The Cost of Raising Children and Family Intentions and Desires:

A Survey Experiment Approach Using Information Intervention

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Abstract

The cost of raising children has been the primary reported reason for the gap between desired and realized fertility in East Asia, one of the so-called "lowest low" fertility contexts. Meanwhile, previous studies are unclear about causality; empirical efforts to understand the relationship between the cost of education and fertility are largely correlational. In this study, we address this limitation by combining a survey experiment approach with information intervention, which allows researchers to identify causal evidence for a particular treatment we cannot directly change by exogenously changing *perceptions* of it. Using data from an online survey experiment targeting never-married young men and women in Japan, our results reveal the following findings. First, respondents are more likely to *overestimate* the cost of education per child (defined by their estimates 25% higher than the actual average). Second, we do not find evidence for the causal effect of over- or under-estimation of the education cost on family intention and desires, except for the desired age of the first childbearing among younger adults. Substantively, overestimating the cost of education by twice the actual average lowers the desired age by 0.37 years for those who are informed. These findings carry important theoretical as well as policy implications to advance our understanding of the cross-national variation in fertility levels across low fertility contexts.

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Introduction

Demographers have long sought to understand the sources of the cross-national variation in fertility levels. One of the key explanations discussed in the previous literature is the cost of raising children (Anderson and Kohler 2013; Rindfuss and Choe 2016). Theoretically, an economic model of fertility posits that a high education cost for children induces a trade-off between quantity and quality (Becker and Lewis 1973). If individuals anticipate the high cost of raising children, they may reduce their fertility intentions and desires. Since these attitudes are a strong predictor for realized fertility, the cost of education is likely to cause lower fertility. To the extent that the reduction in fertility levels leads to further investment in children and competition for better education, this may be an important self-reinforcing mechanism for the prolonged periods of below-replacement fertility in economically affluent countries, which is characterized by the notion of a "low fertility trap."

In this context, scholars have argued that the high cost of education plays a critical role in explaining the so-called "lowest low" fertility in East Asia (Anderson and Kohler 2013; Gauthier 2016), where Total Fertility Rate is considerably lower than other low fertility contexts. Although the cost of education has been a widely accepted explanation for low fertility, empirical efforts to understand the relationship between the rising cost of education and fertility decline are largely correlational (e.g., Ogawa et al. 2009). Observationally, robust evidence indicates that the cost of raising children is the main reason married couples have fewer children than desired (NIPSSR 2023), yet this does not necessarily mean that the cost of children leads to low fertility; it could be the case that material conditions (e.g., lower income) may deter these parents from having fewer children than desired and make cost estimates higher.

It is important to note here that people care about *anticipated* education costs of raising children, which indicates that some individuals may have less accurate estimates than others. If the perceived cost of education may vary across individuals, correcting potential misinformation may change their attitudes and behaviors. From a policy perspective, it would be particularly critical to give information to those who "overestimate" the educational cost of raising children. Overestimating the educational cost is likely in East Asia as widely shared values emphasizing children's social mobility through educational attainment (Li and Xie 2020) may induce people to overestimate the cost of education.

Does the perceived cost of education shape family intentions and desires (hereafter, intentions)? We address this question by focusing on the case of Japan. Similar to other East Asian contexts, Japan is characterized by relatively limited public spending on education and the cost of raising children as the primary reported reason for the gap between desired and realized fertility. According to the Japanese National Fertility Surveys, a nationally representative survey on family and fertility, more than half of married individuals whose desired number of children is lower than the planned number of children have chosen "it costs too much for childrearing and education" as a reason for the gap, which is the most frequent option chosen by respondents all the time (Gauthier 2016; NIPSSR 2023). This is especially the case for younger age groups, where about 78% of married women whose age is 35 or lower have chosen this reason, while about 53% of all married women do so. Speculatively, this is related to the limited public spending on education; Japan's spending on education (4% of its GDP) is considerably smaller than the OECD average (4.9%) (OECD 2024). Thus, Japan's private expenditures on education is higher than other OECD countries (Rindfuss and Choe 2016). Parents' role is further emphasized because their time and financial investment in the so-called "shadow education" is

critical for success in high-stakes admissions (Hannum et al. 2019). It is thus not surprising to see that more than 60% of spending on children's education is expenditure outside of school (MEXT 2023). Reflecting this, many of the public believe that lowering the financial burden for education is critical to mitigating declining fertility trends (Nihon Keizai Shimbun 2024).

