughly the same for immigrant women regardless of the gender of the first child.

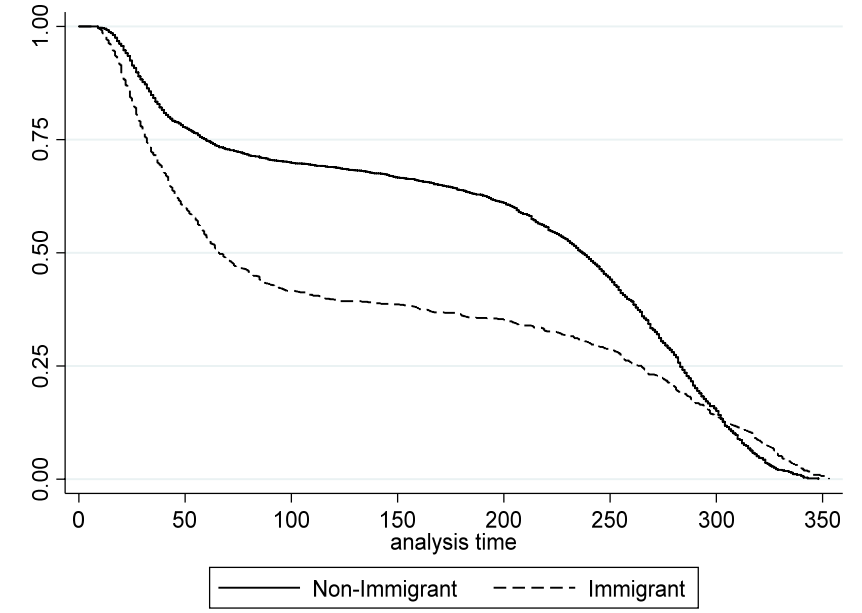
With regard to transition to third births, 32% of the women in the non-immigrant sample and 47% of the women in the immigrant sample transitioned to third births, with median survival times of 154 and 111 months, respectively. Within the non-immigrant sample, 36% of women whose first two births were female, 24% of women whose first two births were male, and 29% of women who achieved a gender mix of children in their first two births transitioned to a third birth with median survival times of 155 months, 148 months, and 147 months, respectively. Within the immigrant sample, 53%

of women whose first two children were girls, 47% of women whose first two girls were boys, and 44% of women who achieved a gender mix of children in their first two births transitioned to a third birth with median survival times of 96 months, 117 months, and 114 months, respectively. Similar to the transition to second births, a higher percentage of women in the immigrant versus non-immigrant sample transitioned to third births, with transition percentages in the immigrant sample being highest for immigrant women whose first two children were female and lowest for immigrant women who achieved a gender mix of children. Data statistics for these and other variables used in the analysis are presented in Tables A-1–4 in the appendix.

4.2 Results of Kaplan–Meier survival analysis

Figure 1 estimates the survival time from first childbirth to second childbirth for non-immigrant and immigrant (Turkish) women in Germany, respectively. The survival probability of 1 in the few months immediately following the birth of the first child represents the necessary time gap required between the birth of the first and second child, indicating that no second child was born during the respective months. Compared to the survival estimates of non-immigrants, the enhanced convexity and reduced concavity of the survival estimates of immigrant women in the initial and latter part of the curve respectively indicate a statistically significant increased propensity of immigrant women to transition to second births. Within the first 50 months of the mean interval of the birth of the first child, approximately 78% of the non-immigrant sample continued to not have transitioned to a second child. By the time the mean interval approached 236 months, approximately half the sample continued to not have transitioned to a second birth. These rates of nontransition are higher than the corresponding figures for the immigrant women: After the first 50 months of the mean interval about 60% of the sample had not transitioned to the second birth, and by the time the mean interval approximated 65 months 50% of the sample had not transitioned to second births.

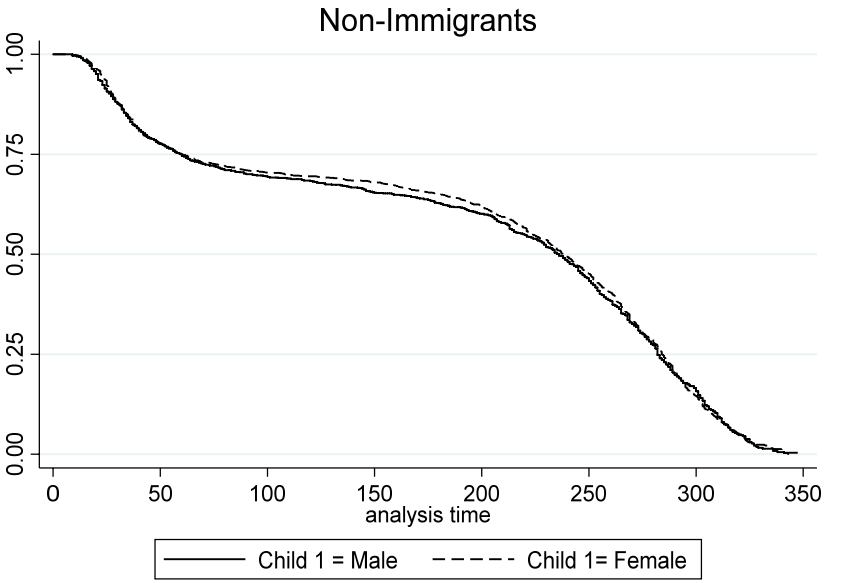
Figure 1: Kaplan–Meier survival curves, transition to second births



