Women's Attitudes toward Assisted Reproductive Technologies - A Pilot Study among Migrant Minorities and Non-migrants in Germany

Haug, Sonja; Milewski, Nadja

Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:
Haug, S., & Milewski, N. (2018). Women's Attitudes toward Assisted Reproductive Technologies - A Pilot Study among Migrant Minorities and Non-migrants in Germany. *Comparative Population Studies - Zeitschrift für Bevölkerungswissenschaft*, *43*, 343-370. https://doi.org/10.12765/CPoS-2019-06en

Comparative Population Studies
Vol. 43 (2018): 343-370 (Date of release: 10.04.2019)

Women's Attitudes toward Assisted Reproductive Technologies – A Pilot Study among Migrant Minorities and Non-migrants in Germany*

Sonja Haug, Nadja Milewski

Abstract: This study examines attitudes toward assisted reproductive technologies (ART) among immigrant women and non-migrants in Germany. The social relevance of ART is increasing in Western countries due to overall low birth rates, a high rate of childlessness, and a gap between the desired and the actual numbers of children. Previous literature has been scarce, however, on attitudes toward ART, and immigrant minorities have rarely been included in studies on ART.

Our working hypotheses are drawn from theoretical considerations on political socialisation and cultural integration. The analysis is based on data collected in a pilot study in 2014 and 2015. The sample includes 960 women aged 18 to 50 living in Germany. About 81 percent of the sample are immigrants who originate from Turkey, Poland, the Balkan countries, or countries of the (Russian) Commonwealth of Independent States (CIS). We study the social norm to use ART to have a child, the personal attitude of whether a woman would use ART herself, and the methods that they would consider for their own use.

Our results show that ART is overall socially acceptable, and the majority of women said that they would use it if necessary. There is significant variation between the origin groups, however. Non-migrants show the lowest acceptance rates and migrants from Poland and Turkey the highest approval. There is also variation in the ART procedures considered for use with the migrants more approving of heterologous methods than non-migrants. The differences between the origin groups diminish only partly when controlling for further explanatory variables, i.e. gender-role attitudes, religiosity, and socio-demographic characteristics of the respondents.

We conclude that attitudes toward ART are shaped less by socio-demographic characteristics, but rather by cultural factors and the socialization in the migrants' countries of origin. The diversity in attitudes toward ART by cultural background should be acknowledged in research and public discourses on ART as well as in regulating policies.

Keywords: ART · Family norms · Women's social status · Migrant women · Germany

* This article belongs to a special issue on migrant fertility.

URL: www.comparativepopulationstudies.de
DOI: 10.12765/CPoS-2019-06en
URN: urn:nbn:de:bib-cpos-2019-06en8

1 Introduction

Our paper investigates attitudes toward assisted reproductive technologies (ART) in the multicultural context of Germany. We ask about attitudes and norms toward ART of immigrant women from four regions as compared to non-migrants, which is a novelty both in research on migrant integration and in studies on ART. Our work is motivated from three perspectives.

First, we are interested in norms and attitudes toward the use of ART. Previous research has focussed on public discourses on bioethics, religious doctrines, social concepts, and legal frameworks (*Schenker* 2005; *Serour* 2008). Demographic research has paid attention to the prevalence of ART treatments and the contribution of ART-related births to overall fertility. Naturally, aspects of need, access to, and effectiveness of ART have been studied in infertile persons (e.g. *Trappe* 2017) as well as knowledge of ART (e.g. *Bunting et al.* 2013). Almost nothing is known, however, about the social dimension among individuals, whether or not they themselves are affected by fertility problems. Exceptions are the recent country-comparative study by *Djundeva/Szalma* (working paper/ 2017) and single-country analyses by *Stöbel-Richter et al.* (2009, 2012) as well as by *Daniluk* and *Koert* (2012) and by *Heikkilä et al.* (2006) on medical students. Social and cultural aspects, such as attitudes, are important for policies regulating ART, which in the long run influence the usage and the supply of ART (*Präg/Mills* 2017a).

Secondly, we focus on immigrants because the scarce previous research has suggested that the attitudes and the behaviour related to ART vary by cultural factors (*Djundeva/Szalma* 2017; *Präg/Mills* 2017a). Cultural diversity has been addressed in previous studies, however only between countries, not within countries. Due to continuing immigration and a growing share of immigrants at the host populations, European countries show increasing cultural diversity (*Coleman* 2006), which is also accompanied by differential fertility trends. The topics of ART, fertility problems, or a gap between the desired and the actual number of children have hardly been raised in research on immigrant fertility in Europe thus far, whereas for the majority populations, childlessness has become an important topic in and of itself. This discrepancy in scholarly interest may be attributed to an overall societal concern with "hyper-fertility" of women from non-Western countries, as Inhorn and van Balen already pointed out in 2002. Two exceptions are a book edited by *Culley, Hudson*, and *van Rooij* (2009a), which showed how culture shapes the interaction between infertile individuals in the West and their experience with ART (*Culley et al.* 2009b), and a review on the international state of the art by *Weblus et al.* (2014), which showed implications of cultural diversity in patients for reproductive medicine.

Thirdly, we are interested in variation within migrant groups. Other attitudes related to reproductive behaviour have been shown to vary not only between migrants and non-migrants, but also among migrant origin groups and generations (e.g. *Carol/Milewski* 2017).

Our empirical study is based on a data collection from 960 women in Germany, which was initiated to investigate attitudes toward ART among immigrants of different origins and non-migrants (*Haug et al.* 2018). Due to the pilot character of the

research project and the sample size, the analyses are exploratory in nature. Our main research question is whether norms and attitudes toward ART differ by origin group and migrant generation, i.e. by the socialization context of the migrants. Our sample includes the four largest groups of immigrant women in Germany, comprising women from Poland, the Balkan countries, the (Russian) Commonwealth of Independent States, and Turkey as well as non-migrants living in Germany. These countries/regions vary in legal regulations and implementation of ART as well as in attitudes (*Präg/Mills* 2017a/b). We include individual cultural and socio-demographic control variables in multivariate analyses because the countries of origin in our study also vary with regard to religious traditions and attitudes toward gender equality (*Norris/Inglehart* 2012), wich correlate with fertility, family planning, and reproductive health.

2 Background

2.1 Societal context and attitudes toward ART

During the Second Demographic Transition, marriage, sexual activity, and childbearing became increasingly disconnected. Modern contraception has made it possible for women to exert control over their fertility career by separating sexual activity and fertilisation. These developments were preceded by an attitudinal change, i.e. growing individualism and declining religiosity (*van de Kaa* 1987; *Lesthaeghe* 2010). With the rise of ART, in particular since the very first live birth of a baby conceived by ART in 1978, persons or couples who are biologically incapable of having children, such as in cases of infertility (be it permanent or temporary), single women, or same-sex couples, can increase their chances of becoming parents. The approaches to the regulation of ART range from the perspective of the patients as their right to reproduce to the rights of the unborn child/embryo[1] (*Serour* 2008; *Čartolovni et al.* 2014). Thus, the major changes in family formation and fertility as well as in ART touch on the core values of any society and religion.

Secular societies have been more likely to experience the developments of the Second Demographic Transition than societies in which religion plays a major role; this coincides with greater acceptance of gender equality. By contrast, more religious societies continue to show a strong bond between sexual activity and marriage on one hand and marriage and childbearing on the other; at the same time, gender inequality is greater (*van de Kaa* 1987; *Norris/Inglehart* 2012). In both types of societies, however, ART has raised bio-ethical concerns because it separates

[1] Note: Our paper studies attitudes toward ART from the viewpoint of family planning and therefore we focus on individuals who may or may not consider using ART for their own family formation. We omit discourses on the status and rights of the embryo/child, such as the question of surplus embryos, on the status of donors, which are admittedly crucial in the bio-ethical debates surrounding ART, or on the question whether and what aspects should be regulated by law (*Heikkila et al.* 2006).

the sexual act from conception. The question is posed as to when a beginning life should be considered an individual person. The major world religions vary in their doctrines in their permission on methods of procreation (*Serour* 2001). Intertwined with religious and cultural traditions, the legal regulations also vary greatly among countries (*Präg/Mills* 2017a/b). ART comprise a wide range of third-party assisted conception as well as diagnostics. The methods of assisted conception can be distinguished as homologous methods, i.e. methods where the social parents are also the two biological parents (e.g. in-vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI)), and heterologous methods, where a third party is one of the biological parents (such as third-party sperm donation, egg cell donation, and surrogacy).

Among infertile persons, ART are often considered the final option to achieve the goal of having their own biological child, while alternative methods such as adoption or fostering are considered only after reproductive medicine has failed (*Onnen-Isemann* 2000a). *Stöbel-Richter et al.* (2012) found that German women and men generally accept the use of ART. Asked about the social norm, half of the respondents agreed that childless couples should try all available ART to have a biological child; while about 18 percent disagreed with this statement (*Stöbel-Richter et al.* 2012). Regarding their own attitude, almost a third of the respondents would use ART if they were not able to have a child of their own the "natural" way (for comparison: only 22 percent would consider an adoption).