The relatively heavy reliance on private spending on education suggests that the cost of education plays a critical role in shaping people's desires and expectations about family size and their desired timing of parenthood. We examine this question by leveraging an experimental method called information provision experiment (Haaland et al. 2023). Specifically, we exogenously generate environments, where a group of respondents are exposed to accurate information about the education cost while other respondents are not. By asking them to provide their guess about the cost of education per child before the experimental exposure, we can identify the causal impact of providing information about the education cost on their family intentions. By doing so, this study contributes to our better understanding of a cross-national variation in low fertility contests.

Research question and hypothesis

In this study, we expect that individuals do not necessarily have correct estimates about the cost of children's education, which is a necessary condition to use the information intervention framework. After confirming that individuals over- or under-estimate the cost of children's education, we test our hypothesis, which posits that those who are in the intervention group and overestimate (or underestimate) the educational cost to be more (or less) willing to marry and have children more and earlier compared with the control group.

Hypothesis: Those who realize that educational costs per child are lower (or higher) than their guess are more (or less) likely to have positive attitudes towards marriage and parenthood.

Since the control and treatment groups are randomly assigned, we can estimate the causal impact of correcting respondent's over- or under-estimation on family intentions. We hypothesize the over- or under-estimation of the cost of children affects not only fertility desires but also marriage intentions in light of evidence that the linkage between marriage and childbearing remains strong in East Asia (Raymo et al. 2015). This family context allows us to posit that marriage decisions are partly driven by fertility intentions and desires (Chen et al. 2020).

Data and method

In this study, we combine a survey experiment approach with information intervention. The information intervention experiment is one of the information provision experiments, a growing experimental method in economics (Haaland et al. 2023). By exogenously changing perceptions of real-world phenomena, this experiment method allows researchers to identify causal evidence for a particular treatment (e.g., education cost), which we cannot directly change.

In the information intervention, we randomly assign respondents to treatment and control groups. For both groups, respondents are asked to estimate the average educational cost of children. For the treatment group, respondents are further shown the average educational cost of children calculated by the authors based on various sources including consumer expenditure surveys and tuition information provided by the Ministry of Education, Culture, Sports, Science and Technology. Specifically, we ask respondents the following question, as shown in Figure 1.

[Figure 1 about here]

For the treatment group, we also show how their estimates are different than the average estimates, while we do not show this information to the control group so that they do not have a chance to correct the gap between their estimates and the average estimates.

> The guess you provided was ____ Japanese yen, but according to the average estimates, **19 years from public pre-school to private university (non-STEM) would cost about 12,600,000 Japanese yen. This means that you [overestimated/underestimated] the actual educational cost by _____ Japanese yen**.

This survey was conducted in collaboration with Japan Public Opinion Research (JAPOR), which made a call for online social surveys in January 2024. After our proposal was accepted by JAPOR, we designed and launched the survey in June 2024. The survey questionnaire was distributed to online panels registered with *Nikkei Research*, which is a survey company working with *Nihon Keizai Shimbun* (Japan Economic Newspaper), one of the largest Japanese newspaper companies.

We set sampling quotas based on three demographic variables (respondents' age, gender, and area of residence) to obtain a sample representing never-married adults aged 20-39, a target population in this study. We closed the survey when we reached our planned sample size, which is 5,000 subjects. We employed multiple survey experiments for different respondents. Respondents who were assigned to the information intervention experiment consist of 2,849

respondents (1,385 respondents assigned to the treatment group and 1,464 respondents assigned to the control group). In addition to the survey experiment questions and family intentions, we also asked attitudinal questions (e.g., attitudes toward parenting or perceptions about future uncertainty) and sociodemographic characteristics including income, occupation, and educational background.