Note: Log rank test: significant (p-value < 0.001)

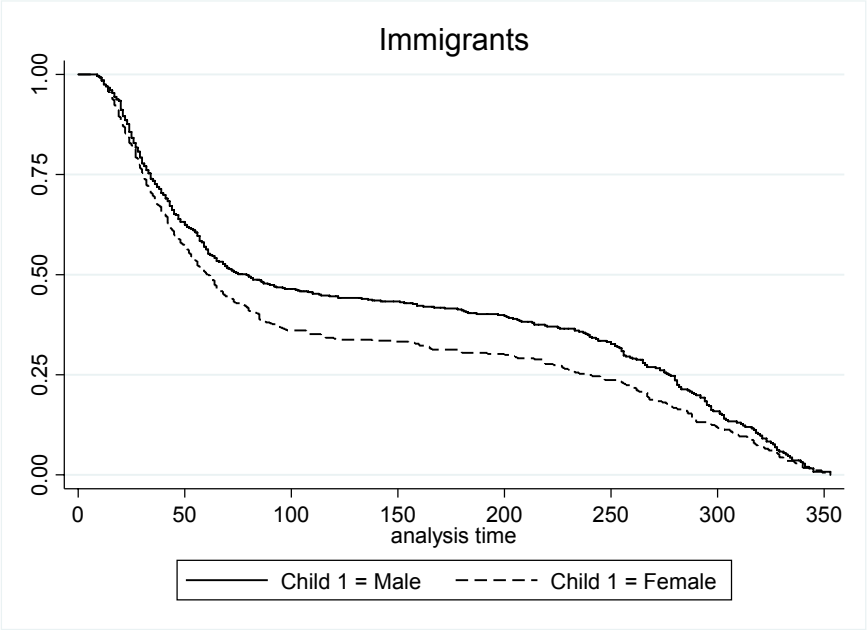
Figures 2a and 2b re-estimate the survival time from first childbirths to second childbirths for non-immigrant and immigrant (Turkish) women in Germany by disaggregating this survival time by gender of first child for both subpopulations, respectively. As evident from Figure 2a, the survival time from first to second childbirths for non-immigrant women is the same regardless of the gender of the first child. However, Figure 2b depicts a statistically significant difference in the survival time from first to second childbirths by the gender of the first child for immigrant women: Mothers who have a daughter as a first child transition to second childbirths earlier than mother's who have a son as a first child.

Figure 2a: Kaplan–Meier survival curves, transition to second births by gender of first child



Note: Log rank test: not significant (p-value > 0.05)

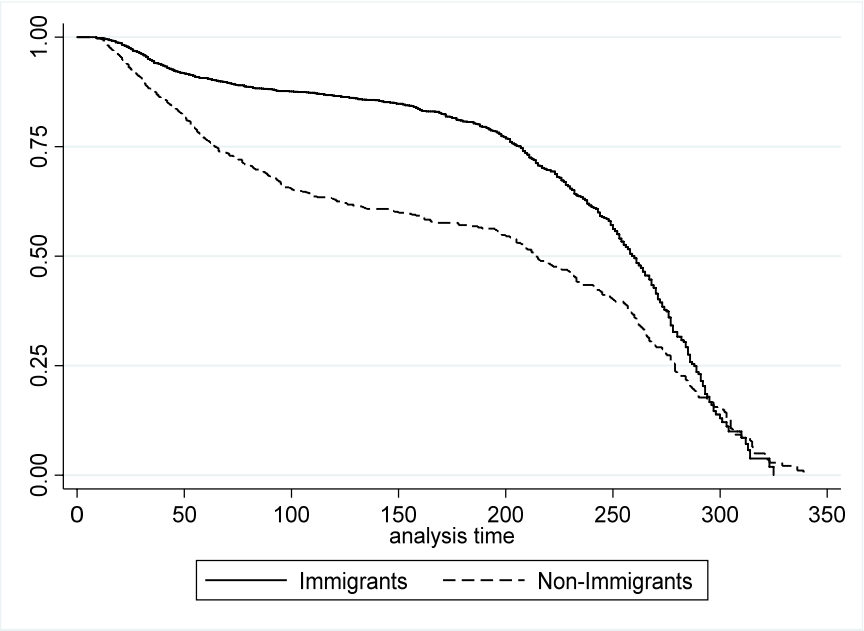
Figure 2b: Kaplan–Meier survival curves, transition to second births by gender of first child



Note: Log rank test: significant (p-value < 0.01)

Figure 3 estimates the survival time from second childbirths to third childbirths for non-immigrant and immigrant (Turkish) women in Germany, respectively. As with transitions from first births to second births, there is a statistically significant difference in transition from second to third births between non-immigrant and immigrant women. In the non-immigrant sample, approximately 75% of the women had not transitioned to third births within the first 205 months of the mean interval of the birth of the second child, and approximately 50% of the women had not transitioned to third births within the first 258 months of the mean interval of the birth of the second child. The rates of non-transition are significantly lower for immigrant women: Approximately 75% of the women had not transitioned to third births within the first 64 months of the mean interval of the birth of the second child, and approximately 50% of the women had not transitioned within the first 213 months of the mean interval of the birth of the second child.