Whereas the general acceptance of ART seems rather widespread in cases of bio-medical fertility problems, the individual methods have different levels of acceptance. Individuals are more likely to approve of homologous methods, such as IVF, than technologies involving third parties, like heterologous sperm and egg cell donation, embryo donation, or surrogacy (*Stöbel-Richter et al.* 2009 for Germany; *Daniluk/Koert* 2012 for Canada).

2.2 Country variation and cultural assimilation among migrants

The context of our study is Germany. More than 18.5 million persons who were immigrants themselves or who were born to one or two immigrant parents live in Germany, comprising about 21 percent of the general population. The migrant population in Germany is heterogeneous with respect to country of origin, legal status, period of residence, and population composition. The largest immigrant groups originating from a single country are from Turkey (about 3.4 percent of the total population) and Poland (about 2.3 percent). Two immigrant groups, those from the countries belonging to the former Soviet Union, now the Commonwealth of Independent States (CIS) and Ukraine, and those from the Balkan countries formerly belonging to Yugoslavia, contribute 3.8 and 2 percent respectively to the population, thus accounting for about half of the migrant population in Germany (*Destatis* 2018).

Our first working hypothesis concerns the influence of the migrants' country of origin. There is not much literature on the ideational or cultural dimension of integration among immigrants in Germany or in other European countries, with minorities from Muslim countries being an exception. Most literature on attitudes and values among women from countries with a Muslim tradition indicates that it is

particularly mostly first-generation immigrants who are likely to maintain the attitudes and values dominant in their country of origin during their socialization phase abroad. This has been shown for attitudes on abortion (*Carol/Milewski* 2017), religiosity (*van Tubergen/Sindradottir* 2011; *Milewski/Otto* 2016), and attitudes toward gender equality (*Röder* 2014). These findings are in line with *Almond* and *Verba's* (1989) theory of political socialization through school, work, or the media according to which the societal climate, e.g. what is created by public discourse, policies and their implementation, is reflected in public attitudes.

As the immigrants in our study originate from countries that differ in their prevalences and legal regulations of ART, we include a rough summary of the legal conditions in the countries/regions of origin in our study at the time of data collection for our analyses (2014/2015) in this section.

Reproductive medicine is a growing health care sector in Germany. Compared to other European countries, the treatment rate is comparatively low, however. In 2010, Germany was ranked 19th of 30 countries in Europe, with about 4000 ART treatments per 1 million women aged 15-45. There is large variation in the immigrants' countries of origin in our study. The lowest prevalences were recorded in Moldova (less than 1000 treatments). Ukraine, a republic that was formerly a part of the Soviet Union and the CIS included in this statistics, ranked 20th. Also rather lower prevalences were found for Macedonia (rank 26), Montenegro (27), and Poland (29). The same statistics ranked Serbia at 11 and Croatia at 17 – indicating (much) higher prevalences of ART than in Germany (*Präg/Mills* 2017b).

The practice of and access to ART can be regulated in three ways: 1) Guidelines contain a set of rules practitioners are expected to follow on a voluntary basis. 2) Governmental legislation refers to rules that are inscribed in law to which violation is subject to penalty. 3) Insurance coverage regulates the reimbursement of the expenses to patients. Almost all European countries regulate access to ART in their legislation. However, there is variation in the existence of additional guidelines and in insurance coverage. Moreover, a couple's marital status and sexual orientation are often additional requirements for ART, with the majority of European countries stipulating that only married (heterosexual) couples can have access to ART treatment (*Präg/Mills* 2017b).

In Germany, legislation regulates access to ART. Whereas all homologous techniques are allowed, there are various regulations regarding heterologous techniques: The donation of a sperm cell is permitted only if the name of the donor is known. By contrast, egg cell donation, surrogacy, or the use of egg or sperm cells after the death of the owner is considered a misuse of ART. ART is limited to married heterosexual couples. Health insurance covers the costs only up to the age of 40 for women and 50 for men (*Trappe* 2017).

Russia appears to be the most liberal European country regarding access to and coverage of ART. It offers homologous and heterologous techniques, such as surrogacy as well as gamete and embryo donation. The costs are covered by the national health plan, commercial arrangements are possible, and single women can have access to ART (*Svitnev* 2010; *Präg/Mills* 2017b). In contrast, the most restrictive case is Poland (*Krawczak* 2016). Until 2015, ART had been neither legal nor regulated by

state law. Due to non-regulation, this health care sector was commercialised and the owners of the respective treatment clinics decided what methods were offered, e.g. egg and sperm cell donation are possible. Only in 2015 did the Infertility Act move ART into legislation and introduce a reimbursement plan. Access is granted only to married couples as in most European countries. The access to information on the supply of ART is limited, however, coinciding with a reluctance among Polish politicians to engage with the topic (*Krawczak* 2016).

The other immigrants' countries of origin included in our study lie somewhere between liberal Russia and conservative Poland. Turkey allows the use of ART for married couples only, costs are partially covered, and only homologous methods are approved (*Gürtin* 2011). Croatia and Slovenia also grant access to couples in a stable relationship. Furthermore, Croatia provides access for single women; costs are, however, only partially covered. Slovenia provides patients of ART treatments with a full reimbursement. In Croatia, heterologous methods are allowed (*Čartolovni et al.* 2014; *Präg/Mills* 2017b).

Because the societal climate regarding ART varies between the countries of origin, we assume the migrant groups from these regions in our study will also show differences in their attitudes toward ART after migration. As compared to Germany, we assume that migrants from Poland may be the least approving of ART because the long resistance of the Polish government to legally regulating ART. The various access restrictions may have also fostered a negative perception of ART (despite the wide range of methods supplied), and the treatment rate is the lowest in Europe. By contrast, we would expect persons from the former Soviet Union to be more accepting of ART due to the laws and practices there, which are more liberal than in any other country included in our pilot study. For migrants from Turkey and the Balkan countries, we expect them to show attitudes that differ from those from the "extreme" cases of CIS and Poland because the legal framework and the usage also ranges in the middle, i.e. rather similar to Germany.

Our first working hypothesis on the country of origin of the migrants thus is: Women from Russia and other CIS countries are expected to be more likely to approve of ART while women from Poland are expected less likely than Germans and migrants from Turkey and the Balkan countries (H1).

Our second working hypothesis concerns the role of cultural integration across migrant generations. Previous empirical studies have provided mixed evidence on other attitudes toward sexuality and family as well as religiosity in the second generation (*Diehl/König* 2009; *Carol/Milewski* 2017; *Kalmijn/Kraaykamp* 2017). Classical assimilation theory (*Gordon* 1964) would propose that subsequent migrant generations gradually adapt to the destination society. The second generation has been described as being between two cultures, in particular when the cultural distance between their parents' origin and the destination is rather large, as in the case of Muslims migrating to Europe. On the one hand, descendants of immigrants may be influenced by channels of political socialization at destination and the institutional context for larger parts of their life course. Thus, their attitudes may rather resemble those of non-migrants than those of their parents. On the other hand, additional

factors may also play a role in the descendants' attitudes, such as intergenerational transmission of the parents' culture and the socialization into a minority group.

Thus, our second working hypothesis: If the attitudes toward ART in the first migrant generation differ from that of Germans, we assume that the attitudes of the women of the second migrant generation range between those of the first generation and the non-migrants (H2).

2.3 Religion and gender roles

Our third working hypothesis concerns the role of further explanatory variables in shaping attitudes toward ART. We are interested in cultural factors, which have been shown to influence the usage of ART (*Präg/Mills* 2017a).

Family and reproduction are an essential part of all religions, hence research on bio-medical ethics discourses about the influence of religion has a long tradition among scholars worldwide. In collectivistic societies and in religious communities, having children is important for intergenerational transmission and support for old age as well as for the continuity of the lineage. Whereas most world religions see marriage as an essential part of the life course, their doctrines perceive fertility and infertility differently (*Serour* 2008).

The Christian churches – the traditionally dominant religions in Europe – vary in their allowance of ART in general and in the methods used in particular. The Roman Catholic doctrines (influential in Poland, Croatia, Serbia, Bosnia-Herzegovina, and parts of Germany) perceive conception as depending on sexual intercourse of the spouses. Therefore, the Vatican rejected assisted reproduction as early as 1956 (a declaration of Pope Pius XII). Tolerable exceptions may be made in cases where natural intercourse is not substituted and where the unit of the married couple is preserved. The doctrines of the Eastern Orthodox Church (represented in Russia and also in Croatia) are similar, allowing only medical, hormonal, corrective or reconstructive surgical treatment of infertility and rejecting methods of third-party-assisted conception. The Protestant denominations in Germany are more liberal in their stance toward the use of ART. Preferably, homologous rather than heterologous methods may be used because the former preserve the unit of the marriage (*Schenker* 2000, 2005).