The main outcome variable is family intentions, measured by marriage and fertility intentions and desires. For marriage intentions and desires, we ask three questions. For the first question, respondents were asked to provide a dichotomous yes-no response to the following question about marriage intention: "Thinking about your life as a whole, which of the following describes your thoughts on marriage?" The response options are "I intend to marry at some point" and "I have no intention of ever marrying." We assigned the values of 1 to the former and 0 to the latter. For the second question, respondents were asked to answer the following question about marriage desire; "What are your thoughts regarding marriage?" and provided the following response options: "I definitely want to marry," "I want to marry if possible," "I don't care if I marry or not," "I'm not thinking about marriage," and "I don't want to marry." We assigned values from 5 to 1, with higher values indicating a stronger marriage desire. These two questions are the two most frequent ways of asking about marriage intentions and desires in nationally representative surveys in Japan. Comparing the former and the latter, the latter question allows respondents to provide a more nuanced answer to how they think about marriage (Raymo et al. 2021). Lastly, the third question asked respondents (those who stated they do not want to marry in the previous question are excluded) to provide their desired age at marriage, ranging from their current age to "50 years old or older." By subtracting the respondent's current age from the desired age at marriage, we constructed the desired timing of marriage.

For fertility desires, we ask two questions. First, respondents were asked "What is the ideal number of children for you?" with six choices: zero, one, two, three, four, and five or more. We assigned the values from 0 to 5. Second, for those who stated a desire for one child or more, we asked a follow-up question: "In the future, by what age do you want to have the first child?" Respondents can provide their desired age for the first childbearing ranging from their current age to "50 years old or older." Similar to the desired timing of marriage, we also constructed the desired timing of first birth.

For control variables, we include respondents' age, age squared, gender (men and women), educational attainment (junior high, senior high, vocational school, junior college, university, graduate school, and currently enrollment in school), and area of residence (metropolitan area[1] and other rural area).

We estimate the following linear regression models (linear probability models for binary outcomes) to assess the effect of over- or under-estimation of education costs:

$$Y_i = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Gap}_i + \beta_3 \text{Treatment}_i \times \text{Gap}_i + \gamma X_i + e_i,$$

where Treatment_i refers to whether respondents are assigned to the treatment group (i.e., provision of education cost information); Gap_i refers to the extent to which respondents overestimate or underestimate the education cost; X_i refers to individual characteristics; and e_i refers to the error term. A key coefficient of interest is β_3, which indicates the extent to which respondents change their family formation intentions if they are exposed to the gap between the perceived education cost and the actual cost. Put differently, β_3 captures the gap between

[1] The metropolitan area includes Tokyo, Kanagawa, Saitama, Chiba, Aichi, Osaka, Kyoto, and Hyogo Prefecture, covering nearly 60 percent of the population of Japan.

perceived and actual costs of education are evaluated differently between the control group and the treatment group. This indicates that if the perceived cost of education is negatively associated with marriage and parenthood attitudes, then β_3 should be positive.

We also examine whether the effect of the revised perceptions of education costs varies by individuals' characteristics. For example, respondent's age can change the relationship between the intervention and family formation intentions as older respondents are more selective than younger respondents in the sense that those who are already married and thus would have stronger marriage or fertility desires are omitted from the sample. Also, response to the information provision may be different by gender, as women may be likely to consider the timing of childbearing more carefully. To consider these potential heterogeneities, we examine whether the treatment effects can vary by respondent's age and gender.

Results

Descriptive results

Table 1 shows the descriptive statistics for the control and treatment groups. Except for the area of residence, the demographic characteristics are balanced between them. The different distribution of the area of residence may affect the results, so we control for this variable when testing the effect of treatment, as well as other characteristics.

How much do individuals estimate education costs to be? While 25.5% of respondents 25% or less underestimate the education cost, 34.0% of respondents 25% or more overestimate it. This indicates that a non-negligible proportion of respondents have misperceived the cost of education relative to the actual cost, particularly in the direction of overestimation.[2]

[2] This result is consistent with an earlier US-based study targeting high school students and their parents, which found that people are more likely to overestimate the cost of education (Velez and Horn 2018).

Simultaneously, their estimates vary considerably. Figure 2 shows the histogram of the gap between the respondents' perceived education cost and the actual education cost, where we can see that some respondents greatly overestimate the cost of education.

[Table 1 about here]

[Figure 2 about here]

Regression results

Table 2 shows the results of regression models predicting family intentions from the provision of education cost information. We focus on the interaction coefficient between the treatment assignment and the gap between perceived and actual education costs.