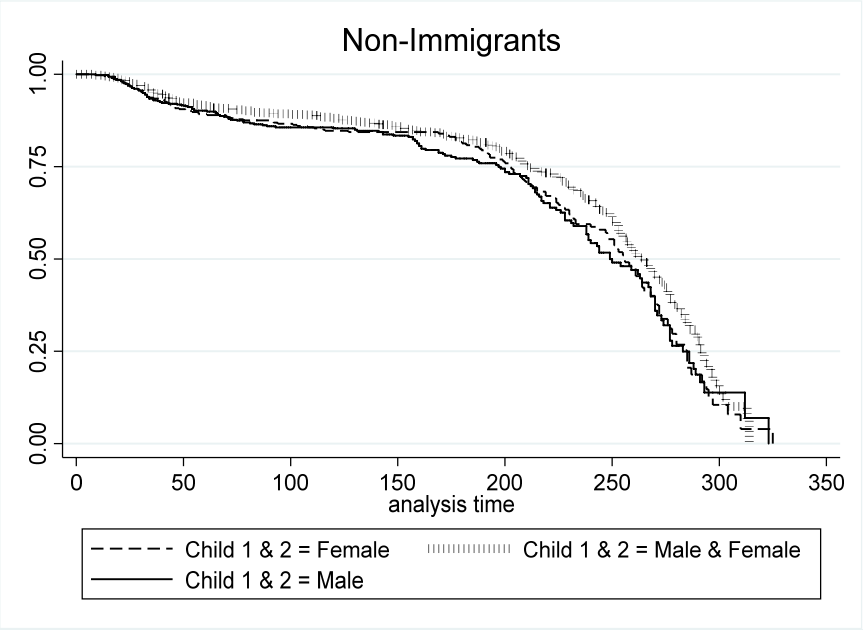
Figure 3: Kaplan–Meier survival curves, transition to third births



Note: Log rank test: significant (p-value < 0.000)

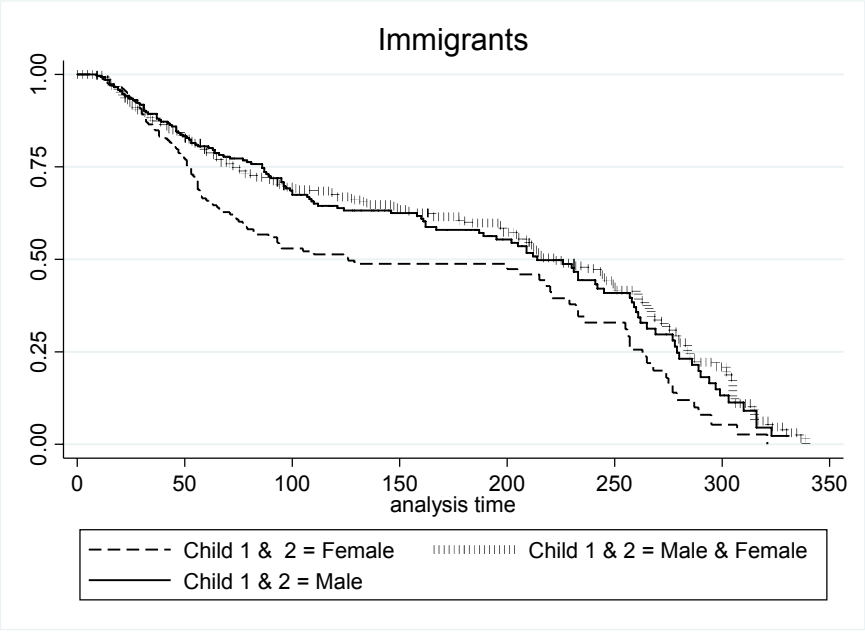
Similar to Figures 2a and 2b, Figures 4a and 4b re-estimate the survival time from second childbirths to third childbirths for non-immigrants and immigrants (Turkish) upon disaggregating by gender of first and second child for both subpopulations, respectively. The results reveal that survival time for both non-immigrants and immigrants differs by the gender composition of the first two children and that this difference is statistically significant. For both non-immigrant and immigrant women, survival time is longest for women who have a gender mix of children. In the remaining two categories (first two children female and first two children male), non-immigrant women have a slightly longer survival time if the first two children are female compared to the first to children being male. In contrast, immigrants have a longer survival time if the first two children are male compared to the first two children being female.