In Islam (dominant in Turkey, parts of Bosnia-Herzegovina, Albania, Kosovo), despite the existence of various schools, the importance of marriage, family formation, and procreation is a common feature in the doctrines. Islam permits the use of ART as long as they are used for married couples who have bio-medical fertility problems. In Sunni Islam, the authenticity of the lineage must be ensured. This means only homologous techniques are permitted as long as the marriage is valid and both spouses are still alive (*Serour* 2008).

Despite these differences between the religious doctrines, previous research on ART usage suggests that religious affiliation may not matter as such (*Präg/Mills* 2017a), but rather personal religiosity. Religiosity can take different forms (believing, bonding, behaving and belonging) (*Saroglou* 2011), and the influence of religion in daily life may vary by life domain. The personal implementation of religion in daily

life may exert an independent effect on attitudes, independent of the country of origin and the religious affiliation as shown for other attitudes toward gender, family, and sexuality.

The religious perceptions of marriage, fertility, and family are highly intertwined with gender roles, in particular with the status of women. People in more religious societies show attitudes leaning toward gender inequality and more conservative family values (*Norris/Inglehart* 2012). This association is particularly strong in the Muslim religions. Therefore, infertility treatment is considered important in Islam. "The social status of Muslim women, their dignity and self-esteem are closely related to their procreation potential, both for the family and society as a whole. Childbirth and rearing are regarded as family commitments of both partners and not just biological and social functions" (*Serour* 2008: 35). By contrast, in the Christian churches, the suffering of persons who are involuntarily childless is perceived as natural and is to be accepted (*Schenker* 2005). Thus, infertility or childlessness may have greater social consequences and may cause greater personal suffering for religious people and people in collectivistic cultures, where family is the main source of pride, or in cultures where the birth rate is high and childlessness is rare (*Culley et al.* 2009b).

The immigrants in our study come from countries where the social status of a woman largely depends on her motherhood status and where – unlike Germany – childlessness in particular is rare. At more than 20 percent, Germany has the highest level of childlessness in Europe (*Sobotka* 2017). Immigrant groups in Germany – as in other European countries – have higher fertility levels than the native population, in particular the first generation from countries with replacement fertility levels or above. For the countries of origin included in our study, this pertains mainly to women from Turkey, who exhibit higher fertility transitions in Germany than both non-migrant Germans and those staying in Turkey (*Milewski* 2010; *Baykara-Krumme/Milewski* 2017). Women from countries where fertility rates are similar to Germany (such as former Yugoslavia) show a rather similar or lower fertility compared to non-migrant Germans. The rates of childlessness, however, are on average lower as compared to non-migrant Germans (*Milewski* 2010). This indicates that immigrant women maintain the family values from their countries of origin, which see motherhood as central for women. A possible gap between desired and actual numbers of children, which may suggest a demand for ART, has not yet been investigated in work on migrant fertility.

Our third working hypothesis is based on the assumption that immigrants of different origins and non-migrants in Germany may vary in their gender-role attitudes and their religiosity from and between each other. *Our third hypothesis: We expect that controlling for gender-role attitudes and individual religiosity reduces the main effects (if any) of the origin groups in attitudes toward ART (H3).*

3 Empirical material

3.1 Data

The data we used in this paper were drawn from a data collection carried out in 2014-2015 as part of a research project on the influence of social networks on knowledge transfer regarding reproductive health (NeWiRe) carried out by a project team at the Eastern Bavarian Technical University (OTH) Regensburg. The data were collected via a standardised telephone survey (CATI) of women living in Germany who were between 18 and 50 years old. The targeted sample size was 1000 respondents. Some parts of the questionnaire of our data collection replicated a survey dating from 2003 (*Stöbel-Richter et al.* 2009). Unlike *Stöbel-Richter's* project, one specific goal of the NeWiRe survey was to include, in addition to German native-born women, immigrants of the first and second generations. The target groups were the four largest immigrant groups living in Germany based on the criteria "migrant background" as used in official statistics and in the microcensus, meaning either foreign citizenship, own migration experience, or having at least one parent who had immigrated to Germany (*Destatis* 2018). The sample for the NeWiRe survey (*Haug et al*. 2018) was drawn by *Humpert & Schneiderheinze* GbR and *Prof. Dr. Rainer Schnell*, using disproportionally layered random sampling by means of an onomastic (name-based) procedure. Potential participants' landline numbers or mobile phone numbers were selected from the German telephone directory based on an index of first or family names (*Humpert/Schneiderheinze* 2000; *Schnell et al.* 2013).[2]

As a result of this sampling method, 1001 interviews were conducted.[3] The questionnaire was available in German, Turkish, Polish, Russian, and Serbo-Croatian; the interviews were carried out by bilingual interviewers in order to allow respondents to switch between German and their respective mother tongue or second language at any point during the interview.[4]

---

2 A screening procedure was conducted preceding the interviews. Respondents were asked about their native country (i.e. country of birth), the native countries of their mother and their father, their first and any second citizenship to define their migrant background according to the definition used in German official statistics. The application of the onomastic method worked very well for persons of Turkish descent, where about 88 percent of the respondents were correctly identified, as well as for persons from Poland (86 percent) and from the CIS (94 percent). The correct identification of the migrant background was rather modest in the case of people originating from the Balkan countries (61 percent), resulting in a lower coverage rate of this group. The response rate was higher for the sample group of CIS (37 percent), Poland (29 percent), and Turkey (25 percent), but relatively low for the Balkan countries (18 percent) and non-migrants (17 percent).

3 18 percent with non-migrant women, 25 percent had a migrant background from CIS countries, 19 percent from Poland, 19 percent from Turkey, and 15 percent from Balkan countries formerly belonging to Yugoslavia and Albania.

4 In the groups from "Turkey," "the CIS," and "Poland," more than half of the interviews were conducted in the respective native languages compared to only 9 percent of the interviews in the group of "the Balkan countries" (*Haug et al.* 2018).

The final sample used consisted of 960 women (41 respondents were excluded from the analyses due to missing or unreliable information on their migrant background). About 81 percent of the women in our sample belonged to a migrant minority group and 19 percent were non-migrants. Among the immigrants, we distinguished the generations by the respondents' country of birth. About two-thirds of them had migrated to Germany themselves or with their parents (the mean length of stay was 24 years), while the remaining third was born in Germany.

3.2 Variables and method

Our analyses consist of three parts. The first dependent variable is the social norm on the use of ART (Models A). We used the statement reading "Involuntarily childless couples should make use of all possibilities of reproductive medicine to have biological children" (960 respondents answered this question). The answers were collected on a 5-item Likert scale ranging from "completely disagree" to "completely agree." We used linear regression models and display these results as beta coefficients. Second, we analysed the more personal attitude by using the question "If you wanted to have children but were unable to have children 'naturally,' would you in principle make use of medical procedures to be able to have a biological child?" (947 respondents answered this question) (Models B). Three answers were possible ("yes, definitely," "yes, maybe," and "no"). For the analysis, the categories "yes, definitely" and "yes, maybe" were combined to yes (1) versus "no" (0). We used binary logistic regression models and display these results as odds ratios. These two variables, i.e. the social norm and the personal attitude, correlate significantly (Spearmans's rho=0.35), but are no substitutes for each other. We investigate both outcomes because the question on the norm specifically addresses infertility in childless couples whereas the question on the attitude is phrased more generally using the word "naturally." Thirdly, we analysed the methods of ART that would be considered for use (Models C). The respondents who indicated that they would "in principle make use of medical procedures to be able to have a biological child" were asked in a follow-up question which methods they would use (864 respondents answered this question). The questionnaire listed six procedures that belong to three basic types. First, hormone treatment influences the preconditions of a possible conception. Second, insemination and IVF are homologous methods. Third, sperm and egg cell donation as well as surrogacy are heterologous methods. The respondents could either agree or disagree to each of these six procedures; multiple answers were possible. In clinical practice, hormone treatment is not only a stand-alone treatment, but also a component of other technologies. Similarly, IVF is a homologous method, but also a component of heterologous methods. In addition, heterologous methods are more controversial because they involve a third party; and they are – to date – not legal in Germany, or only under certain conditions. Therefore, we distinguished between those respondents who would use at least one heterologous method (1) and those who would use only homologous methods (0) and carried out a binary logistic regression on the type of ART.

In order to account for cultural differences between the main groups, we used a variable for individual religious behaviour related to family planning by querying the degree of agreement with a statement on family-planning methods: "I practise family planning conforming to religious rules." As an indicator for gender-role attitudes, the respondents were asked how much they agreed with the statement "A woman needs her own children to live a fulfilled life." The answers to the questions on religious family planning and gender-role attitudes were possible on a five-item Likert scale.

Further independent variables captured the socio-demographic characteristics of the respondents in order to control for compositional differences between the groups under study. Age and age-squared were used as metric variables. The variable "union status" measured whether the respondents had a cohabiting partner (be it either a marriage or a non-marital cohabitation) or not. A parenthood variable indicated whether the respondents had children or not. The level of educational attainment was measured by the highest school degree obtained (none/lower secondary education (corresponding to *Hauptschule)*, intermediate secondary education (corresponding to *Realschule or Mittlere Reife)*, upper secondary education (corresponding to *Abitur or Fachhochschulreife*)).