For marriage intentions and desires, we do not find that correcting the perceived cost of education for children reduces intentions to marry. Similarly, we do not find that correcting the perceived cost increases the desired number of children. For the desired timing of marriage and childbearing, we can see that correcting the perceived cost of education seems to lower the desired timing of marriage and the first birth. Substantively, results indicate that if respondents overestimate the cost of education by twice the actual costs, they wish to marry 0.13 years ($= -0.010 \times 12.6$) earlier and wish to have a first child 0.14 years ($= -0.011 \times 12.6$) earlier. These results are consistent with our hypothesis. However, these coefficients are not statistically significant.

Descriptively, it is worth noting that estimating education costs more (or less) than the actual one is not related to family intentions. Looking at coefficients representing those who are not treated (i.e., Perceived-actual gap), we can see that it is not associated with any of the

outcomes. This is not because there is no variation in the estimates individuals provide. Indeed, as we have shown in Figure 1, a sizable number of respondents either over- or under-estimate the education cost. Instead, the results are driven by the fact that the perceived cost of education does not predict family intentions.

[Table 2 about here]

Heterogeneity by age and gender

Since the cost of raising children as the primary reported reason for the gap between desired and realized fertility has been especially the case for younger age groups (NIPSSR 2023), we estimate results separately by age (20-27 for younger adults and 28-39 for middle-aged adults). The regression results are presented in Table 3. We can see that correcting the perceived cost of education reduces the desired timing of first birth for younger age groups. Substantively, this means that overestimating the cost of education by twice the actual costs lowers the desired age by 0.37 years ($= -0.029 \times 12.6$) for those who are informed. Meanwhile, for middle-aged adults, no significant effects are found in correcting the perceived cost of education. For gender differences, results indicates that there are no significant gender differences. The only difference we find is that women are more likely to lower the desired age of marriage and the first birth ($p < 0.1$) if they are exposed to the information intervention.

Figure 3 presents predicted values for the desired age of the first birth among all samples, younger adults, and middle-aged adults. We show the gap ranging from -12 million JPY to 46 million JPY, which are equivalent to the upper and lower 1 percentile. For younger adults, we can see that those who overestimated the cost of education lower the desired age of the first birth

if they are exposed to the intervention, while for the middle-aged group those who overestimated the cost of education increase the desired age of the first birth if they are exposed to the intervention.

[Table 3 about here]

[Figure 3 about here]

Robustness check

Recognizing findings from previous studies that marriage desires may not be necessarily interpreted as a single dimension (Raymo et al. 2021), we re-estimate models for marriage desires by classifying intentions categorically. By doing so, these analyses provide a more nuanced interpretation of the current results. Regression results are presented in Appendix Table 1. Similar to the main results where we do not find a statistically significant relationship, these results also indicate that correcting the perceived gap in the education cost does not impact respondents' marriage desires.

Discussion

This economic model of quantity and quality tradeoff has been particularly relevant to understanding the "lowest low" fertility in East Asia, where the normative emphasis on children's education seems to be linked to declining fertility, with important implications for the self-reinforcing mechanism of below-replacement fertility. Our study is designed to shed new light on this old question. Applying the information intervention framework to a survey experiment targeting never-married individuals in Japan, we find that respondents both over- and

under-estimate the cost of education per child, which is consistent with Hypothesis 1. Regression results show that the over- or under-estimating the education cost is not related to family intentions, except for the desired age of the first child among young adults, where correcting the overestimation lowers the desired age. As such, our results provide partial support for Hypothesis 2, which posits that those who realize that the education cost per child is lower than they expected to become positive about family formation. This specific evidence provides theoretically important insights, as social norms and expectations shape individual perceptions of desirable ages for life-course events (e.g., fertility desires), which affects behavioral outcomes (Billari et al. 2009, 2011). Therefore, changing perceptions about the cost of education may have implications for the timing of marriage and childbearing via intervening with the desired childbearing age.

It should be noted here, however, that overall results do not provide supportive evidence for the hypotheses. Several substantive interpretations are possible. First, studies have shown that fertility decline in Japan, or more broadly East Asia, has been mainly driven by later and less marriage, rather than the decline in marital fertility (Tan et al. 2024). Suggested mechanisms for the delay and decline in marriage include the rise in precarious employment, the persistent gender division of labor, or the relatively large prevalence of intergenerational coresidence that delays the transition to adulthood (Raymo et al. 2015). If these are primary mechanisms of later and less marriage and fertility decline via changes in marriage, the cost of raising children may not play a major role.