Figure 4a: Kaplan–Meier survival curves, transition to third births by gender of first and second child



Note: Log rank test: significant (p-value < 0.05)

Figure 4b: Kaplan–Meier survival curves, transition to third births by gender of first and second child



Note: Log rank test: significant (p-value < 0.01)

4.3 Results of Cox regression

Table 1 depicts the Cox regression results of transition to second births for non-immigrant and immigrant (Turkish) women in Germany. The three models in Table 1 allow for an examination of the effect of the gender of the first child, immigration status, and control variables on probability of second births for non-immigrant and immigrant (Turkish) women. To this end, Models 1 and 2 examine how the gender of the first child and control variables affect the probability of second births for non-immigrant and immigrant (Turkish) women in Germany, respectively. Subsequently, Model 3 represents an extension of Model 2 via the incorporation of migration status to assess how our primary independent variable of interest alongside other relevant controls affects the probability of second births.

The results for Model 1 reveal that two variables significantly affect the probability of a second birth for non-immigrant women in Germany: age at the time of

first birth and relationship status. Surprisingly, women who have a higher age at first childbirth have an increased likelihood of a second childbirth at a decreasing rate. Women who are in a cohabiting or marital relationship have a higher likelihood of second childbirth than women who are single. Model 2 allows a comparison of these results with those for immigrant women. Five variables significantly affect the likelihood of a second childbirth for immigrant women: age, relationship status, gender of first child, education, and employment. Age and relationship status affect the likelihood of a second childbirth for immigrant women in the same manner as non-immigrant women. Immigrant women who have a daughter as a first child have a higher probability of a transition to second birth compared to their counterparts who have a son. Immigrant women with a secondary education have an increased likelihood of transition to second births than their counterparts who have a primary education. Finally, immigrant women who have previously been engaged in the labour market have a lower likelihood of transition to second births than those who have not engaged in the labour market. Model 3 reveals that compared to women who are first-generation immigrants, the likelihood of a transition to second births is higher for women who are 1.5-generation and second-generation immigrants.

Table 1: Cox regression results, transition to second births

Variable	Model 1 *Non-immigrants* Coefficient (S.E.)	Model 2 *Immigrants* Coefficient (S.E.)	Model 3 *Immigrants* Coefficient (S.E.)
Status (ref: first generation)			
1.5 generation			0.41*** (0.09)
Second generation			0.61*** (0.12)
Age first child	1.78*** (0.09)	0.58*** (0.09)	0.56*** (0.009)
Age first child square	–0.03*** (0.00)	–0.01*** (0.00)	–0.01*** (0.00)
Sex first child (ref: male)			
Female	0.00 (0.05)	0.21** (0.07)**	0.19** (0.07)

Table 1: (Continued)

Variable	Model 1 *Non-immigrants* Coefficient (S.E.)	Model 2 *Immigrants* Coefficient (S.E.)	Model 3 *Immigrants* Coefficient (S.E.)
Education (ref: primary)			
Secondary	0.10 (0.08)	0.23* (0.10)	0.12 (0.10)
Tertiary	0.14 (0.09)	0.10 (0.25)	0.09 (0.25)
Employment (ref: never employed)			
Ever employed	0.02 (0.08)	–0.16* (0.08)	–0.24** (0.08)
Relationship status, first child (ref: single)			
Cohabiting	0.85*** (0.11)	0.98*** (0.26)	0.73** (0.26)
Married	0.31*** (0.08)	0.47 (0.13)	0.42** (0.13)
Mother's employment (ref: unpaid work)			
Paid employment	0.02 (0.06)	–0.04 (0.09)	–0.13 (0.10)
Highly skilled paid employment	0.09 (0.07)	0.14 (0.24)	0.15 (0.24)
Sample size (first births)	2152	985	985
Failures (second births)	1542	764	764
Log likelihood	–9705***	–4459***	–4442***

Note: * p<0.05; ** p<0.01; *** p<0.001.

Table 2 divides the results for immigrant women by gender of first child to separately assess the effect of migration status on the probability of having a second child. The results in Table 2 show that if the first child is a boy, immigrant women of the 1.5 generation and second generation have an increased likelihood of a second birth compared to immigrant women of the first generation. However, if the first child is a girl only immigrant women of the 1.5 generation have an increased likelihood of a second birth.

Table 2: Cox regression results, transition to second births for immigrants by gender of first child