3.3 The sample and data quality

The sample consisted of five country groups of origin. Table 1 gives a descriptive overview of the sample by country of origin, which also enables evaluation of the data quality of our pilot project.

About 19 percent were German non-migrants, 26 percent of the women came from the CIS countries, about 20 percent from Poland, and another 20 percent from Turkey, and 16 percent originated from a country in the Balkan region. If we take country of origin and migrant generation into account simultaneously, the share of the second generation was about 2 percent in the group from the women from CIS countries, about 10 percent among Polish respondents, 32 percent among Turks, and 27 percent among those from the Balkan countries.[5] According to the German microcensus, the share of the second generation is about one third; their share is, however, much lower for the relatively new immigrant groups from Poland or CIS countries (*Destatis* 2018).

Despite a similar age structure, we found significant differences between the groups by country of origin in the explanatory variables: The percentage of single women and childless women was significantly lower among the immigrants than for non-migrant Germans. The groups in our sample also varied significantly regarding their schooling with the migrant groups on average lesser educated than the German non-migrants. There was, however, a substantial difference between the

[5] In the migrant groups coming from Turkey and from the Balkan countries, we distinguished between the first and the second migrant generations; due to the small sample size of the second generation in the groups from the CIS countries and Poland, no distinction could be made there in the multivariate analyses.

Tab. 1: Description of the sample, by country of origin (%)

	Non-migrants	Migrants			
	Germany	CIS countries	Poland	Turkey	Balkan countries
Migrant generation					
1st generation	na	98.4	89.9	67.9	74.0
2nd generation		1.6	10.1	32.1	26.5
Age (mean)	39	38	38	36	38
*Union status***					
Single and no cohabitation (not married/ divorced/ widowed)	35.4	18.7	27.1	22.5	19.9
Married or non-marital cohabitation	64.6	81.3	72.9	77.5	80.1
*Parenthood****					
No, childless	25.8	8.7	20.7	20.3	13.2
Yes, children	74.2	91.3	79.3	79.7	86.8
*School education****					
None, primary, lower secondary	9.3	10.3	4.8	35.3	20.5
Intermediate secondary	42.3	57.5	31.4	33.2	38.4
Upper secondary	47.3	30.2	56.9	27.3	39.1
mv	1.1	2.0	6.9	4.3	2.0
*Religious affiliation****					
Roman catholic	40.1	11.5	92.6	0.5	34.4
Protestant	29.1	38.1	0.5	1.1	1.3
Muslim	2.2	0.4	0.0	92.5	39.7
Christian orthodox	0.0	24.2	0.0	1.1	12.6
None	23.1	17.9	4.8	1.6	9.3
mv	5.5	7.9	2.1	3.2	2.6
*Family planning conforming to religious regulations****					
“Completely disagree”	53.8	34.1	14.4	5.3	31.1
“Disagree”	21.4	26.2	22.3	8.6	10.6
“Neither nor”	11.0	12.7	9.6	3.2	15.2
“Agree”	8.2	16.7	30.3	26.7	23.8
“Completely agree”	3.8	9.5	21.8	54.5	17.9
mv	1.6	0.8	1.6	1.6	1.3

Tab. 1: Continuation

	Non-migrants	Migrants			
	Germany	CIS countries	Poland	Turkey	Balkan countries
*"A woman needs her own children to live a fulfilled life."****					
"Completely disagree"	17.6	2.4	8.0	4.3	8.6
"Disagree"	13.7	8.7	12.2	7.5	8.6
"Neither nor"	19.8	8.3	12.2	5.9	10.6
"Agree"	28.0	21.0	23.4	27.8	27.2
"Completely agree"	20.9	58.7	43.6	53.5	45.0
mv	0.0	0.8	0.5	1.1	0.0
Reproductive treatment experience					
Yes	8.2	6.0	8.5	6.4	7.9
No	91.8	94.0	91.0	93.6	91.4
mv	0.0	0.0	0.0	0.0	0.7
n	*182*	*252*	*188*	*187*	*151*
% at total sample	*19.0*	*26.3*	*19.6*	*19.5*	*15.7*

Note: Significance for bivariate association between variable and migrant status (chi² or t-test); *p<=.05; **p<=.01; ***p<=.001.

CIS: Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russian Republic, Tadzhikistan, Turkmenistan, Uzbekistan, Ukraine;

Balkan countries: Bosnia, Croatia, Kosovo, Macedonia, Montenegro, Serbia, Albania.

mv=missing values, na=not applicable.

Source: NeWiRe survey 2014-2015. N=960

migrants' by their country of origin, i.e. women from Poland were the highest educated on average in our sample, with a low share of low education and a rather high share of upper secondary schooling. The group from Turkey had the lowest education with the highest shares of lower secondary (or less) schooling and the lowest share of upper secondary schooling in our sample. The groups from CIS and Balkan countries were in the middle.

Regarding their religious affiliations, the groups from Poland and from Turkey were dominated by one religious affiliation; more than 90 percent of the Polish belonged to the Roman Catholic Church and more than 90 percent of the Turks indicated a Muslim affiliation. The groups from the Balkan, from CIS countries, and from Germany each showed a composition of two religious denominations, but also rather high shares of non-religious persons. As the variable "religious affiliation" correlates highly with the country of origin, we could not use this indicator in our multivariate analyses, however. Personal religiosity, measured as the role of religion in contraception, differed significantly between the German non-migrant group and the migrant groups. Only 12 percent of the German respondents said that they prac-

tised family planning conforming to any religious regulations, but 83 percent of the Turkish migrants and 53 percent of the Polish migrants agreed to this statement. The statement measuring gender-role attitudes "A woman needs her own children to live a fulfilled life" received much more agreement among migrants, in particular women from CIS countries and Turkey, with about 80 percent or more each, compared to 49 percent among non-migrants. Women from Poland and from Balkan countries were in the middle with about 70 percent agreement to this gender-role item.

When we compare the socio-demographic structure of the sample in our pilot project to previous literature and data on the population of Germany, we believe that the quality of our sample is rather good. As an additional indicator of the data quality, we can use the prevalence of ART usage. In our sample, the percentage of women who had ever received any reproductive medical treatment was about 7 percent. The rate was even higher in the German sub-sample (8 percent) than among the migrant groups. This is a much higher rate than what has been stated in the scarce literature to date (2 percent, *Stöbel-Richter et al.* 2012). This increase, however, seems not implausible considering the rise in the number of children born after medical treatment according to the German in-vitro fertilization register (IVF register) in the recent decades (*Haug et al.* 2018; *Trappe* 2017; *Passet-Wittig* 2017). The rate that we estimated is similar, however, to 8 percent in a sample of childless migrants in *Smidt/Wippermann's* study (2014).

The willingness to use ART is much higher in our sample than that of *Stöbel-Richter* (2009, 2012); a plausible reason may be measurement issues. The first question in our study referred to ART in general and then to different methods separately (see Table 5), whereas Stöbel-Richter's study asked for "all reproductive options."

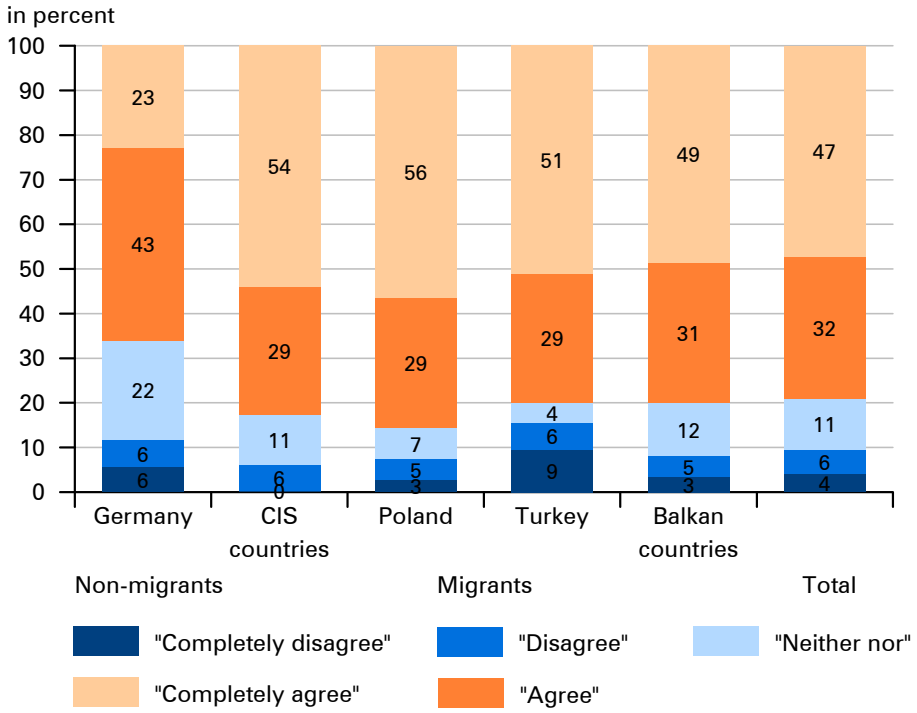
4 Results

Social norm on the use of ART

Figure 1 displays the bivariate results for the social norm to use ART by origin group. In the total sample, almost 80 percent agreed (strongly) that involuntarily childless couples should make use of all available ART; 10 percent disagreed (strongly). There was variation by migrant background: The approval rates were higher among migrants, with at least 80 percent in each origin group, than among the non-migrants, of whom only 66 percent agreed. The disagreement was 12 percent among Germans and 15 percent among Turks; women of the other origin group showed disagreement rates below 10 percent.

