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Polarization and Flexibility in Attitudes Toward Assisted Reproduction: A Vignette Study

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Abstract

While delayed parenthood and medical advancements have increased the utilization of assisted reproductive technologies (ART) across Europe, existing studies largely treat infertility as a medical issue, overlooking its *socially constructed* nature. This gap is problematic in light of the growing societal and political debates around ART, which resemble other polarized, partisan ethical issues. This paper examines attitudes toward ART, with a focus on Italy—a country traditionally known for conservative family norms, yet where ART use has become more widespread in recent years. We employ a factorial survey experiment within a nationally representative, quota-controlled survey in which respondents evaluate vignettes describing fictitious couples facing infertility and rate, on a 0–10 scale, whether they should pursue ART. Descriptive results reveal polarized attitudes toward ART use: approximately 15% of responses in our sample are strongly in favor, while about 10% are strongly opposed. Nonetheless, our findings also indicate that certain characteristics of the fictitious couples—such as having tried to conceive for over a year and advanced maternal age—positively influence support for ART. In contrast, heterologous treatments, going abroad, and being already a parent are generally associated with more negative attitudes. By demonstrating that views on ART are both polarized and fluid, shaped by the socio-demographic circumstances surrounding each couple, this study provides a foundation for future research on ART in contemporary aging societies.

Key words: Assisted reproductive technology, Factorial survey experiment, Attitudes, Italy

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Introduction

Many couples encounter fertility challenges when trying to conceive. The rising trend of delayed childbearing has led to an increased demand for medical assistance, as advancing age reduces the natural ability to conceive and carry a pregnancy to term (Schmidt et al. 2012). As a result, more and more individuals and couples will turn to Assisted Reproductive Technology (ART) to fulfill their childbearing intentions. ART encompasses fertility treatments in which eggs, sperm, and embryos are manipulated in a laboratory before being transferred into the uterus in the hope of achieving pregnancy (Zegers-Hochschild et al. 2017). Its use has expanded significantly in Europe, with over 2 million ART-conceived babies born as of 2019 (Smeenk et al. 2023). This emerging demographic reality has fueled a new generation of studies on the determinants of medical help-seeking for infertility (see Passet-Wittig & Greil 2021 for a review). Yet, to date, most research on ART use remains constrained by frameworks that conceptualize infertility primarily as a medical condition (White et al. 2006). This paper moves beyond this limitation by viewing ART-related behavior as a *socially constructed process* (Greil et al. 2011a), negotiated within couples and embedded in broader socio-cultural contexts.

We contend that ART-related behaviors should be conceptualized as fertility behaviors, where the goal of seeking help is not merely to address a health condition, but to overcome barriers to parenthood and achieve a desired family size (Passet-Wittig et al., 2020; Kuhnt et al. 2025; Passet-Wittig et al. 2025). Fertility research has long emphasized that, beyond structural barriers, deeply ingrained social norms and attitudinal factors play a decisive role in shaping individuals' fertility choices (van de Kaa, 2001; Lesthaeghe, 2010, 2020). However, this perspective has yet to be fully integrated into the ART literature (Präg and Mills 2017; Haug and Milewski 2018). Understanding how normative and attitudinal forces operate is essential for a more comprehensive account of infertility help-seeking behaviors, calling for a paradigm shift in research that moves beyond access and affordability to also consider the social and cultural foundations of ART utilization.

The focus on attitudes towards ART aligns with the growing relevance of ART in contemporary societies not only as a medical and demographic phenomenon but also within the social, political, and ethical debate (Vayena et al. 2002). Advances in reproductive technologies and the trend toward delayed parenthood combined with individual and societal aging, have expanded access to parenthood for groups previously excluded (Lazzari et al. 2021, 2022). However, this expansion has also ignited ethical, moral, and political debates about the legitimacy, regulation, and social implications of ART (Compans and Zagel 2025). As reproductive technologies increasingly intersect with deeply held beliefs about family, life, and societal values, ART has become entangled in broader public debates

that mirror other divisive and politically charged issues, such as abortion and euthanasia (Aurrekoetxea-Casaus et al. 2022; Ramos et al. 2024). Similarly, ART has itself evolved into a partisan dispute, reflecting wider ideological divides (Szalma and Pélyi 2025). To what extent this remains the case, however, is an open empirical question. On the one hand, proponents emphasize individual autonomy, reproductive rights, and the potential for technology to overcome biological limitations. On the other hand, opponents often invoke concerns about the natural order, ethical boundaries of scientific intervention, the commodification of women's bodies, and the potential commercialization of reproduction. This polarization mirrors the dynamics of the so-called "culture wars" observed across Europe and beyond, in which questions of reproductive autonomy and technological intervention have become markers of broader political and ideological affiliations. The partisan nature of these debates underscores the importance of studying attitudes toward ART utilization.

This paper examines attitudes toward ART, with a focus on Italy—a country often portrayed as the antidote to the broad changes to the family occurring in other wealthy societies. However, the stereotypical view of Italy as an old-fashioned and traditional society, at least demographically, is increasingly being challenged (Aassve et al. 2024) while ART has recently become a standard infertility treatment (Scaravelli et al. 2024). Specifically, this study addresses the following research questions: (1) To what extent are attitudes toward ART polarized? (2) How do couples' socio-demographic circumstances, encompassing both infertility-related dynamics and unequal access to different ART procedures, shape attitudes toward ART?

This paper addresses these questions by taking a novel perspective to assess the role of attitudes towards ART in Italy through the use of a factorial survey experiment (FSE). The use of experiments has been successfully employed in family demography research in recent years (e.g., Lappegård et al. 2022; Vignoli et al. 2022; Matera et al. 2023; Guetto et al. 2025). In our experimental setting, we expose the respondents to several scenarios (vignettes) characterized by different couple's characteristics and diverse ART conditions (female partner's age; parity; duration of the couple's attempts to conceive a child; expenses of the procedure; type of treatment recommended by the doctor; proximity to a fertility center) and ask them what this couple *should* do with respect to the eventual use of ART to achieve their fertility goals. Rather than directly asking respondents to express their personal attitudes toward ART, this approach reduces the social desirability biases inherent in such attitudinal questions and allows us to genuinely assess how respondents' attitudes are shaped by the characteristics of both the couple and the treatment of the vignette. Our findings uncover the underlying flexibility of ART-related attitudes, which are sensitive to the specific socio-demographic

situational dynamics of the couple. This paper moves beyond the medical and technical dimensions of ART to gain a more comprehensive understanding of how individuals make decisions in the context of infertility.

Background

Attitudes Toward ART: Evidence and Gaps

Recent scholarship increasingly acknowledges that decisions to seek medical assistance for infertility arise from the interplay between structural conditions and the attitudinal orientations of individuals and couples. While early works focused primarily on socio-demographic or socio-economic determinants, it has become evident that these factors alone cannot account for the substantial variation in help-seeking behaviors observed across and within populations. Attitudes toward infertility and ART, as well as the normative and ethical frameworks in which they are embedded, are now understood as integral components shaping whether and how couples engage with medical care. We situate the study of ART and infertility help-seeking within fertility research (e.g., Balbo et al., 2014; Vignoli et al., 2020; Mills et al., 2011). A key insight from this literature (see van de Kaa, 2001; Lesthaeghe, 2010, 2020)—which has yet to receive sufficient attention in ART research—is that beyond structural barriers, attitudinal factors may play a critical role in shaping individuals' decisions to seek medical help for infertility.