Variable	Model 1 *Child 1 Boy* Coefficient (S.E.)	Model 2 *Child 1 Boy* Coefficient (S.E.)	Model 3 *Child 1 Girl* Coefficient (S.E.)	Model 4 *Child 1 Girl* Coefficient (S.E.)
Status (ref: first generation)				
1.5 generation	–	0.47*** (0.13)	–	0.35** (0.13)
Second generation	–	0.93*** (0.17)	–	0.33 (0.18)
Age first child	0.59*** (0.13)	0.58*** (0.13)	0.55*** (0.14)	0.53*** (0.14)
Age first child square	–0.01*** (0.00)	–0.01*** (0.00)	–0.01*** (0.00)	–0.01*** (0.00)
Education (ref: primary)				
Secondary	0.24* (0.13)	0.10 (0.13)	0.18 (0.14)	0.13 (0.15)
Tertiary	–0.04 (0.42)	–0.22 (0.42)	0.25 (0.32)	0.33 (0.32)
Employment (ref: never employed)				
Ever employed	–0.12 (0.10)	–0.22* (0.11)	–0.22 (0.11)	–0.28* (0.12)
Relationship status (ref: single)				
Cohabitation	0.89* (0.40)	0.54 (0.40)	0.10** (0.36)	0.86* (0.38)
Married	0.54** (0.17)	0.51** (0.17)	0.38 (0.21)	0.34 (0.21)
Mother's employment (ref: no paid employment)				
Paid employment	0.06 (0.13)	–0.05 (0.13)	–0.16 (0.14)	–0.22 (0.14)
Highly skilled paid employment	0.02 (0.39)	–0.01 (0.39)	0.16 (0.32)	0.19 (0.32)
Sample size (first births)	538	538	447	447
Failures (second births)	410	410	410	410
Log likelihood	–2140	–2124	–1794	–1791

Note: * p<0.05; ** p<0.01; *** p<0.001.

Table 3 depicts the Cox regression results of third births for non-immigrant and immigrant (Turkish) women in Germany in a similar vein as Table 1. For non-immigrant women two variables significantly affect the likelihood of a third birth: age at the time of first birth and relationship status. The results for age are similar to those as for earlier models. Women who are cohabiting with their partners have a significantly higher likelihood of third childbirth than women who are single. Our results from Model 2 for immigrants show that five variables significantly affect the likelihood of a third birth: age at first birth, employment history, relationship status, mother's employment, and gender composition of existing children. Age at first birth and employment history operate in a manner similar to that of second births for

immigrants. Immigrant women in a cohabitation relationship display a higher likelihood of third births than their single counterparts. Immigrant women whose mothers had been engaged in highly skilled paid employment displayed a lower likelihood of third births than their counterparts whose mothers had not been engaged in paid employment. With regards to gender composition, immigrant women who have both a gender mix and two sons from their first and second birth parities display a lower likelihood of third births than women who have two daughters in their first two parities. Similar to the results in Table 1, Model 3 reveals that compared to women who are first-generation immigrants, the likelihood of a transition to third births is higher for women who are 1.5-generation and second-generation immigrants. Nevertheless, accounting for immigration status reveals that immigrant women who have a tertiary education have a significantly lower likelihood of transitioning to a second birth than their counterparts who have a primary education.

Table 3: Cox regression results, transition to third births

Variable	Model 1 *Non-immigrants* Coefficient (S.E.)	Model 2 *Immigrants* Coefficient (S.E.)	Model 3 *Immigrants* Coefficient (S.E.)
Status (ref: first generation)			
1.5 generation	–	–	0.28 (0.13)*
Second generation	–	–	0.35 (0.20)
Age first child	1.4*** (0.16)	0.37 (0.15)*	0.37* (0.15)
Age first child square	–0.24*** (0.000)	–0.01 (0.00)*	–0.01* (0.00)
Sex first & second child (ref: child 1 & 2 = girl)			
Gender mix	–0.22 (0.11)	–0.45** (0.13)	–0.40** (0.13)
Child 1 & 2 = boy	0.03 (0.13)	–0.34 (0.14)**	–0.33 (0.14)*
Education (ref: primary)			
Secondary	0.03 (0.13)	0.24 (0.15)	0.18 (0.15)
Tertiary	0.03 (0.16)	–1.26 (0.72)	–1.26* (0.71)
Employment (ref: never employed)			
Ever employed	–0.11 (0.13)		1.39** (0.41)

Table 3: (Continued)

Variable	Model 1 *Non-immigrants* Coefficient (S.E.)	Model 2 *Immigrants* Coefficient (S.E.)	Model 3 *Immigrants* Coefficient (S.E.)
Relationship status (ref: single)			
Cohabitation	0.53 (0.25)*	1.37** (0.41)	1.40** (0.41)
Married	0.08 (0.13)	0.35 (0.20)	0.33 (0.20)
Mother's employment (ref: no paid employment)			
Paid employment	0.07 (0.11)	–0.04 (0.14)	–0.10 (0.14)
Highly skilled paid employment	0.05 (0.12)	–1.49* (0.72)	–1.59* (0.73)
Sample size (first births)	1590	804	804
Failures (second births)	500	376	376
Log likelihood	–3007***	–2062***	–2059***

Note: * p<0.05; ** p<0.01; *** p<0.001.

Following the logic of Table 2, Table 4 divides the results for immigrant women by gender of first and second child to separately assess the effect of migration status on the probability of having a third child. Table 4 shows that among immigrant women with two sons and gender mix, the probability of a third birth is significantly higher for second-generation immigrants compared to first-generation immigrants. For the gender mix category, the results are significant for both the 1.5 generation and second generation of immigrants. The reverse is true for women who have two daughters at the first two parities (i.e., they have a lower likelihood of a third birth); however, these results remain non-significant.