Table 2 displays the result of the multivariate analyses of the social norm to use ART. In Model A1, we distinguished between the countries of origin and between the migrant generations when possible, testing our working hypotheses 1 and 2 on the role of the country of origin and the migrant generation. The lowest agreement to the norm was estimated for the Germans (who were in the reference category). The highest agreement was found for women from CIS countries and Poland

Fig. 1: Social norm on the use of ART, by country of origin (%)



Note: Differences by country background are significant on the 0.001 level.

Source: NeWiRe survey 2014/2015. N=945

(which consisted in both groups mainly of first-generation migrants). Women of the first generation from the Balkan region and from Turkey ranged between the Polish women and those from CIS countries on one hand and the German respondents on the other. By contrast, women of the second migrant generation from Turkey and the Balkan countries did not show significant differences compared to Germans, but significantly lower levels than their first-generation counterparts. Then we tested our third working hypothesis on the role of differences in the cultural and socio-demographic composition of the groups by inserting the control variables in the Models A2 (adding age, age-squared, union status, parenthood, education) and A3 (adding gender attitudes and religiosity). The pattern of significant country differences in the first generation and the significant differences between the migrant generations remained, and the coefficients only slightly changed despite these controls, however.

Tab. 2: Determinants of social norms toward ART

	Model A1			Model A2			Model A3		
	beta	ci lower	ci upper	beta	ci lower	ci upper	beta	ci lower	ci upper
Country background (Ref = Germany)									
Balkan countries/ 1st generation	0.16***	0.29	0.79	0.15***	0.25	0.76	0.14***	0.20	0.72
Balkan countries/ 2nd generation	0.04	-0.15	0.57	0.04	-0.15	0.58	0.04	-0.17	0.56
Turkey/1st generation	0.15***	0.22	0.71	0.14***	0.18	0.69	0.12**	0.11	0.66
Turkey/2nd generation	0.02	-0.22	0.41	0.03	-0.19	0.48	0.03	-0.22	0.46
Poland	0.23***	0.39	0.82	0.23***	0.40	0.83	0.22***	0.37	0.81
CIS countries	0.24***	0.39	0.79	0.22***	0.34	0.75	0.19***	0.27	0.68
Age				0.34	-0.03	0.12	0.44	-0.02	0.13
Age^2				-0.34	0.00	0.00	-0.42	0.00	0.00
Married/cohabition (Ref = single)				-0.05	-0.32	0.07	-0.05	-0.33	0.06
Parenthood (Ref = childless)				0.07	-0.07	0.45	0.03	-0.17	0.36
School education (Ref = none/primary/lower secondary)									
Upper secondary				-0.05	-0.30	0.09	-0.03	-0.27	0.13
Intermediate secondary				0.01	-0.16	0.22	0.02	-0.15	0.23
"A woman needs her own children ..."									
"Completely agree"/"agree" (Ref = "completely disagree"/"disagree"/"neither nor")							0.14***	0.16	0.48
"... family planning conforming to religious regulations"									
"Completely agree""/agree" (Ref = "completely disagree"/"disagree"/"neither nor")							-0.03	-0.23	0.09
R^2	*0.22*			*0.26*			*0.29*		

Note: *p<=.05; **p<=.01; ***p<=.001.

Linear regression (OLS), dependent variable: "Involuntarily childless couples should make use of all possibilities of reproductive medicine to have biological children";

1=completely disagree to 5=strongly agree.

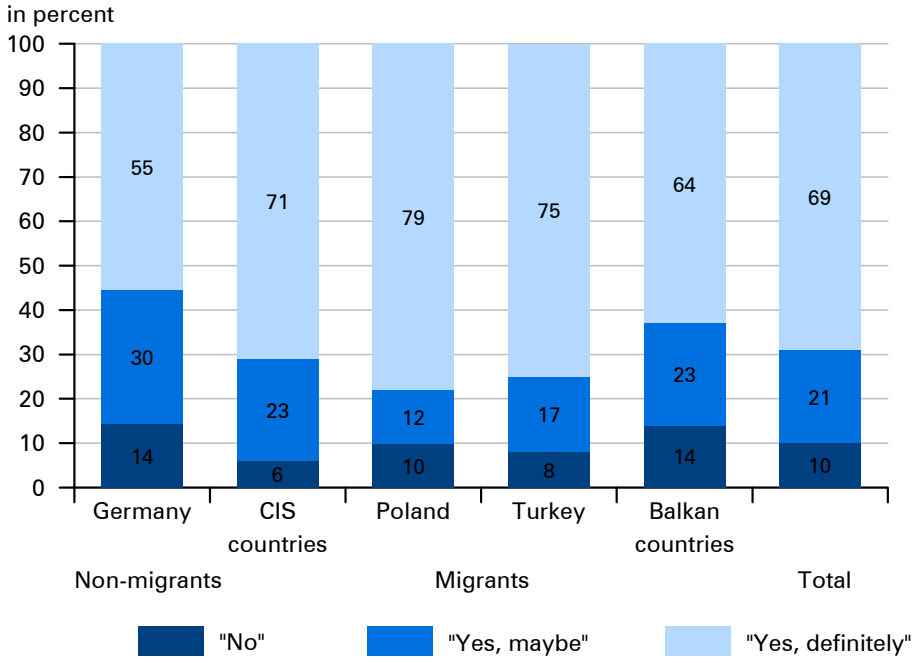
Models A2 and A3 controlled for ART treatment experience.

Source: NeWiRe survey 2014/2015. N=943

Personal attitudes toward the use of ART

Figure 2 displays the bivariate results for the personal attitude toward the use of ART by origin group. The willingness to use reproductive medicine if faced with an inability to conceive in order to have biological children is rather high in the total sample: 69 percent of the women would "definitely" use ART, and another 21 percent said that they would "maybe" use it. Accordingly, only 10 percent rejected the possibility of ART usage. The size of the non-users corresponded with those who did not share the norm on the use of ART. Similar to the analyses of the norm, the attitude toward the use of ART was the lowest in the group of German natives, of whom only 55 percent would "definitely" use ART and another 30 percent answered "maybe." Accordingly, 14 percent rejected personal use of ART. Among migrant women, there was variation by country of origin: The highest share of "definite" use was found for women from Poland (79 percent), followed by those from Turkey (75 percent) and CIS countries (71 percent). Women from the Balkan countries ranged with 64 percent "definite" use in the middle between Germans and the other migrant groups, but their share of non-intention to use ART was equal to that of Germans (10 percent). The share of those who rejected ART treatment was the lowest in the CIS group (6 percent).

Fig. 2: Personal attitude toward the use of ART, by country of origin (%)



Note: Differences by country background are significant on the 0.05 level.

Source: NeWiRe survey 2014/2015. N=947

Tab. 3: Determinants of personal attitudes toward the use of ART

	Model B1			Model B2			Model B3		
	odds ratio	ci lower	ci upper	odds ratio	ci lower	ci upper	odds ratio	ci lower	ci upper
Country background (Ref = Germany)									
Balkan countries/1st generation	1.30	0.62	2.70	1.42	0.67	3.03	1.64	0.74	3.64
Balkan countries/2nd generation	1.06	0.38	2.97	0.89	0.31	2.56	0.95	0.33	2.76
Turkey/1st generation	2.72*	1.14	6.51	3.31*	1.32	8.28	4,63**	1.71	12.57
Turkey/2nd generation	1.42	0.55	3.64	1.05	0.38	2.94	1.40	0.48	4.13
Poland	2.27*	1.10	4.67	2.25*	1.08	4.68	2.80	1.28	6.13
CIS countries	2.36*	1.22	4.57	2.42*	1.22	4.78	2.37**	1.17	4.79
Age				0.97	0.75	1.24	0.97*	0.76	1.26
Age^2					1.00	1.00		1.00	1.00
Married/cohabition (Ref = single)				0.65	0.32	1.31	0.66	0.33	1.34
Parenthood (Ref = childless)				1.45	0.63	3.35	1.24	0.53	2.87
School education (Ref = none/primary/lower secondary)									
Intermediate secondary				1.32	0.68	2.53	1.34	0.69	2.6
Upper secondary				1.22	0.64	2.33	1.21	0.63	2.31
"A woman needs her own children ..."									
"Completely agree"/"agree" (Ref = "completely disagree"/ "disagree"/"neither nor")							1.76*	1.04	2.98
"... family planning conforming to religious regulations"									
"Completely agree"/"agree" (Ref = "completely disagree"/"disagree"/"neither nor")							0.49**	0.28	0.84
Nagelkerke R²	*0.03*			*0.05*			*0.07*		

Note: *p<=.05; **p<=.01; ***p<=.001.
Binary logistic regression, dependent variable: "I would make use of medical procedures to have a biological child"; 1=yes, 0=no.
Models B2 and B3 controlled for ART treatment experience.