This demographic perspective aligns with evidence that ART-related behaviors are shaped by social dynamics to an even greater extent than other health-related behaviors (Greil et al. 2011b). Seeking treatment for infertility is closely tied to the personal and social significance individuals attach to parenthood (Mencarini et al., 2018), rather than to clinical definitions alone (Greil et al., 2011a). The decision to pursue help is not made in isolation; it typically emerges from a process of negotiation within the couple and interactions with their broader social networks (Präg and Mills, 2017). Unlike many other medical conditions, infertility is characterized not by the presence of physical symptoms but by the absence of a desired life outcome (Greil et al., 2011a). Finally, what distinguishes it from other clinical treatments is that in most cases it involves two people rather than just one. Consequently, such treatments typically have implications for both partners and require joint decision-making, which can further complicate the infertility treatment process. This perspective aligns with recent arguments in social demography emphasizing that reproduction constitutes a domain deeply embedded in state regulation and institutional norms, which powerfully influence decisions about if, when, and how to have children (Zagel 2024).

Passet-Wittig and Greil (2021) offer a comprehensive narrative review on infertility help-seeking that synthesizes the existing evidence base, identifies persistent conceptual and methodological limitations, and delineates promising avenues for future research. Their review shows that although much of the existing knowledge focuses on socio-demographic aspects (such as age and race/ethnicity) and socio-economic influences (including income, health insurance, and financial barriers to treatment), there is growing evidence that individual attitudes play a crucial role in shaping the help-seeking process (Greil et al. 2010, 2011b). Empirical studies further demonstrate that attitudes toward ART can either facilitate or hinder couples' pathways to medical assistance. For instance, Greil and colleagues (2011a) found that ethical concerns did not reduce the likelihood of initially consulting a doctor but did lower the probability of proceeding with diagnostic testing or treatment, pointing to socio-demographically patterned interpretations of medical intervention. Similarly, Bunting and Boivin (2007) showed that positive beliefs about fertility and treatment—often unequally distributed across social groups—were associated with a higher likelihood of seeking help.

Overall, research on ART attitudes increasingly highlights the importance of couples' socio-demographic characteristics insofar as they shape two key domains: the dynamics associated with infertility and the potential for differential access to assisted reproduction. First, support for ART varies by procedure, reflecting how socio-demographic backgrounds intersect with normative and ethical evaluations. Qualitative studies (e.g., Van Steijvoort 2024, for Flanders) and research based on convenience samples (e.g., Wenberg et al. 2016 for Sweden; Fauser et al. 2019 for France, Germany, Italy, Spain, Sweden, and the UK; Szalma and Bitó 2021 for Hungary) generally suggest broad public acceptance of ART, particularly when used to address biomedical fertility impairments. Homologous IVF using a couple's own gametes tends to receive broader approval than procedures involving third-party contributions such as sperm or egg donation, embryo donation, or surrogacy (e.g., Stöbel-Richter et al. 2009 for Germany; Daniluk & Koert 2012 for Canada). A recent systematic review and meta-analysis by Demissei and colleagues (2024) further shows that attitudes toward donor gametes vary substantially, with women generally expressing higher acceptance than men and non-Asian populations reporting more positive views overall. Second, the socio-demographic literature on ART access is socially stratified both globally and within Western societies (e.g., Goisis et al. 2020, 2023), which could imply differential attitudes towards ART by social groups, too. Although earlier studies found limited direct effects of gender, education, or age on ART attitudes (e.g., Szalma & Bitó 2021), differential access to treatment nonetheless shapes how couples interpret infertility and navigate treatment pathways (Bunting et al., 2013; Cozzani et al. 2025). These

differentiated attitudes further underscore how social position shapes both perceptions of infertility and actual or perceived access to ART.

A key limitation of existing research is the lack of context-specific assessments that situate ART attitudes within concrete couple scenarios. While most people may oppose donor eggs in principle—often on the grounds that it is preferable to have a biologically related child of both parents—their views may shift when confronted with more realistic circumstances, such as how long a couple has been trying to conceive or whether they already have children. Even among infertile couples, whose views are shaped by direct experience, variation in their help-seeking trajectories and differential ART access can influence their attitudes toward ART. As a result, our understanding of how situational and experiential factors shape ART attitudes remains limited.

From a demographic perspective, it is also challenging to generalize findings from much of the medical and psychological literature, which often relies on small, non-representative samples. Greil and collaborators (2010, 2011b) accordingly call for greater reliance on large, representative datasets—particularly from non-U.S. contexts—to better capture how ART attitudes are distributed in the population and what makes ART more or less socially acceptable. Substantial gaps remain in understanding how attitudinal factors drive ART-seeking behaviors, underscoring the need to integrate infertility more systematically into fertility research frameworks (Präg and Mills 2017).

This paper addresses these limitations by drawing on a nationally representative, quota-controlled sample of individuals aged 25–49 living in Italy and by adopting an experimental design that allows us to assess causal relationships while minimizing social desirability bias.

A case for Italy

Italy has been labelled 'traditional' in terms of values orientation; a feature due in no small part to the dominant role of the Roman Catholic Church. However, the perception of Italy as a demographically old-fashioned and traditional society is increasingly challenged (Aassve et al. 2024; Castiglioni et al. 2025). Recent data suggest that new family-related behaviors, i.e. cohabitation, out-of-wedlock childbearing, and divorce, are now spreading rapidly (e.g., Meggiolaro and Ongaro 2015; Pirani and Vignoli 2016; Vignoli et al. 2018). The only indicator consistent with SDT would be Italy's 40-year history of low fertility. In 2022, the TFR is below 1.3 and the mean age of first childbearing stands nearly at 32 years (ISTAT, 2023). After Spain, Italy has the highest incidence of births from women over 40 (8.4%), 3 percentage points over the EU27 average.

The conundrum of rapid changes in family-related behaviors, on the one side, and the enduring low fertility and sky-rocking age at first birth, on the other, make Italy especially interesting to study

attitudes towards ART. According to the Italian Ministry of Health, the use of ART remains relatively uncommon compared to the potential demand. Nonetheless, its usage has experienced a substantial increase (Burgio et al., in 2025). Over the past decade, there has been a noteworthy 73% surge in ART-related deliveries, escalating from 8,000 in 2012 to surpass 14,000 in 2022. The proportion of deliveries involving ART rises with age, with nearly one out of every five deliveries for women over 40 being accomplished through ART (18.1%). This percentage has notably expanded over the past 10 years, as in 2012 it was just 6.9%.

The regulation of ART in Italy has followed a contentious path since the introduction of Law 40/2004, which has been progressively revised. Initially, the law limited the fertilization of more than three oocytes and required the simultaneous transfer of all embryos, contributing to high rates of multiple pregnancies (Esposito et al., 2024). These restrictions were overturned in 2009, leading to a marked decline in multiple births (Levi Setti et al., 2011). Similarly, the original ban on heterologous fertilization was lifted following a 2014 Constitutional Court ruling. Today, ART is restricted to married or cohabiting opposite-sex couples of reproductive age; single individuals, same-sex couples, and all forms of surrogacy remain excluded. Access to ART also varies widely across regions due to differences in public service availability, waiting times, costs, and age criteria. These disparities may soon lessen: infertility is now recognized as a medical condition by the National Health System, and from January 2025 ART will be included in the Essential Assistance Levels (LEA), with homologous procedures fully covered and heterologous procedures partially reimbursed.

In Italy, as in much of Europe, women's reproductive health often sparks intense debate, frequently becoming entangled with political, social, and religious considerations (Cioffi et al. 2022; Parel et al. 2024). Although the existing legal framework appears to be rooted in broadly accepted norms, it remains unclear whether it aligns with contemporary attitudes toward ART. Cioffi and colleagues (2023) surveyed 448 women undergoing fertility treatment using a questionnaire grounded in key bioethical issues and the constraints of Law 40/2004. Many respondents opposed core restrictions in the law, including the age limit of 43 and the prohibition on pre-implantation genetic diagnosis and embryo cryopreservation. While the study highlights a gap between legal regulations and patient preferences, its insights are limited by a modest sample size and the exclusive focus on clinical patients, potentially excluding women with unmet fertility needs who have not sought care.