Table 4: Cox regression results, transition to third births for immigrants by gender of first and second child

Variable	Model 1 *Child 1 & 2= boy* Coefficient (S.E.)	Model 2 *Child 1 & 2 = girl* Coefficient (S.E.)	Model 3 *Gender mix* Coefficient (S.E.)
Status (ref: first generation)			
1.5 generation	0.47 (0.25)	–0.05 (0.26)	0.51* (0.20)
Second generation	1.14 (0.33)*	–0.31 (0.37)	0.43 (0.36)
Age first child	0.23 (0.23)	0.70 (0.42)	0.47* (0.23)
Age first child square	–0.00 (0.00)	–0.01 (0.01)	–0.01 (0.01)

Table 4: (Continued)

Variable	Model 1 *Child 1 & 2= boy* Coefficient (S.E.)	Model 2 *Child 1 & 2 = girl* Coefficient (S.E.)	Model 3 *Gender mix* Coefficient (S.E.)
Education (ref: primary)			
Secondary	0.22 (0.23)	0.33 (0.33)	–0.04 (0.24)
Tertiary	–45.02	–44.68	–0.34(0.73)
Employment (ref: never employed)			
Ever employed	–0.43* (0.22)	–0.38 (0.23)	–0.55** (0.17)
Relationship status (ref: single)			
Cohabitation	1.64* (0.69)	0.56 (0.86)	1.67* (0.23)
Married	0.47 (0.35)	0.09 (0.49)	0.22 (0.29)
Mother's employment (ref: no paid employment)			
Paid employment	0.56 (0.23)*	–0.55 (0.29)	–0.16 (0.22)
Highly skilled paid employment	–0.93 (1.03)	–45	–1.12 (1.02)
Sample size (first births)	240	178	386
Failures (second births)	115	92	169
Log likelihood	–485***	–371*	–795*

Note: * p<0.05; ** p<0.01; *** p<0.001.

5. Discussion

Using data from GGS: German and GGS: German-Turkish Waves 1 and 2, we examine gender preferences for offspring among Turkish immigrants in Germany by analysing transitions to second and third births for non-immigrant and immigrant (Turkish) women in Germany. To this end our analyses highlight how the gender of existing children and migration status (in the case of Turkish immigrants) affect both parity progression and underlying gender preferences. Our results yield several interesting findings.

First, our results show that Turkish immigrant women have a significantly higher likelihood of transition to both second and third births than non-immigrant women. These results are somewhat consistent with research on fertility of Turkish immigrants across different European countries. For example, Milewski (2010b) finds that, upon controlling for socioeconomic factors, second and third birth risks for Turkish women in Germany were higher than those of the native population. This trend among women

of Turkish origins is observed in Belgium (second and higher order births for women with partners of Turkish origin), France (first and second order births), and Norway (third birth) and among descendants of Turkish immigrants in Belgium, France, Sweden, and Switzerland (Pailhé 2017; Van Landschoot, de Valk, and Van Bavel 2017; Lillhagen and Lyngtad 2018; Kulu et al. 2019).

Second, our results reveal whether the gender of existing children affects transitions to second and third births for non-immigrant and Turkish immigrant women in Germany. For non-immigrant women the gender of the first and the gender sequence of the first and second child do no significantly affect the transition to second and third births, respectively. However, with regards to transition to third births, the coefficients are marginally significant[4] for a mixed-gender composition at the first two parities, so that mothers who have a son and a daughter at these two parities are less likely to transition to a third birth. This result for mixed-gender preferences is consistent with that of Carol and Hank (2019) for East and West Germany combined and lends credence to their argument that, whereas mixed-gender preferences were formerly observed in East Germany alone, they are now also evident in West Germany, thereby pointing to the changing nature of gender preferences in the country (Hank and Kohler 2000, 2003; Carol and Hank 2019).

For Turkish immigrant women, our results show that women who have a daughter as a first child are more likely to have a second birth than those who have a son. Subsequently, the results for transitions to third births reveal that women who have two daughters in the first two parities are more likely to proceed to a third birth than both women who have a gender mix and women who have sons at the first two parities. These results indicate the possible persistence of son preference among Turkish immigrants in Germany as the desire for a son is the possible driver of the increased probability of a transition to a subsequent parity. This behaviour is consistent with that of the native population in Turkey where couples continue to have children till (the second, third, and consequently last birth parity) the birth of a son (Altindag 2016). This result is also somewhat consistent with that of Carol and Hank (2019), who find a large tendency for mothers who have two daughters (versus two sons) to transition to a third parity. The fertility behaviour exhibited by Turkish immigrant women in Germany therefore mimics that displayed by immigrant women hosted in industrialized societies who originate from son-preferring societies and adopt the son-preferring fertility-stopping rule. For example, like Pakistani women in their native country who use the son-preferring fertility-stopping rule to ensure the birth of at least one son, immigrant women of Pakistani origin in Canada and the United States continue to adopt this rule towards the same end (Adamou, Drakos, and Iyer 2013; Almond, Edlund, and Miligan 2013; Channon, 2017).