Source: NeWiRe survey 2014/2015, N=947

Table 3 displays the results of the multivariate analyses of personal attitudes toward the use of ART. Similar to the social norm, the chances to approve of ART was elevated in the groups from Poland and the CIS countries as well as in the first migrant generation from Turkey and the Balkan region (but, due to a large confidence interval, not significantly in the Balkan group). Again, no significant differences were found between women of the second generation and non-migrants (Model B1). The pattern of country differences and generational differences remained when we inserted the socio-demographic controls (Model B2). Model B3 controlled for the indicators of gender-role attitudes and religiosity, without causing much effect on the group differences by migrant origin and generation. Women from Turkey in the first generation were about 4 times more likely to say that they would use ART than Germans; the likelihood among women from Poland and those from the CIS countries was more than double that of the Germans. Although not significant, the first generation from the Balkan countries were 60 percent more likely to say that they would use ART compared to Germans (Model B3).

Methods of ART considered for personal use

Table 4 displays the descriptive results of the methods of ART that the respondents would use themselves. Hormone treatment and insemination received the highest acceptance rate with about 82 to 89 percent in the whole sample and rather modest variation by country of origin. The lowest acceptance was found in the group from CIS countries (about 67 percent). IVF was met with lower acceptance, but still received about 70 percent in the whole sub-sample with only little difference by country of origin. The lowest acceptance was estimated among women from the Balkan countries (about 65 percent). The respondents were much less open to heterologous procedures. Note that egg cell donation and surrogacy are currently not allowed under German law, and sperm cell donation only when the donor is disclosed (see section 2.2). In the total sub-sample, sperm and egg cell donation received about 15 percent acceptance, and surrogacy was approved in only about 8 percent in the total sample. The non-migrants were the least accepting followed by women from the Balkan countries and Turkey. Approval of the three heterologous methods was the highest among women from the CIS countries and Poland. Among them, about 17 to 22 percent would utilise sperm or egg cell donation (which are legal in Russia and Poland), and about 10 percent would apply surrogacy (which is allowed in Russia).

Table 5 displays the results of the multivariate analyses of the possible use of heterologous methods. Similar to the results on the determinants of the norm and the attitude toward the use of ART in general, women from Poland, the CIS countries as well as first-generation migrants from Turkey and the Balkan region showed higher chances of approving of heterologous methods than Germans (Model C1). We again found the pattern of differences between the first and second generations from Turkey and the Balkan countries, with the migrant descendants showing lower acceptance than their mothers' generation. At the same time, the odds ratios of the second generation were not different or even lower than that of the Germans. We

Tab. 4: Procedures of ART considered for potential own use, by country background (%)

	Germany	CIS countries	Poland	Turkey	Balkan countries	Total
Hormone treatment***	91.0	66.9	94.7	84.3	80.8	82.3
Homologous methods						
Insemination***	92.9	86.0	94.7	88.4	83.8	89.1
In-vitro fertilization***	71.8	71.6	71.2	75.6	64.6	71.3
Heterologous methods						
Sperm cell donation	12.8	18.2	18.8	14.0	12.3	15.6
Egg cell donation***	9.6	17.4	21.8	12.2	12.3	15.0
Surrogacy**	6.4	10.2	10.0	5.2	5.4	7.8
At least one heterologous method	*18.6*	*27.1*	*28.8*	*22.1*	*20.0*	*23.8*
n	*156*	*236*	*170*	*172*	*130*	*864*

Note: Significance for bivariate association between variable and migrant status (chi^2 test); *p<=.05; **p<=.01; ***p<=.001.

Source: NeWiRe survey 2014/2015

should note here, however, that the sample size is rather small and the confidence intervals rather large, which rendered most of the group differences insignificant at the 5 percent level. Another similarity to the analyses of the norm and the general attitude is that the insertion of the socio-demographic controls (Model C2) and of the cultural variables (Model C3) did not alter the pattern of the group differences by region of origin and migrant generation.

Effects of the cultural indicators and further control variables

The control variables used showed similar effects in the three analyses. Significantly elevated approval rates were found among women who believe that a woman should have a child to have a fulfilling life as compared to those who did not support this statement. In other words, gender-role attitudes have a significant effect on the social norm and the personal attitude toward the use of ART as well as on the method considered for use. Regarding religiosity, the women in our sample who said that they practised family planning conforming to religious regulations did not show significant differences in their approval rate of the social norm to use ART and were significantly more likely to consider ART for their own use than those who did not follow religious guidelines. Whereas religiosity did not play a significant role in the general norm and attitude, it had a significant impact on the method considered for personal use. The religious women in our sample were less likely than the non-religious women to approve of heterologous methods. This result corresponds with the somewhat restrictive view on the use of reproductive medicine of not only the Catholic, but also the Protestant and Islamic religious communities.

Tab. 5: Determinants of personal attitudes toward the use of a heterologous treatment

	Model C1			Model C2			Model C3		
	odds ratio	ci lower	ci upper	odds ratio	ci lower	ci upper	odds ratio	ci lower	ci upper
Country background (Ref = Germany)									
Balkan countries/1st generation	1.21	0.65	2.27	1.30	0.68	2.48	1.32	0.68	2.57
Balkan countries/2nd generation	0.78	0.28	2.20	1.01	0.35	2.90	1.03	0.36	2.97
Turkey/1st generation	1.35	0.75	2.42	1.48	0.80	2.76	1.58	0.80	3.12
Turkey/2nd generation	1.02	0.46	2.26	1.85	0.78	4.38	1.95	0.81	4.73
Poland	1.77*	1.05	2.99	1.94*	1.14	3.31	2.01*	1.15	3.52
CIS countries	1.63	0.99	2.67	1.67*	1.00	2.79	1.64	0.97	2.75
Age				1.25*	1.03	1.52	1.26*	1.04	1.53
Age^2				1.00	1.00	1.00	1.00	1.00	1.00
Married/cohabition (Ref = single)				0.90	0.57	1.42	0.91	0.57	1.43
Parenthood (Ref = childless)				0.65	0.35	1.22	0.62	0.33	1.18
School education (Ref = none/primary/lower secondary)									
Intermediate secondary				1.16	0.71	1.91	1.17	0.71	1.93
Upper secondary				1.54	0.95	2.49	1.54	0.95	2.50
"A woman needs her own children ..."									
"Completely agree"/"agree" (Ref = "completely disagree"/"disagree"/"neither nor")							1.19	0.80	1.76
"... family planning conforming to religious regulations									
"Completely agree"/"agree" (Ref = "completely disagree"/"disagree"/"neither nor")							0.86	0.58	1.26
Nagelkerke R^2	*0.02*			*0.05*			*0.05*		

Note: *p<=.05; **p<=.01; ***p<=.001.

Binary logistic regression, dependent variable: 1=at least one heterologous treatment/0=none of these treatments mentioned.

Models C2 and C3 controlled for ART treatment experience.

Source: NeWiRe survey 2014/2015. N=864

No significant effects were found in the three analyses for the socio-demographic controls age, union status, parenthood, and education. The only exception was the age in the analysis of the type of methods. Heterologous methods were more approved the older the women were.

5 Discussion and conclusion

Our paper examined norms and attitudes toward the use of various methods of ART, comparing women of several migrant origins and generations to natives in Germany.

Our first working hypothesis (H1) concerned the role of the country of origin. In line with theoretical considerations on the political socialization and the lasting impact of socialization in migrants even after their international move, we expected the societal climate in the migrants' countries of origin and in Germany to be reflected in the individual attitudes toward ART. In detail, we assumed that migrants from Poland would be the least approving of ART and persons from the CIS countries the most approving. For Germans as well as women from the Balkan countries and Turkey we expected a position in the middle between these positions. Our results, however, only partially supported this hypothesis. Contrary to our hypothesis, the least approving origin group were the non-migrants, which we had expected to be found in between the various migrant groups. They had the lowest approval rates in all three outcome variables, i.e. the norm that childless people should make use of ART and their personal attitude whether they would use ART themselves, and the question if they would use heterologous methods. Confirming our hypothesis, persons from the CIS countries had much higher approval rates in all three outcomes. Not in line with our hypothesis, the attitudes of women from Poland, Turkey, and the Balkan region were significantly elevated as compared to Germans and rather similar to that of the women from CIS countries. The results of our study suggest therefore that it may be an overall societal climate where having children is valued that may support the acceptance of ART. In all other country groups in our study, the women more strongly supported the statement that childless couples should use ART. Thus, the legal regulations in a country are only one determinant of attitudes toward ART; liberal laws – as in Russia – are associated with high approval of ART. But also women from Poland, which has a long period of non-regulation, restricted access to information, and a more negative discourse, as well as women from countries with stricter regulations and limited access (Turkey, Balkan countries) showed higher approval than Germans. This also means that attitudes and prevalences do not necessarily coincide; Germany ranks in the middle of European ART usage, Poland at the end of the treatment ranking – yet the attitudes of women from these countries are opposite.