Data and Methods

The experimental setting

We aim to assess the role of attitudes and social norms towards ART in Italy through the use of a FSE, a multivariate experimental method in which the researcher constructs various descriptions of hypothetical situations, called vignettes (Auspurg & Hinz 2014). These vignettes are assessed by respondents based on a fictitious couple's ART-related behavior under different couple's situation.

The use of a FSE ensures internal validity, as variations solely influence respondents' reactions in the randomly assigned vignettes. Unlike single-item questions, vignettes enable the creation of hypothetical scenarios that incorporate multiple varying dimensions. Moreover, using a fictional couple rather than addressing the survey participant directly offers several methodological advantages. First, it facilitates a more plausible assessment of counterfactual scenarios. For instance, respondents can assess the likelihood of the hypothetical couple recurring to the use of ART with homologous gametes or heterologous gametes without envisioning themselves experiencing this technique, which can be challenging. Second, incorporating a fictional couple into our survey helps minimize the impact of person-specific contingent situations, in contrast to alternative direct questioning methods. When participants are directly questioned about their attitudes towards ART, they may feel obligated to consider external factors such as the female partner's health status. Conversely, when presented with a hypothetical couple's scenario, respondents are prompted to focus on the elements outlined in that specific scenario. Finally, it mitigates social desirability bias, wherein individuals tend to respond in a manner they perceive as socially acceptable or expected, which can be particularly relevant in our setting dealing with a sensitive topic such as infertility treatments.

Before illustrating the scenario to our respondents, we provide them with a short text to read, offering an overview of what an ART cycle entails (see Figure A1 in the Supplementary Material for the full introductory text). The text indicates that ART is a medical procedure aimed at helping couples facing infertility to conceive a child. It outlines the process involving sperm and egg manipulation in a laboratory to create an embryo for the couple, known as "homologous fertilization", followed by implantation into the woman's uterus to initiate pregnancy. Additionally, it mentions cases where donated sperm or eggs are used, termed "heterologous fertilization". The text emphasizes the necessity of multiple clinic visits for each attempt and notes that success rates decrease with age.

After that introduction, the vignette describes a hypothetical situation of a fictitious heterosexual couple (Caterina and Tommaso), who "*have been trying to conceive for a year and are considering assisted reproductive techniques because they have not yet succeeded with natural conception.*" In each vignette, we manipulate the couples' socio-demographic characteristics focusing on two domains (with three dimensions each): the dynamics related to infertility and the potential differential treatment and access to ART. Table 1 provides an overview of the six dimensions, along with the

corresponding levels for each dimension, whereas Figure A1 in the Supplementary Material illustrates a typical vignette in the questionnaire.

The first domain we manipulated concerns the couple's characteristics regarding infertility. First, we distinguished for the couple's parity between childless couples and couples with a child. The second dimension belongs to the female partner's age in four levels: Caterina is less than 35, she is between 35 and 39, she is between 40 and 42, or she is 43 and over. We define the last category as individuals above 43 years old, as several Italian regions—with legislative authority over medical procedures—set this age as the maximum age to access ART treatments covered by the NHS, or impose higher out-of-pocket costs on this group[1] (see, for example, the Resolution No. 1197 of October 1, 2019 by the Tuscany Region). Finally, the third couple dimension is about the duration of the couple's attempts to conceive a child, with three possible levels in the vignettes: one year; two years; or three or more years. The baseline level was settled to one year because a couple is medically considered infertile or experiencing fertility issues if it is unable to conceive after 12 months of regular, unprotected intercourse (World Health Organization, 2023).

The second domain we manipulated concerns the couple's access to ART coupled with the recommended treatment needed to solve their fecundity problems. A first varying dimension regards the expenses that the fictitious couple should face, with two possible alternatives: the overall expenses of ART treatment are equal to 3,000 euros, or there are no living costs. Expenses for ART treatments vary much by type of treatment, region of residence and centers. Thus, we opted for two contrasting scenarios: one describing an affordable treatment option for the couple (€3,000, representing the average cost for a couple living in Italy), and the other depicting a completely free option. With this choice, we aimed to assess respondents' perception that ART techniques can be regarded as fundamental healthcare treatments, to which everyone should have access at minimal and income-adjusted costs. This perspective aligns with recent legislation, which has classified ART treatments as part of the 'Essential Levels of Care.' The second dimension relates to the type of treatment recommended by the doctor, with three levels: in the vignette, the couple may need a homologous treatment, or a heterologous treatment where the sperm comes from the donor, or a heterologous treatment where the egg comes from the donor. We aimed to test the overall acceptance of heterologous fertilization, which occurred only after a ruling by the Constitutional Court in 2014, ten years after the enactment of Law 40/2004. Finally, the last dimension pertains to the couple's

[1] With the inclusion of ART in Italy's 'Essentials Levels of Care' effective from January 1, 2025, the age limit for women to access ART treatments through the National Health Service has been raised to 46 years, standardizing access criteria nationwide.

proximity to a fertility center, which in the vignette could be within the region of residence, outside the region, or abroad.

Beyond the couple's characteristics, the fictitious couple's income level might affect attitudes toward ART irrespective of the other listed characteristics. To prevent interference, we 'fixed' the income level by specifying in the initial description what annual net income is available to the couple, computed for childless and parents separately and corresponding to the median annual income[2] for childless couples and couples with at least one child younger than 18, respectively (Istat, 2024).

At the end of each vignette, respondents are asked the following questions: First, *should* – on a scale from 0 ('absolutely no') to 10 ('absolutely yes') – the fictitious couple use ART. Second, what *should* the fictitious couple do, allowing several possible alternatives: 'Initiate ART treatment without delay;' 'Persist in natural conception attempts for an additional year before considering ART;' 'Persist in natural conception attempts for two years before considering ART;' 'Continue trying to conceive naturally without a specific time frame;' 'Evaluate the possibility of adopting a child;' 'Abandon their plan of having a child.'

[Table 1 about here]

Data

The data collection on Attitudes towards ART (A-ART), funded by the Age-It Research Program (Alderotti et al. 2025; Vignoli et al. 2025), was carried out between July 4th and October 15th, 2024, by the survey firm Demetra.it using its opt-in online panel. Demetra.it is well known in Italian academic circles for its high-quality and methodologically rigorous data collection. We relied on a quota sampling strategy, imposing national quotas by 5-year age classes, gender, region of residence, and education by gender. Quota sampling ensures that the final sample is virtually distributed as the country benchmark given by the statistics provided by the Italian National Institute of Statistics on key sociodemographic factors. Additionally, we added post-stratification weights to adjust for small deviations from the benchmark population statistics. At the end of the collection procedure, after having excluded those individuals who failed our check question (see below for some details), we could rely on a sample of 4,728 individuals in a heterosexual union (being married, cohabiting, or LAT) aged 25-49 years old.

For the six dimensions incorporated into our design, the fully crossed vignette universe comprises $2^2 \times 3^3 \times 4^1 = 432$ unique combinations of vignette characteristics. We adopted a mixed design, in which

[2] Following the described procedure, the annual net income is set to 35k euros for childless couple and to 38k for parents.

different groups of respondents are assigned different sets of vignettes, while all respondents within each group evaluate the same set. This approach allows us to obtain enough observations for each vignette while requiring a smaller sample size compared to a between-subject design.

Vignette sets (decks) were generated with the random sampling. To determine the size of each vignette set, we followed the recommendations of Auspurg and Hinz (2015), who advise limiting the number of vignettes per respondent to a maximum of ten. We, therefore, selected six vignettes per deck, striking a balance between minimizing respondent fatigue and ensuring sufficient within-subject variation. Given that each of the 4,728 respondents evaluated six vignettes, resulting in a total of 28,368 observations, we achieved an average of 66 replications per unique vignette and a standard deviation of 2.45 replications (the minimum number of replicated vignettes is 59 and the maximum number is 76).