[4] P-value of 0.05.

Finally, our results allow us to disaggregate transitions by migration status. Our results for transitions to second births reveal that 1.5-generation immigrants have a higher likelihood of transitioning regardless of the gender of the first child. This effect is stronger in terms of both magnitude and significance for those who have a son vis-à-vis a daughter at the first parity. For second-generation immigrants, only those who have a son at the first parity have a significantly higher likelihood of transitioning to second births. Our results for transition to third births show a higher probability of transitioning to third births for both 1.5-generation (marginally significant)[5] and second-generation (significant) immigrants if the first two children are boys and a higher probability of a third birth for the 1.5 generation if a gender mix is achieved in the first two parities. These results, coupled with the (non-significant result) of a lower probability of transition in the event of first two children being daughters, show that son preference may be declining across subsequent generations of Turkish immigrants. These findings lend some credence to Carol and Hank (2019), who show that son preference, although persistent, is less pronounced among second-generation Turkish immigrants in Germany. These results also accord with previous findings from Sweden and Norway, where son preference from 2000 to 2015 (as exhibited by masculinized sex ratios at birth) declined for immigrant women who had been residing in these countries for extended periods of time (Tønnessen, Aalandslid, and Skjerpen 2013; Mussino, Miranda, and Ma 2018).

6. Conclusion and limitations

Our results show that Turkish immigrants in Germany have higher fertility than the native (non-immigrant) population. For first-generation immigrants this higher fertility may be driven by the son-preferring fertility-stopping rule, whereas for the 1.5 generation and second generation it may be driven by a desire for more children itself, a desire for a gender mix of children or even a desire for a daughter in the case of the latter. These results allow us to conclude that although the cultural persistence theory may apply to first-generation Turkish immigrants in Germany with regards to gender preferences for offspring, cultural adaptation may be more apt for later generation of immigrants. The gender preferences for offspring for the latter appear to be deviating away from that of their native country (e.g., as shown by Altindag 2016) and leaning towards the gender preferences exhibited by the native German population.

Given the nature of our data, however, we cannot conclusively assert whether it is the process of cultural adaptation which is responsible for the changing nature of gender

[5] P-value = 0.059.

preference across subsequent generation of immigrants. The Turkish population sampled in the Turkish-German GGS represents a unique subset of Turkish immigrants in Germany: Turkish citizens who did not acquire German citizenship (Wolf 2014). Research has shown that naturalization is positively associated with a higher degree of socioeconomic and cultural assimilation in Germany (e.g., Steinhardt 2008; Ersanili and Koopmans 2010). Therefore, the changing gender norms across subsequent generations of immigrants evident via our results may not necessarily be due to cultural adaptation but rather specific social and economic features restricted to a subset of this sample. This is similar to the explanation forwarded by Tønnessen, Aalandslid, and Skjerpen (2013), who assert that the decreased masculinization of sex ratios at birth in Norway evident during the 2006–2012 period, in addition to long-term residence in the country and/or a time trend, may be attributed to a new wave of Indian immigrants entering the country.

We advise additional caution in the interpretation of our results for two reasons. First, increased (or decreased) likelihood in transitioning to a subsequent parity conditional on gender of the preceding children does not necessarily imply the existence of son/daughter/mixed gender preference (Miranda, Dahlberg and Andersson 2018). It may well be that women who have a particular gender constellation have an increased (or decreased) inclination to have more children (Miranda, Dahlberg and Andersson 2018). Nevertheless, the majority of studies on gender preferences have used this approach successfully to examine gender preferences, both within the native population and among immigrant communities in industrialized countries (e.g., see theoretical background section for references). We therefore feel it is adequate for our analysis when interpreted with caution.

Second, as Kreyenfeld, Hornung, and Kubisch (2013) point out, the GGS: German understates the fertility of older cohorts and overstates the fertility of younger cohorts. These inconsistencies stem from two sources: under-reporting of children who have left the parental home and easy accessibility to women with small children (Kreyenfeld, Hornung, and Kubisch 2013). There is no evidence to support that this affects the GGS: German-Turkish. Given that its affect is limited to the German GGS and that mixed-gender preferences for offspring as determined by Carol and Hank (2019) are an emergent phenomenon in Germany as a whole, we would expect that correcting for this under-reporting and over-reporting would allow our results for the non-immigrant category to become significant and align more closely with Carol and Hank's (2019). This is because the aberrations in the GGS: German are under-reporting the extent of fertility decline experienced within Germany, and fertility decline is a key determinant of gender preferences (Hank 2007).

We acknowledge further limitations given our data, in particular our inability to disaggregate the sample by time period (due to limited sample size) and incorporate

time variant controls (especially for socioeconomic status/income), which both limit a comprehensive analysis of son preference. We also draw attention to our deliberate exclusion of fertility intentions as a control variable. While we partly exclude this variable because we do not have it as a time variant variable (i.e., at the time of each birth parity or before childbearing begins), our main reason for excluding it is the possibility of multicollinearity. We cannot predict ex-ante whether the native population or Turkish immigrants in Germany will exhibit gender preferences. If such gender preferences are strong, we expect fertility intentions to not only change at each parity but also be highly correlated with the gender of existing children. Therefore, we exclude this variable to avoid bias in our analysis.