We turn to our second working hypothesis (H2): We investigated possible differences between the migrant generations. According to classical assimilation theory, we expected women of the second migrant generation to show lower acceptance levels of ART than those in the first generation. Our results delivered evidence for

this hypothesis (although we must acknowledge that we were only able to test this hypothesis for the groups from the Balkan countries and from Turkey; the numbers in the second generation of the other two immigrant groups were too low, up to only 10 percent). The norms and attitudes toward ART did not vary much from those of the non-migrants in our sample and not significantly so; but they were much lower than that of the first generation in all three outcomes.

When we compare the results of our study to other papers on attitudes, norms, and values of immigrants, they are similar with respect to differences between migrants and non-migrants, and they also depict the in-between position of the second generation compared to the first generation and to non-migrants. Previous research found more traditional values – i.e. supporting gender inequality – among migrants, but large differences were found between immigrants from Muslim countries and those with other religious predominance. The variation between women from countries with Muslim and Christian minorities was not significant in our study. As suggested above, we see the reason for this common feature between women from countries with different religious traditions in their joint characteristics of placing a central role on motherhood for women's status.

In order to investigate the causes for the differences between the origin groups, we formulated a third working hypothesis on the role of cultural and socio-demographic control variables, whereby controlling for group differences in composition would account for differences in attitudes toward ART (H3). We included individual agreement whether a woman needs a child in order to have a fulfilled life and an indicator for personal religiosity in our analyses, in which the women stated whether they practiced contraception according to their faith. The inclusion of the two controls did not significantly affect the main patterns of group variation; therefore our working hypothesis was rejected.

Another difference to previous research is that the norms and attitudes in our study are of an innovative nature, whereas previous research has focused instead on topics where the dividing line between the religious East and the non-religious West is apparent and where the migrants' maintenance of the cultural traditions of their origin was demonstrated. In our study, all migrants, in particular those of the first generation, appear to be more "open minded" in their norms and attitudes toward the use of ART. The remaining question, however, is why these respondents approved or disapproved of ART. The norm-variable that we used referred specifically to "childless couples" who are the people using ART. Using ART in order to treat infertile couples also is linked to "traditional" family attitudes and gender-role models – despite the innovative nature of the conception method. The norm of bearing children is so established that these "modern" ART are seen as a way of supporting age-old expectations. Perhaps these attitudes would differ if the question was about subsequent parities or about single women or same-sex couples, which are also contested topics in the legal debates and are not tolerated by most religions included here.

It seems that religiosity played a rather minor role, indicating that private religious practice does not necessarily follow theoretical religious doctrines in norms and values. An alternative explanation is that ART seem not in contradiction to most

religious regulations as long as the unit of the couple is preserved, which is the case in the phrasing of the item we used for the norm. When they were asked about heterologous methods, the respondents with higher religiosity were far more reluctant than the non-religious women in our sample to consider them for use. This is again an indication of the continuation of traditional family values in attitudes toward ART.

Another aspect that may play a role is the treatment of information in heterologous methods, where a third party comes into play. Questions such as whether the donors should be anonymous or not, should the surrogate mother's name appear on the birth certificate, or would the donors have any obligations to the potential children may play a role in shaping these individual attitudes. Future research will need to investigate this more thoroughly in order to understand the comparatively low attitudes toward ART among non-migrants in our sample, which at first sight suggest a more traditional attitude. It is known from research on the childless population in Germany that most people do not use fertility treatment, even when they have a diagnosis of impaired fertility and have heard of different methods (*Wippermann* 2014). Would the ethical arguments as well as the financial and emotional costs of ART weigh more? Or might it be that childlessness and small numbers of children are more common in Germany, and that the social consequences of having no children or not as many as desired are not as detrimental as in "traditional" societies – as suggested by the rather low share of German respondents in our survey who said that having biological children is important for a woman?

Acknowledgements

The research project NeWiRe 2015 (Der Einfluss sozialer Netzwerke auf den Wissenstransfer am Beispiel der Reproduktionsmedizin) was funded by the German Federal Ministry of Education and Research (BMBF, grant number 1GP1304). The authors thank Karsten Weber, Matthias Vernim and Edda Currle for their contributions to this research project and Renée A. Lüskow for English language editing. The telephone survey was conducted by Infas Institut für angewandte Sozialwissenschaft.

References

Almond, Gabriel; Verba, Sidney 1989: The civic culture: political attitudes and democracy in 5 nations. Newbury Park, Californien: Sage Publication.

Baykara-Krumme, Helen; Milewski, Nadja 2017: Fertility patterns among turkish women in Turkey and abroad: The effects of international mobility, migrant generation, and family background. In: European Journal of Population 33,3: 409-436 [doi: 10.1007/s10680-017-9413-9].

Bunting, Laura; Tsibulsky, Ivan; Boivin, Jacky 2013: Fertility knowledge and beliefs about fertility treatment: findings from the International Fertility Decision-making Study. In: Human Reproduction 28,2: 385-397 [doi: 10.1093/humrep/des402].

Carol, Sarah; Milewski, Nadja 2017: Attitudes toward abortion among the Muslim minority and non-Muslim majority in cross-national perspective: Can religiosity explain the differences? In: Sociology of Religion 78,4: 456-491 [doi: 10.1093/socrel/srx015].

Čartolovni, Anto; Casini, Marina; Spagnolo, Antonio G. 2014: The regulation of the Medically Assisted Reproduction (MAR) in Croatia and the European legislative context. In: Medicina e Morale 63,6: 405-436 [doi: 10.4081/mem.2014.38].

Coleman, David 2006: Immigration and ethnic change in low-fertility countries: A third demographic transition. In: Population and Development Review 32,3 401-446 [doi: 10.1111/j.1728-4457.2006.00131.x].

Culley, Lorraine; Hudson, Nicky; van Rooij, Floor 2009a: Marginalized reproduction: Ethnicity, infertility and reproductive technologies. London: Routledge.

Culley, Lorraine; Hudson, Nicky; van Rooij, Floor 2009b: Introduction: Ethnicity, infertility and reproductive technologies. In: *Culley, Lorraine; Hudson, Nicky; van Rooij, Floor* 2009: Marginalized reproduction: Ethnicity, infertility and reproductive technologies. London: Routledge: 1-14.

Daniluk, Judith C.; Koert, Emily 2012: Childless Canadian men's and women's childbearing intentions, attitudes towards and willingness to use assisted human reproduction. In: Human Reproduction 27,8: 2405-2412 [doi: 10.1093/humrep/des190].

Destatis – Statistisches Bundesamt 2018: Bevölkerung und Erwerbstätigkeit. Bevölkerung mit Migrationshintergrund. Ergebnisse des Mikrozensus 2017. Fachserie 1. Reihe 2.2. Wiesbaden: Statistisches Bundesamt [https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Migration-Integration/Publikationen/Downloads-Migration/migrationshintergrund-2010220177004.pdf, 04.04.2019].

Diehl, Claudia; Koenig, Matthias 2009: Religiosität türkischer Migranten im Generationenverlauf: Ein Befund und einige Erklärungsversuche. In: Zeitschrift Für Soziologie 38, 4: 300-319 [doi: 10.1515/zfsoz-2009-0403].

Djundeva, Maja; Szalma, Ivett 2017: What shapes public attitudes towards assisted reproduction technologies? In: Open Science Framework [doi: 10.17605/OSF.IO/U94SJ].

Gordon, Milton 1964: Assimilation in American life: The role of race, religion, and national origins. New York: Oxford University Press.

Gürtin, Zeynep B. 2011: Banning reproductive travel: Turkey's ART legislation and third-party assisted reproduction. In: Reproductive BioMedicine Online 23,5: 555-564 [doi: 10.1016/j.rbmo.2011.08.004].

Haug, Sonja et al. 2018: Wissen über Reproduktionsmedizin, Wissenstransfer und Einstellungen im Kontext von Migration und Internet. Stuttgart: Franz Steiner Verlag.

Heikkilä, Katr et al. 2006: Assessment of attitudes towards assisted reproduction: A survey among medical students and parous women. In: Gynecological Endocrinology 22,11: 613-619 [doi: 10.1080/09513590601005631].

Humpert, Andreas; Schneiderheinze, Klaus 2000: Stichprobenziehung für telefonische Zuwandererumfragen. Einsatzmöglichkeiten der Namensforschung. In: ZUMA-Nachrichten 24,47: 36-63.

Inhorn, Marcia; van Balen, Frank (Eds.) 2002: Infertility around the Globe: New Thinking on Childlessness, Gender and Reproductive Technologies. Berkeley CA: University of California Press.