To ensure high-quality responses across all the vignettes, we added a question after the first vignette with the sole purpose of verifying if the respondent read the text carefully. Specifically, we asked about the fictitious couple's annual income, with three possible answers[3]. We excluded from the final sample those providing a wrong answer (N = 825) to retain a sample with more reliable and focused responses. We also replicated the analyses including individuals who failed the attention check, and the results remained virtually unchanged.

After the vignettes, the questionnaire asked for some socio-economic and demographic information about the respondent and the partner's respondent. Then, we asked for personal experience with ART techniques and fecundity problems, like if the respondent has ever done any exams or treatments to help conception.

Analyses

To address the first research question, which examines the extent to which attitudes toward ART are polarized, we begin with a descriptive analysis of the distribution of our main dependent variable on whether the fictitious couple should use ART. Specifically, we assess how responses are distributed across the 0-10 scale and whether they cluster in the extreme categories of zero and ten.

To address the second research question, which assess the impact of couples' socio-demographic circumstances on attitudes toward ART, we followed a "within approach," with the six vignettes evaluated by each respondent nested within individuals. We provide two sets of analyses. First, since we observed a strong polarization in the main dependent variable regarding whether the fictitious

[3] The three possible answers were: 20,000 euros; 40,000 euros; or the annual income reported in the vignette, namely 35,000/38,000 euros.

couple should use ART, with a substantial concentration at levels 0 and 10 on the 0–10 Likert scale, we estimated two multilevel logistic models — with the six evaluated vignettes nested within respondents — predicting polarized views on what the fictitious couple should do. We estimated one model for responses equal to zero (corresponding to "absolutely no") and another model for responses equal to ten (corresponding to "absolutely yes") contrasted to the 1-10 and 0-9 responses, respectively. All vignette dimensions were included as independent variables.

Second, we implemented an OLS random-effect regression model with a truncated version of the response variable. We excluded the two extreme categories, zero ("absolutely no") and ten ("absolutely yes"), thereby retaining only responses from one to nine for whether the couple should use ART. The six vignette dimensions were included as categorical explanatory variables. We opted for random-effect regression models after testing OLS regression and fixed-effect OLS regression models to account for the nested structure of the data.

Finally, to examine further the overall effect size of couple's socio-economic characteristics on attitudes towards ART, we complemented the multilevel models with a descriptive assessment of respondents' evaluations across substantively relevant profiles of the fictitious couple. We report predicted responses for different combinations of vignette attributes, focusing specifically on contrasts between the most favorable and least favorable scenarios, as well as by maternal age (35–39 vs. 43+) and parity (attempting to conceive a first child or a higher-order child). The most favorable scenario corresponds to a couple who has been trying to conceive for only one year, faces no financial burden for the procedure, has access to treatment in their region of residence, and can use their own gametes (homologous). Conversely, the least favorable scenario represents a couple who has been attempting to conceive for more than three years, must bear a cost of 3,000 euros, and would need to undergo a heterologous treatment abroad.

The random assignments of the vignettes by construction control for alternative explanations. Nonetheless, we also estimated as additional analyses two multilevel logistic models predicting negative and positive polarized views as a function of the FSE conditions by adding respondents' socio-demographic characteristics and their knowledge of ART in the model equation. Specifically, we included gender, birth cohort (1975–1984; 1985–1999), education (at most lower secondary; vocational or upper secondary; tertiary), macro-area of residence (North West; North East; Center; South and Islands), occupation (employed or self-employed; unemployed; inactive or student), partnership status (married; cohabiting; LAT), parenthood, being informed about ART (yes; no), having experienced difficulties conceiving (yes; no), and previous use of ART (no; no FIVET but

other actions; FIVET with or without other actions). Importantly, post-stratification weights are used in all analyses.

Results

Descriptive Results: to what extent are ART attitudes polarized?

As a first step, we investigate the distribution of our main dependent variable, which is measured on a scale from 0 to 10 (0: 'absolutely no'; 10: 'absolutely yes') and captures the extent to which respondents of the FSE believe the fictitious couple should pursue ART given the experimental circumstances. The distribution of attitudes towards ART is quite polarized, with approximately 10–15% of responses falling into the extreme categories (0 and 10), while the remaining responses are concentrated in the more positive range between 5 and 8.

[Figure 1 about here]

Predicting Polarized Attitudes towards ART: FSE Conditions

Here, we present the average marginal effects (AMEs) and associated 95% confidence intervals (CIs) resulting from the two multilevel logistic models predicting the polarized views on whether the fictitious couple should use ART (negative attitudes = 0; positive attitudes = 10), with experimental conditions as covariates. Figure 2 (full models presented in supplementary Table A2, columns 1; 3) displays negative views in the left panel and positive views on whether the couple should use ART in the right panel. To maintain conciseness, we refer to respondents as having either a negative or a positive view, corresponding to the extreme categories of the 0–10 scale measuring views about ART.

Most conditions influence the likelihood of holding either positive or negative views. On the left panel, we observe that having a child increases the probability of negative views on whether the couple should use ART by approximately 4 percentage points (pp) (P-value < 0.05). Age also plays a role: being between 35-39 and 40-42 years old reduces the likelihood of a negative attitude by approximately 3 and 1.5 pp, respectively (P-value < 0.05). The longer a couple has been trying to conceive, the lower the likelihood of a negative view. Higher costs increase the probability of believing the couple should not pursue ART. Additionally, requiring heterologous techniques raises the likelihood of a negative view (i.e. the fictitious couple should not use ART), as does an ART center located abroad.

Positive attitudes, displayed on the right panel, follow a somewhat mirrored pattern: having a child, high costs, heterologous treatments, and distance from an ART center all decrease the probability of

believing the couple should pursue ART. However, maternal age above 35 increases the probability of a positive view, as does attempting to conceive for more than a year.

Overall, the effect sizes are quite large, especially for conditions associated with negative attitudes. If the fictitious couple already has a child or has to resort to heterologous treatment, the probability of being associated with negative attitudes increases by about 4 percentage points—more than one-third of the sample average level of negative attitudes (about 12%).

[Figure 2 about here]

Predicting Attitudes towards ART: FSE Conditions

Figure 3 presents the effects of different FSE conditions on views about whether the fictitious couple should pursue ART, estimated with a random-effect OLS model, using the scale of the variable after excluding extreme categories (namely, the 1-9 answer categories). Full model is presented in supplementary Table A3. The results are in line with those found for positive views (see Figure 2, right panel). On the one hand, if the fictitious couple already has a child, faces high costs, requires heterologous procedures, or must move for treatment, respondents are more likely to express negative views on whether the couple should use ART. On the other hand, if the mother is older or the couple has been trying to conceive for two years or even more, respondents are more likely to have positive views on the fictitious couple.

[Figure 3 about here]

The impact of couples' specific characteristics on polarized attitudes and more nuanced attitudes are consistent in the different models. With respect to the effect sizes discussed for the experimental conditions in shaping polarized views, we find smaller estimates here. The largest coefficients are around 0.3 on a 1–9 scale, and they correspond to roughly one-seventh of a standard deviation of the outcome variable (SD = 2). Overall, some experimental conditions (such as heterologous treatment or parenthood) are more salient in influencing polarized views than in affecting individuals with more moderate opinions.