Despite our limitations our analyses make valuable contributions to literature on gender preferences at birth in Germany, fertility of immigrants, and immigrant assimilation versus persistence processes.

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Appendix

Table A-1: Descriptive statistics, transitions to second birth, non-immigrant sample

Variable	Total		First child girl		First child boy	
	N	*% or mean*	*N*	*% or mean*	*N*	*% or mean*
Second birth						
Yes	1789	71	851	71	938	71
No	735	29	353	29	382	29
Survival time	2,524	163	1,204	163	1,320	163
Age first child	2,524	25	1,204	25	1,320	25
Highest education						
Primary	405	16	189	16	216	17
Secondary	1596	64	773	65	823	63
Tertiary	498	20	231	19	267	20
Relationship status (first child)						
Single	398	17	194	18	204	17
Cohabiting	246	11	102	9	144	12
Married	1,649	72	799	73	850	71
Employment history						
Ever employed	2,235	89	1069	90	1,166	89
Never employed	275	11	125	10	150	11
Mother's employment (respondent 15)						
Not working	1,208	50	573	50	635	50
Paid employment	579	24	277	24	302	24
Highly skilled paid employment	613	26	292	26	321	26

Table A-2: Descriptive statistics, transitions to second births, immigrant sample

	Total		First child girl		First child boy	
	N	*% or mean*	*N*	*% or mean*	*N*	*% or mean*
Second birth						
Yes	910	76	431	77	478	75
No	286	24	126	23	160	25
Survival time	1,196	105	557	96	638	114
Immigration status						
First generation	735	62	334	60	400	63
1.5 generation	277	23	140	25	137	21
Second generation	184	15	83	15	101	16
Age first child	1,196	23	557	23	638	23
Highest education						
Primary	837	74	387	74	449	75
Secondary	258	23	121	23	137	23
Tertiary	30	3	16	3	14	2
Relationship status (first child)						
Single	101	9	40	8	60	10
Cohabiting	44	4	25	5	19	3
Married	978	87	449	87	529	87
Employment history						
Ever employed	714	39	338	62	375	41
Never employed	465	61	209	38	256	59
Mother's employment (respondent 15)						
Not working	891	79	411	79	479	79
Paid employment	212	19	96	18	116	19
Highly skilled paid employment	26	2	15	3	11	2

Table A-3: Descriptive statistics, transitions to third births, non-immigrant sample

Variable	Total		Girl-girl		Boy-boy		Gender mix	
	N	*% or mean*	*N*	*% or mean*	*N*	*% or mean*	*N*	*% or mean*
Third birth								
Yes	563	32	147	36	157	34	259	29
No	1,188	68	258	64	310	66	620	71
Survival time	1,751	154	405	155	467	148	879	157
Age first child	1,751	25	405	25	467	25	879	25
Highest education								
Primary	277	16	70	18	65	14	142	16
Secondary	1,095	63	255	64	287	62	553	23
Tertiary	365	21	75	19	113	24	179	21
Relationship status (second child)								
Single	223	14	59	15	66	15	108	13
Cohabiting	91	5	24	6	24	5	43	5
Married	1,364	81	312	79	360	80	692	82
Employment history								
Ever employed	1,529	88	358	89	407	88	764	87
Never employed	215	12	45	11	57	12	113	13
Mother's employment (respondent 15)								
Not working	862	52	202	53	225	51	435	52
Paid employment	418	25	97	25	108	24	213	26
Highly skilled paid employment	385	23	86	22	112	25	187	22

Table A-4: Descriptive statistics, transitions to third births, immigrant sample

	Total		Girl-girl		Boy-boy		Gender mix	
	N	*% or mean*	*N*	*% or mean*	*N*	*% or mean*	*N*	*% or mean*
Third birth								
Yes	433	47	112	53	126	47	195	44
No	491	53	99	47	142	53	249	56
Survival time	924	111	211	96	268	117	444	114
Immigration status								
First generation	573	62	119	56	166	62	287	65
1.5 generation	223	24	60	29	61	23	102	23
Second generation	128	14	32	15	41	15	55	12
Age first child	924	22	211	22	268	22	444	22
Highest education								
Primary	673	77	159	80	200	78	313	75
Secondary	181	21	35	17	53	21	93	22
Tertiary	20	2	6	3	3	1	11	3
Relationship status (second child)								
Single	74	8	13	6	27	10	33	8
Cohabiting	12	1	5	3	4	2	3	1
Married	817	91	186	91	234	88	397	91
Employment history								
Ever employed	539	59	120	58	150	57	268	61
Never employed	375	41	88	42	115	43	172	39
Mother's employment (respondent 15)								
Not working	691	78	158	79	204	79	328	77
Paid employment	169	19	37	19	49	19	83	20
Highly skilled paid employment	22	3	4	2	4	2	14	3