Kagitcibasi, Cigdem 2005: Modernization does not mean Westernization: Emergence of a different pattern. In: *Friedlmeier, Wolfgang; Chakkarath, Pradeep; Schwarz, Beate* (Eds.): Culture and human development: The importance of cross-cultural research to the social sciences. New York: Psychology Press: 255-272.

Kalmijn, Matthijs; Kraaykamp, Gerbert 2017: Determinants of cultural assimilation in the second generation. A longitudinal analysis of values about marriage and sexuality among Moroccan and Turkish migrants. In: Journal of Ethnic and Migration Studies 44,5: 697-717 [doi: 10.1080/1369183X.2017.1363644].

Krawczak, Anna 2016: Patient monitoring in Polish assisted reproductive technology centres. In: Reproductive Biomedicin & Society Online 3: 77-89 [doi: 10.1016/j.rbms.2017.06.001].

Lesthaeghe, Ron. J. 2010: The Unfolding Story of Transition. In: Population and Development Review 36,2: 211-251 [doi: 10.1111/j.1728-4457.2010.00328.x].

Milewski, Nadja 2010: Fertility of immigrants. A two-generational approach in Germany. Hamburg: Springer [doi: 10.1007/978-3-642-03705-4].

Milewski, Nadja; Otto, Danny 2016: The importance of a religious funeral ceremony among Turkish migrants and their descendants in Germany: What role do socio-demographic characteristics play? In: Journal of Intercultural Studies 37,2: 162-178 [doi: 10.1080/07256868.2016.1141760].

Norris, Pippa; Inglehart, Ronald F. 2012: Muslim Integration into Western Cultures: Between Origins and Destinations. In: Political Studies 60,2: 228-251 [doi: 10.1111/j.1467-9248.2012.00951.x].

Onnen-Isemann, Corinna 2000: Ungewollte Kinderlosigkeit und die Auswirkungen der Reproduktionsmedizin: Der Fall Deutschland. In: Forum: Qualitative Sozialforschung 1,1.

Passet-Wittig, Jasmin 2017: Unerfüllte Kinderwünsche und Reproduktionsmedizin. Eine sozialwissenschaftliche Analyse von Paaren in Kinderwunschbehandlung. Beiträge zur Bevölkerungswissenschaft. Opladen: Verlag Barbara Budrich.

Präg, Patrick; Mills, Melinda C. 2017a: Cultural determinants influence assisted reproduction usage in Europe more than economic and demographic factors. In: Human Reproduction 32,11: 2305-2314 [doi: 10.1093/humrep/dex298].

Präg, Patrick; Mills, Melinda C. 2017b: Assisted Reproductive Technology in Europe: Usage and Regulation in the Context of Cross-Border Reproductive Care. In: *Kreyenfeld, Michaela; Konietzka, Dirk* (Eds.): Childlessness in Europe: Contexts, Causes, and Consequences. Cham: Springer International Publishing: 289-309 [doi: 10.1007/978-3-319-44667-7_14].

Röder, Antje 2014: Explaining religious differences in immigrants' gender role attitudes: the changing impact of origin country and individual religiosity. In: Ethnic and Racial Studies 37,14: 2615-2635 [doi: 10.1080/01419870.2013.854919].

Saroglou, Vassilis 2011: Believing, Bonding, Behaving, and Belonging: The Big Four Religious Dimensions and Cultural Variation. In: Journal of Cross-Cultural Psychology 42,8: 1320-1340 [doi: 10.1177/0022022111412267].

Schenker, Joseph G. 2000: Women's reproductive health: monotheistic religious perspectives. In: International Journal of Gynecology & Obstetrics 70,1: 77-86 [doi: 10.1016/S0020-7292(00)00225-3].

Schenker, Joseph G. 2005: Assisted reproduction practice: religious perspectives. In: Reproductive BioMedicine Online 10,3: 310-319 [doi: 10.1016/S1472-6483(10)61789-0].

Schnell, Rainer et al. 2013: Ein neues Verfahren für namensbasierte Zufallsstichproben von Migranten. In: MDA – Methoden, Daten, Analysen 7,1: 5-33 [doi: 10.12758/mda.2013.001].

Serour, Gamal I. 2001: Attitudes and cultural perspectives on infertility and its alleviation in the Middle East area. In: *Vayena, Effy; Rowe, Patrick J.; Griffin, P. David* (Eds.): Current Practices and Controversies in Assisted Reproduction. Report of a meeting on "Medical, Ethical and Social Aspects of Assisted Reproduction" held at WHO Headquarters in Geneva, Switzerland, 17-21 September 2001. Geneva, Switzerland: World Health Organization: 41-49.

Serour, Gamal I. 2008: Islamic perspectives in human reproduction. In: Reproductive BioMedicine Online 17,3: 34-38 [doi: 10.1016/S1472-6483(10)60328-8].

Smidt Mirian; Wippermann Carsten 2014: Kinderlose Frauen und Männer. Befragte mit Migrationshintergrund. Ungewollte oder gewollte Kinderlosigkeit im Lebenslauf und Nutzung von Unterstützungsangeboten. Berlin: Bundesministerium für Familie, Senioren, Frauen und Jugend (BMFSFJ).

Sobotka, Tomas 2017: Childlessness in Europe: Reconstructing Long-Term Trends Among Women Born in 1900-1972. In: *Kreyenfeld, Michaela; Konietzka, Dirk* (Eds.): Childlessness in Europe: Contexts, Causes, and Consequences. Cham: Springer: 17-56 [doi: 10.1007/978-3-319-44667-7_2].

Stöbel-Richter, Yve et al. 2009: Egg donation, surrogate mothering, and cloning: attitudes of men and women in Germany based on a representative survey. In: Fertility and Sterility 92,1: 124-130 [doi: 10.1016/j.fertnstert.2008.05.015].

Stoebel-Richter, Yve et al. 2012: What Do You Know about Reproductive Medicine? – Results of a German Representative Survey. In: PLoS ONE 7,12: e50113 [doi: 10.1371/journal.pone.0050113].

Svitnev, Konstantin 2010: Legal regulation of assisted reproduction treatment in Russia. In: Reproductive BioMedicine Online 20,7: 892-894 [doi: 10.1016/j.rbmo.2010.03.023].

Trappe, Heike 2017: Assisted Reproductive Technologies in Germany: A Review of the Current Situation. In: *Kreyenfeld, Michaela; Konietzka, Dirk* (Eds.): Childlessness in Europe: Contexts, Causes, and Consequences. Cham: Springer: 269-287 [doi: 10.1007/978-3-319-44667-7_13].

Van De Kaa, Dirk J. 1987: Europe's second demographic transition. In: Population Bulletin 42,1: 1-59.

Van de Kaa, Dirk J. 1997: Options and sequences: Europe's demographic patterns. In: Journal of the Australian Population Association 14,1: 1-29.

Van Tubergen, Frank; Sindradóttir, Jórun I. 2011: The religiosity of immigrants in Europe: A cross-national study. In: Journal for the Scientific Study of Religion 50,2: 272-288 [doi: 10.1111/j.1468-5906.2011.01567.x].

Weblus, Anna J.; David, Matthias; Kentenich, Heribert 2014: Paare mit Migrationshintergrund in der Reproduktionsmedizin. In: *Kentenich, Heribert et al.* (Eds.): Leitlinie psychosomatisch orientierte Diagnostik und Therapie bei Fertilitätsstörungen. Gießen: Psychosozial-Verlag: 113-121.

Wippermann, Carsten 2014: Kinderlose Frauen und Männer. Ungewollte oder gewollte Kinderlosigkeit im Lebenslauf und Nutzung von Unterstützungsangeboten. Berlin: Bundesministerium für Familie, Senioren, Frauen und Jugend (BMFSFJ).

Date of submission: 03.08.2018 *Date of acceptance: 20.02.2019*

Prof. Dr. Nadja Milewski (✉). University of Rostock, Institute of Sociology and Demography. Rostock, Germany. E-mail: nadja.milewski@uni-rostock.de
URL: https://www.isd.uni-rostock.de/en/isd/lehrstuhl/jp-demo/milewski/

Prof. Dr. Sonja Haug. Ostbayerische Technische Hochschule Regensburg (OTH). Regensburg, Germany. E-mail: sonja.haug@oth-regensburg.de
URL: https://www.oth-regensburg.de/professoren-profilseiten/professoren-s/prof-dr-habil-sonja-haug.html

Comparative Population Studies

www.comparativepopulationstudies.de

ISSN: 1869-8980 (Print) – 1869-8999 (Internet)

Published by
Prof. Dr. Norbert F. Schneider

Federal Institute for Population Research
D-65180 Wiesbaden / Germany

Managing Editor
Dr. Katrin Schiefer

Copy Editor
Dr. Evelyn Grünheid
Dr. Katrin Schiefer

Editorial Assistant
Beatriz Feiler-Fuchs
Wiebke Hamann

Layout
Beatriz Feiler-Fuchs

E-mail: cpos@bib.bund.de