Views on What the Couple Should Do Based on the Fictitious Couple's Characteristics

Table 2 below presents respondents' answers regarding what the fictitious couple *should* do to conceive given the varying FSE conditions. We report responses for different combinations of the FSE, distinguishing between the most and least favorable scenarios, and further disaggregating by maternal age (35–39 vs. 43+) and parity (childless vs. first child). Favorability is defined according to the likelihood that the couple's characteristics would lead to a successful treatment. In the most

favorable scenario, the couple has been trying to conceive for one year, faces no financial burden, has local access to treatment, and can use their own gametes (homologous). In contrast, the least favorable scenario describes a couple who has been attempting to conceive for more than three years, must pay 3,000 euros, and would need to undergo a heterologous treatment abroad. This descriptive exercise provides an interpretable complement to the multilevel estimates, allowing us to gauge the substantive magnitude of differences in support for ART under more and less advantageous reproductive conditions.

Regardless of the fictitious couple's characteristics, we observe that the modal response is that the couple should start treatment right away, with this option being selected by between 32.8% and 47.7% of respondents across different groups. The only exception is for fictitious couples in a least favorable scenario who already have a child. For this group, the modal response for the younger group is that they should keep trying for an additional year (35.9%), while for those aged 43+, the most frequent recommendation is to resort to adoption (26.2%). Overall, choosing to pursue ART immediately or within a year is the preferred option for more than half of the sample across different couple's characteristics. This may indicate a certain degree of acceptance toward ART.

[Table 2 about here]

Adoption emerges as a less preferred option, particularly when ART allows for conception using the couple's own gametes. Even in heterologous cases, ART remains favored over adoption, suggesting a strong value placed on having at least one biologically related parent, as well as on the experience of pregnancy. Abandoning the goal of parenthood is consistently viewed as the least desirable outcome.

Additional analyses

We also conducted three sets of additional analyses. First, we replicated the models presented in Figure 2 by including controls for respondents' socio-economic characteristics. These results are shown in Supplementary Table A2 (columns 2; 4) and are fully consistent with the main analyses. Second, we estimated empty random-intercept models for both the 1–9 and the 0–10 response scales.

The intraclass correlation coefficients (ICCs) were 51% and 59%, respectively. These values indicate that the variance in attitudes toward ART is distributed both within and between individuals. The experimental vignette conditions influence about 50% of respondents' evaluations when extreme answers are excluded. When extreme response categories are included (0 and 10), the share of

between-individual variance increases, suggesting that 60% of respondents hold polarized strongly rooted in stable personal beliefs; yet, 40% remain sensitive to the vignette characteristics. Third, we also replicated the model presented in Figure 3 including the 0 and 10 categories, and results remain consistent with those presented in the main text (Supplementary Table A4, columns 1-2). Fourth, we replicated this last model, which includes the 0–10 categories, using fixed effects rather than random effects, and the results are fully consistent (Supplementary Table A4, columns 3-4).

Concluding discussion

In this paper, we argue that infertility help-seeking and ART utilization must be understood within the broader field of fertility research, as both are fundamentally shaped by socially constructed processes. We contend that attitudes toward ART are not driven solely by the broader—and often contentious—social, political, and ethical debates surrounding assisted reproduction, but also hinge on the couple's specific socio-demographic circumstances and situational constraints.

This paper makes a case for Italy. Attention to ART in Italy is particularly timely in light of the implementation of the Essential Levels of Care for ART (Ministerial Decree of November, 25, 2024). The new legislation leads to a substantial reduction and standardization of the costs associated with accessing ART services for heterosexual couples nationwide. Assessing Italians' perspectives on ART is therefore essential both for informing potential policy adjustments and for contributing to the broader discourse on reproductive rights and healthcare accessibility in Italy.

We employed a factorial survey experiment (FSE) in which respondents evaluate vignettes describing fictitious couples facing infertility, and express judgments they ascribe to those couples regarding whether they *should* pursue ART. A key strength of this experimental setting is that, unlike previous research that asked respondents to express their attitudes toward an ART procedure in absolute terms (e.g., "Are you in favour or against it?"), our design situates the ART experience within a realistic scenario involving a couple. As a result, respondents are called to take the situation into account and to weigh potential trade-offs with respect to several aspects related to the fictitious couples' characteristics and access to ART, rather than offering a purely abstract judgment.

Results indicate that attitudes toward ART are relatively polarized in Italy, with about one-quarter of the opinions ascribing either extremely positive (15%) or extremely negative (10%) attitudes to the fictitious couple. This highlights how ART, like other sensitive issues, may risk becoming a partisan topic in an already polarized political landscape. Nonetheless, the rest of the distribution leans more toward positive views, suggesting a relatively high degree of acceptance. This, in itself, challenges

the often-repeated portrayal of Italy as a stronghold of traditionalism in matters of family life, in line with recent studies (Aassve et al. 2024; Castiglioni et al. 2025).

Despite this polarization, attitudes are not static or universally held, but rather flexible and couple-dependent. The variations in responses across different couple and treatment scenarios suggest that individuals' moral judgments and support for ART are shaped by situational factors, such as the couple's characteristics or the cost of the procedure. This flexibility reflects not only individual-level ambivalence but also the dynamic nature of social norms surrounding ART. In a society traditionally marked by conservative family values, such as Italy, the observed adaptability of attitudes—and, by extension, of normative frameworks—underscores an important shift. Respondents are more supportive of ART when the fictitious couple is attempting to conceive their first child, when maternal age is more advanced, and when they have been trying to conceive for more than a year. These findings suggest that as age-related infertility becomes more common, acceptance of ART (and demand for treatment) may increase. Conversely, high treatment costs and the need to travel for care negatively affect attitudes toward ART. This suggests that reducing economic and geographical barriers to treatment may foster more positive attitudes toward ART, and, in turn, support higher utilization rates, as shown in previous studies (Goisis et al., 2020, 2023; Lazzari et al. 2022).

Importantly, heterologous treatments are viewed with markedly greater skepticism, consistent with previous research (e.g., Daniluk and Koert 2012). Our findings indicate that certain experimental conditions—particularly the use of heterologous treatment—are more potent in shaping polarized responses than in shifting the views of individuals with more moderate positions. Yet, attitudes toward ART remain sensitive to the couple's specific circumstances and display some flexibility, especially when the chances of achieving parenthood are perceived to be at greater risk. A further dividing line emerges with respect to parity. Being already a parent is strongly associated with more polarized and less malleable views: even when the couple's infertility experience or social circumstances change, respondents show limited willingness to adjust their attitudes when the fictitious couple already has a child.

The experimental approach employed in this study ensures strong internal validity while minimizing biases linked to social desirability that often affect traditional surveys. The randomization of treatment conditions and the use of a fictitious couple substantially reduce interference from respondents' own characteristics. In addition, we verified that controlling for a range of socio-demographic and economic attributes does not alter the overall pattern of results. Despite the strengths of FSE, some limitations should also be acknowledged. First, vignette designs necessarily simplify complex real-world situations by capturing only a limited set of possible outputs. Second, because

responses reflect hypothetical judgments, our ability to extrapolate these findings to actual decision-making in real-world scenarios is limited. Third, answers may be influenced by comparison effects when respondents evaluate multiple vignettes rather than substantive differences in perception. Fourth, although we provided respondents with a short text explaining what an ART cycle entails, some scenarios may remain unfamiliar or difficult to fully imagine, especially for those without direct or indirect experience with ART. Finally, future research could examine the stratification of attitudes toward ART by incorporating additional factors not available in our data—such as psychological predispositions, political orientation, and religiosity—which are likely to play a meaningful role in shaping views on assisted reproduction.

In conclusion, our findings suggest that attitudes towards ART are far from static and are highly sensitive to couples' specific situations, with 40–50% of respondents revising their evaluations depending on the inclusion of extreme response categories irrespective of their internalized beliefs. In particular, the personal characteristics of the fictitious couples, particularly the woman's age, parity, and the length of time spent trying to conceive, emerge as the most significant factors influencing attitudes toward ART, and their polarization. The cost of ART remains an important consideration in shaping these attitudes. Moreover, the type of ART used plays a critical role in how it is perceived: methods that allow infertile heterosexual couples to have biological children (homologous ART) are generally viewed more favorably, likely because they tend to replicate traditional family structures. The importance placed on biological relatedness is also reflected in the limited support for adoption, which is seen as a less desirable solution to infertility.

By acknowledging the social construction of ART utilization, we conclude that attitudes play a fundamental role in shaping the experience of infertility. Our findings call for the need to better situate the study of infertility within partners' family life courses and within a demographic framework. We conclude that future research on infertility and ART decision-making must move beyond purely medical perspectives to fully account for the complex interplay of social, cultural, and demographic factors. We show that views on ART are deeply polarized, yet also fluid and shaped by the specific socio-demographic dynamics within couples. Recognizing this malleability underscores the need to move beyond static social, political, and ethical debates and opens promising avenues for future research into how attitudes toward ART evolve in response to changing personal and societal conditions.

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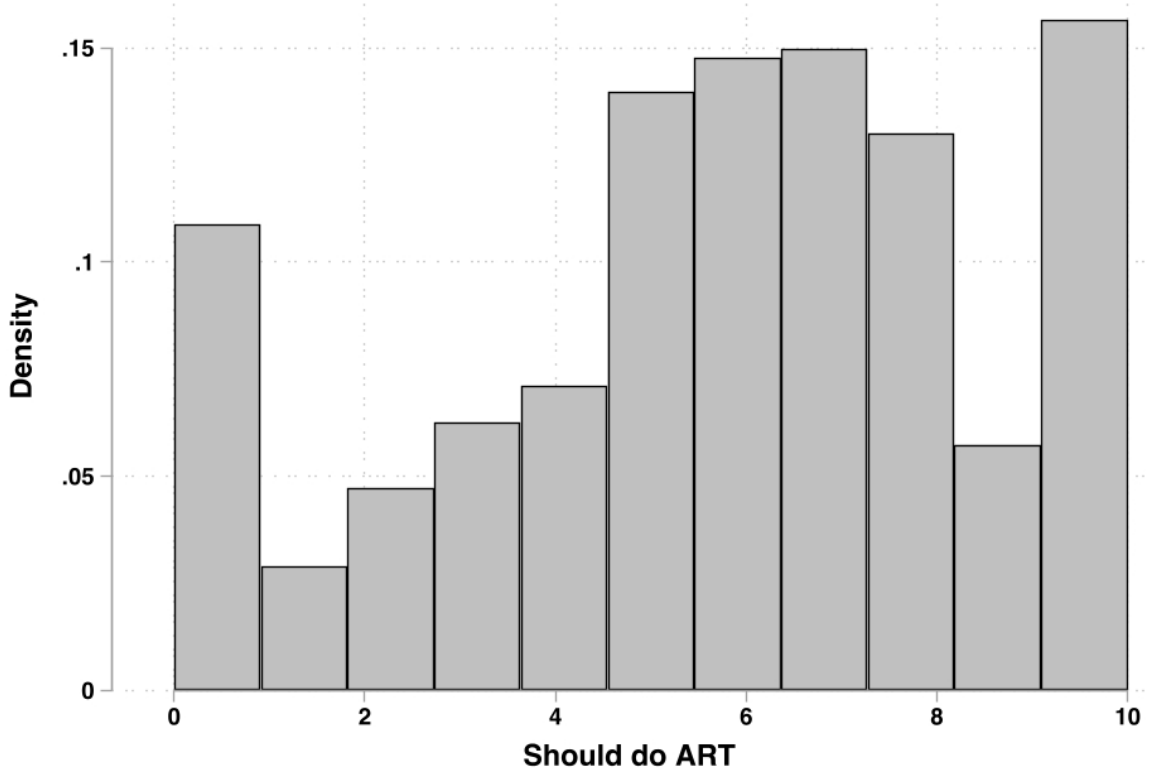
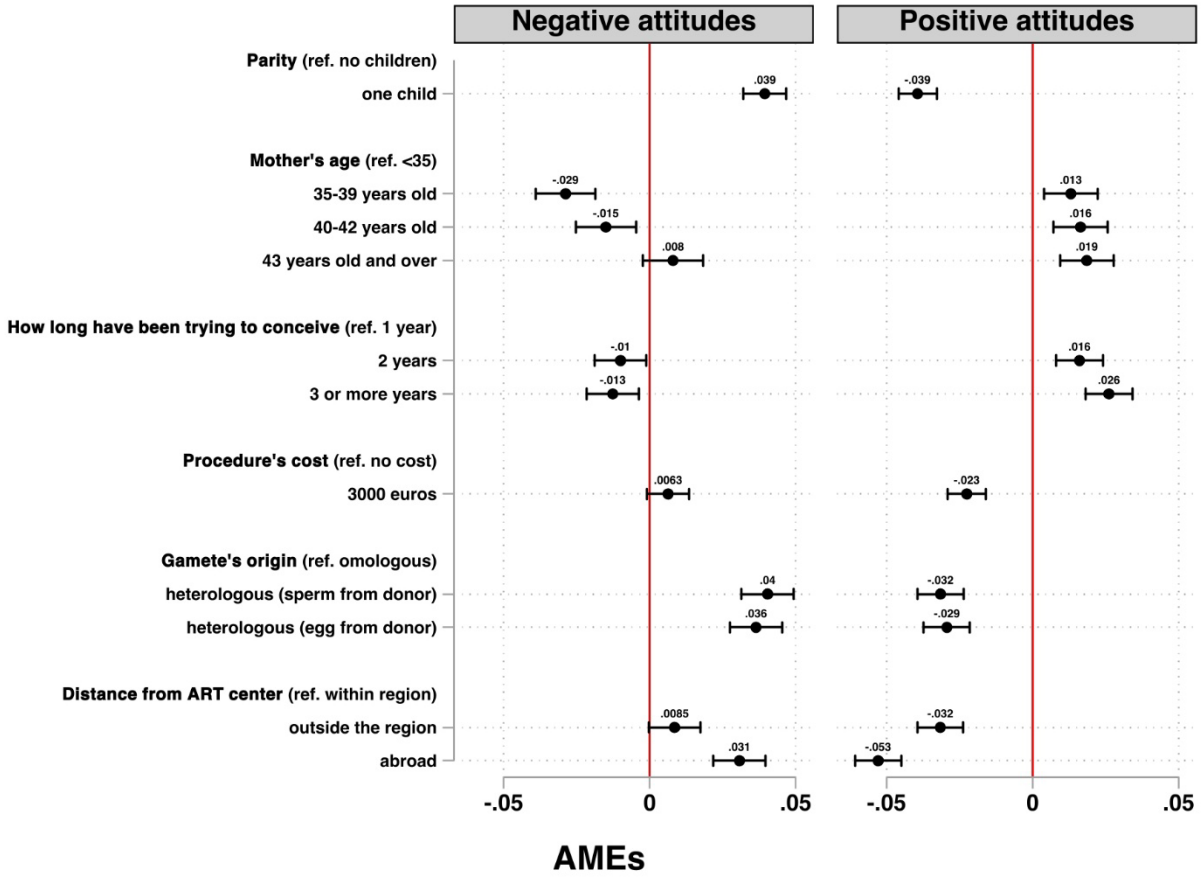
Figures

Figure 1. Distribution of views on whether the fictitious couple should do ART



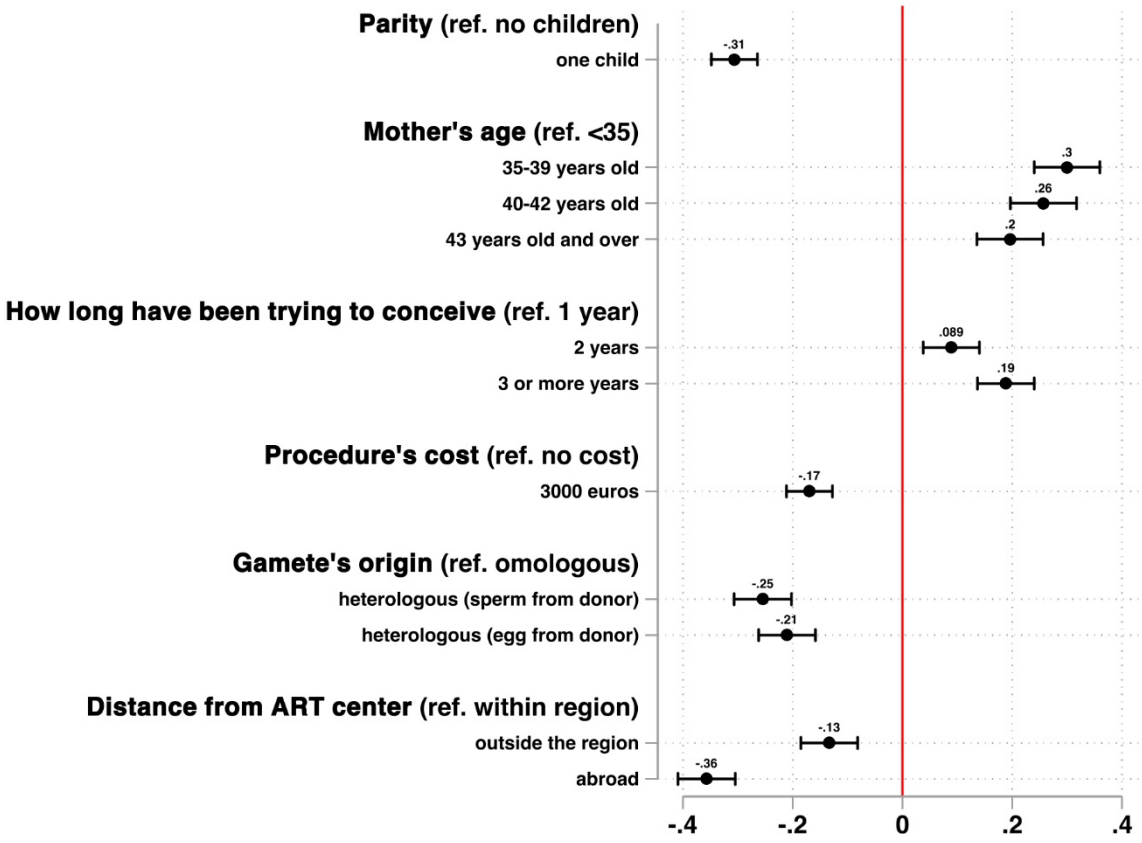
Note: 0/10 means ‘absolutely no’/‘absolutely yes’ that a couple should pursue ART.

Figure 2. AMEs of experimental conditions on polarized views towards whether the fictitious couple should do ART



Note: AMEs and 95% CIs of FSE conditions on the probability of having a negative/positive view on whether the couple should use ART are obtained from estimating multilevel logistic models.

Figure 3. OLS random effect regression estimates of experimental conditions on views towards whether the fictitious couple should do ART



Note: marginal effects of FSE conditions on the view towards whether the fictitious couple should recur to ART (with a 1-9 scale, excluding the two extreme categories 0 and 10) are obtained by estimating OLS models with random effects.

Tables

Table 1 – Vignette dimensions and levels

Vignette dimension	Levels of dimensions
Couple's characteristics	
Couple's parity	1 Childless
	2 Parents of one child
Female partner's age	1 less than 35
	2 35-39
	3 40-42
	4 43 and over
Duration of the couple's attempts to conceive	1 1 year
	2 2 years
	3 3 or more years
Treatment details	
Expenses of ART treatment	1 3,000 euros
	2 No living costs
Type of treatment recommended by the physician	1 Homologous treatment
	2 Heterologous treatment (sperm donor)
	3 Heterologous treatment (egg donor)
Couple's proximity to a fertility center	1 Within the resident region
	2 Outside the region
	3 Abroad

Table 2 - Percentage distribution on respondents' answers regarding what the fictitious couple should do to conceive

What should Caterina and Tommaso do?	Fictitious couple without children				Fictitious couple with children			
	Most favorable scenario woman's age		Least favorable scenario woman's age		Most favorable scenario woman's age		Least favorable scenario woman's age	
	35-39	43+	35-39	43+	35-39	43+	35-39	43+
Initiate ART treatment without delay	32.8	37.7	38.5	47.7	39.4	33.9	17.2	18.5
Persist in natural conception attempts for an additional year before considering ART	29.7	26.1	33.9	16.9	25.8	15.4	35.9	23.1
Persist in natural conception attempts for two years before considering ART	14.1	7.3	15.4	13.9	12.1	4.6	12.5	9.2
Continue trying to conceive naturally without a specific time frame	14.1	4.4	7.7	16.9	12.1	9.2	18.8	13.9
Consider the possibility of adopting a child	7.8	20.3	3.1	1.5	10.6	32.3	10.9	26.2
Abandon their plan of having a child	1.6	4.4	1.5	3.1	0.0	4.6	4.7	9.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Experimental conditions in the two scenarios: A) Most favorable scenario: the fictitious couple has been trying to conceive for only one year, faces no financial burden for the procedure, has access to treatment in their region of residence, and can use their own gametes (homologous). B) Least favorable scenario: the couple has been attempting to conceive for more than three years, and must bear a cost of 3,000 euros for a heterologous treatment abroad.

Supplementary Material

Supplementary figures

Figure A1. Example vignette with introductory text (translated version)

Introduction to ART:

Assisted Reproductive Technologies (ART) are medical procedures that help couples facing fertility challenges in their journey to conceive a child. These methods involve the manipulation of sperm and eggs in a laboratory to create an embryo from the couple (known as "homologous fertilization"). The embryo is then implanted into the woman's uterus to initiate a pregnancy.

In some cases, couples may find that their fertility challenges can only be overcome by using donated sperm or eggs (known as "heterologous fertilization"). Typically, couples must attend multiple clinic visits for each attempt. The success rate of these techniques decreases with age.

Introductory text to the vignette:

You will see six different possible scenarios, each describing the hypothetical situation of a couple. After each scenario, indicate whether you think the couple should resort to medically assisted reproduction techniques, how likely you believe they are to actually use these techniques, and, more generally, what you think the couple should do.

Caterina and Tommaso are a **childless couple** who have been trying to conceive **for a year** and are considering assisted reproductive techniques because they have not yet succeeded with natural conception. The couple's net annual income is 35,000 euros. Since Caterina is **under 35**, the total cost of the assisted reproduction procedure they would undergo is **3,000 euros**, and the type of treatment recommended by their doctor is **homologous fertilization**. Finally, the infertility centre they are considering is located in the **couple's region of residence**.

In your opinion, should Caterina and Tommaso use ART?

0	1	2	3	4	5	6	7	8	9	10
Absolutely no										Absolutely yes

How likely will Caterina and Tommaso use ART?

0	1	2	3	4	5	6	7	8	9	10
Very unlikely										Very likely

Lastly, what should Caterina and Tommaso do?

- Initiate ART treatment without delay;
- Persist in natural conception attempts for an additional year before considering ART;

- Persist in natural conception attempts for two years before considering ART;
- Continue trying to conceive naturally without a specific time frame;
- Consider the possibility of adopting a child;
- Abandon their plan of having a child

Supplementary tables

Table A1. Survey questions assessing respondents' opinions about ART procedures, funding schemes, and access.

Item number	Full text of question
Item 1	Couples who are unable to conceive naturally should be allowed to use homologous fertilization (that is, with both gametes coming from the couple).
Item 2	Couples who are unable to conceive naturally should be allowed to use heterologous fertilization, which uses a male donor's gamete.
Item 3	Couples who are unable to have a child naturally should be allowed to use heterologous fertilization, which uses the female gamete of a donor.
Item 4	In Italy, ART should be free of charge, regardless of the number of attempts made.
Item 5	In Italy, all women should be guaranteed the possibility of freezing their eggs free of charge, so they can potentially use them at a later time.
Item 6	In Italy, the government should not impose a limit on the number of cycles allowed.
Item 7	In Italy, ART should be accessible to other individuals as well, such as single people (without a partner).
Item 8	In Italy, ART should be accessible to other individuals as well, such as lesbian couples.
Item 9	In Italy, ART should be accessible to other individuals as well, such as gay couples.

Table A2. Full models referring to Figure 2 and models adjusting for sociodemographic characteristics

	Negative Attitudes		Positive Attitudes	
	(1) Baseline AME (SE)	(2) Adjusted AME (SE)	(3) Baseline AME (SE)	(4) Adjusted AME (SE)
Parity (ref. No children)	*ref.*	*ref.*	*ref.*	*ref.*
one child	0.044***	0.040***	-0.034***	-0.032***
	(0.0037)	(0.0035)	(0.0033)	(0.0032)
Maternal age (ref. <35)	*ref.*	*ref.*	*ref.*	*ref.*
35-39	-0.029***	-0.026***	0.014**	0.013**
	(0.0051)	(0.0047)	(0.0047)	(0.0045)
40-42	-0.022***	-0.021***	0.008	0.007
	(0.0051)	(0.0047)	(0.0048)	(0.0046)
43+	0.003	0.003	0.013**	0.012**
	(0.0051)	(0.0047)	(0.0047)	(0.0045)
How long trying to conceive (ref. 1year)	*ref.*	*ref.*	*ref.*	*ref.*
2 years	-0.012**	-0.011**	0.013**	0.012**
	(0.0044)	(0.0040)	(0.0042)	(0.0040)
3+ years	-0.008	-0.007	0.028***	0.027***
	(0.0044)	(0.0041)	(0.0041)	(0.0040)
Procedure's costs (ref. No costs)	*ref.*	*ref.*	*ref.*	*ref.*
3000 euro	-0.001	-0.001	-0.021***	-0.020***
	(0.0036)	(0.0033)	(0.0033)	(0.0032)
Gamete's origin (ref. homologous)	*ref.*	*ref.*	*ref.*	*ref.*
heterologous (sperm from donor)	0.038***	0.035***	-0.032***	-0.031***
	(0.0044)	(0.0041)	(0.0041)	(0.0040)
heterologous (egg from donor)	0.036***	0.033***	-0.025***	-0.024***
	(0.0044)	(0.0041)	(0.0041)	(0.0040)
Distance from ART center (ref. within region)	*ref.*	*ref.*	*ref.*	*ref.*
outside region	0.007	0.006	-0.035***	-0.035***
	(0.0044)	(0.0041)	(0.0041)	(0.0040)
abroad	0.033***	0.030***	-0.057***	-0.055***
	(0.0044)	(0.0041)	(0.0041)	(0.0040)
Cohort of birth (ref. 1975-1984)		*ref.*		*ref.*
1985-1999		-0.040***		0.015*
		(0.0073)		(0.0073)
Female		0.004		0.026***
		(0.0073)		(0.0070)
Education (ref. Lower secondary)		*ref.*		*ref.*
Vocational-upper secondary		0.021*		-0.012
		(0.0106)		(0.0113)
Tertiary		0.005		-0.045***
		(0.0118)		(0.0120)
Area of residence (ref. North west)		*ref.*		*ref.*
north east		0.019		-0.016
		(0.0104)		(0.0101)
center		0.016		-0.008
		(0.0103)		(0.0101)
south and islands		0.004		0.017
		(0.0091)		(0.0090)
Occupation (ref. Employed/self-employed)		*ref.*		*ref.*
unemployed		0.023		-0.014
		(0.0119)		(0.0113)
inactive/student		0.038**		0.003
		(0.0133)		(0.0129)
Marital status (ref. Married)		*ref.*		*ref.*
cohabiting		-0.023**		-0.006
		(0.0087)		(0.0083)
LAT		-0.036**		-0.004
		(0.0114)		(0.0117)
Already parent = yes		-0.018*		0.008
		(0.0085)		(0.0082)
Informed about ART = yes		-0.013		0.067***

		(0.0083)		(0.0074)
Had problem conceiving = yes		0.012		0.017
		(0.0104)		(0.0099)
Used ART (ref. No)		*ref.*		*ref.*
No FIVET, other actions		-0.025*		0.013
		(0.0098)		(0.0097)
FIVET, eventual other actions		-0.066***		0.068***
		(0.0158)		(0.0203)
Variance random effects	23.348	26.854	17.306	14.122
	(1.747)	(2.070)	(1.078)	(0.869)
N	28,368	28,368	28,368	28,368

Note: models report average marginal effects (AMEs) obtained from multilevel logistic models.

Table A3. Random effect OLS model predicting whether the fictitious couple will recur to ART (1-9 values)

	Beta	(SE)
Parity (ref. No children)	*ref.*	
one child	-0.306***	(0.022)
Maternal age (ref. <35)	*ref.*	
35-39	0.299***	(0.030)
40-42	0.256***	(0.031)
43+	0.196***	(0.031)
How long trying to conceive (ref. 1year)	*ref.*	
2 years	0.089***	(0.026)
3+ years	0.188***	(0.026)
Procedure's costs (ref. No costs)	ref.	
3000 euro	-0.170***	(0.022)
Gamete's origin (ref. homologous)	*ref.*	
heterologous (sperm from donor)	-0.254***	(0.026)
heterologous (egg from donor)	-0.210***	(0.026)
Distance from ART center (ref. within region)	*ref.*	
outside region	-0.133***	(0.027)
abroad	-0.357***	(0.027)
Constant	6.025***	(0.044)
Sigma(e)		1.524
Sigma(u)		1.446
N	21,528	

Table A4. Random and fixed effects OLS model predicting whether the fictitious couple should recur to ART (0-10 values)

	RE		FE	
	(1)	(2)	(3)	(4)
	Beta	(SE)	Beta	(SE)
Parity (ref. no children)	*ref.*		*Ref.*	
one child	-0.485***	(0.024)	-0.480***	(0.024)
Mother's age (ref. <35)	*ref.*		*Ref.*	
35-39	0.360***	(0.034)	0.352***	(0.035)
40-42	0.306***	(0.034)	0.309***	(0.035)
43+	0.190***	(0.034)	0.192***	(0.035)
Trying to conceive (ref. 1 year)	*ref.*		*Ref.*	
2 years	0.154***	(0.030)	0.156***	(0.030)
3+ years	0.273***	(0.030)	0.277***	(0.030)
Procedure's cost (ref. no cost)	*ref.*		*Ref.*	
3000 euro	-0.207***	(0.024)	-0.212***	(0.024)
Ref. homologous	*ref.*		*Ref.*	
heterologous (sperm)	-0.456***	(0.030)	-0.449***	(0.030)
heterologous (egg)	-0.391***	(0.030)	-0.389***	(0.030)
Distance (ref. within region)	*ref.*		*Ref.*	
outside region	-0.232***	(0.030)	-0.233***	(0.030)
abroad	-0.540***	(0.030)	-0.541***	(0.030)
Constant	6.303***	(0.054)	6.299***	(0.042)
Sigma(e)		2.314		2.440
Sigma(u)		1.884		1.884
N	28,368		28,368	