Another (stronger) interpretation is that the cost of children's education may influence individuals' life-course expectations. Individuals have multiple life-course goals and expectations in family and work domains. These expectations are often bundled together

(Bumpass et al. 2009), while achieving multiple goals simultaneously may not seem feasible depending on constraints, which can be a source of conflict (Collins 2020). Facing the need to reconcile such conflicts, people may give up one goal for the sake of others. Postponing parenthood is one reconciliation strategy. In this context, financial constraints may not change their plans per se, but they may change *when* people plan to make parenthood happen. Our subgroup analyses indicate that correcting the education costs of children likely helps younger individuals, who are at a stage where they are beginning to plan for the future, adjust their future outlook and makes it easier to change their desired timing for childbearing, which provides consistent evidence for this speculation.

This study also carries policy implications. Specifically, our results add important nuances to the popular discourse regarding the role of education costs in fertility decline. While the Japanese government has implemented a range of pronatalist policies to mitigate declining fertility (Chen et al. 2020), limited studies support the evidence for these policies on fertility outcomes. This can be because these policies typically support parenthood prioritizing childbearing within married couples, which may be misleading given that the primary source of fertility decline in Japan and other East Asia is later and less marriage, not declining marital fertility (Raymo et al. 2015; Tan et al. 2024). Alternatively, this can be because the government has not tackled costly education yet, which has been the primary reason for the gap between desired and actual fertility (NIPSSR 2023). The popular discourse also seems to support the claim, as recent news polls have shown that reducing education costs has been raised as the top solution for declining fertility (Nihon Keizai Shimbun 2024). In contrast to the popular narratives, our results suggest that education costs, at least perceived ones, play a limited role in shaping family intentions.

There are several limitations in this study. First, this study does not examine another aspect of the cost of raising children, which is the opportunity cost. Theoretically, the opportunity cost is equally important to anticipated educational investment in the quantity-quality tradeoff framework. Having a child means not only spending money on children's education but also facing potential conflicts in balancing work and family. Importantly, the increased time pressure for parents to invest in children may discourage young adults' family intentions by increasing perceived opportunity costs. If this is an equally important pathway to low fertility, our study design may not capture a critical source of variation in low fertility levels due to childbearing and parenting. Second, although the information intervention can be a cost-effective approach compared to other approaches which typically provide financial support, it is an empirical question to what extent the information intervention approach has implications in the long run, including whether it leads to behavioral outcomes (i.e., childbearing).

Despite these limitations, our study provides unique and more nuanced insights into the role of the educational cost of children in explaining declining fertility. Importantly, the implications of findings from this study speak not only to the Japanese context but also East Asia more broadly, where the widely shared emphasis on children's education is a compelling explanation for the so-called "lowest-low" fertility. Since access to higher education has expanded rapidly in these societies, we can expect that the role of educational cost is increasingly salient in these societies by further increasing anticipated educational investment in children. Also importantly, the specific evidence for the effect on the desired age of childbearing is informative because the changing timing of childbearing likely translates into the level of fertility in Japan and other East Asia, where evidence for recuperation at older ages is limited. Lastly, the stakes of investment in children's education are increasingly high since returns to

higher education have increased in many economically affluent countries. Therefore, the perceived cost of education can be a critical reason for the declining fertility in non-East Asian contexts. Future studies would benefit from comparing the role of the educational cost of children across countries.

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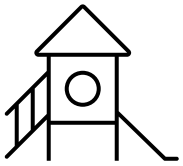
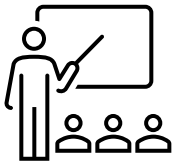
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The following figure presents a typical educational experience among children in Japan.

				
Public pre-school	Public elementary school	Public middle school	Public high school	Private four-year university, non-STEM[3]
3 years	6 years	3 years	3 years	4 years

Question: As you can see, some people spend 19 years from public pre-school to a private university (non-STEM). What is your guess for the educational cost of a child who experiences such educational trajectories? Please make your guess including educational costs related to extracurricular activities (e.g., cram school or prep school). Please provide estimates related to education, excluding the cost related to meals, living expenses, or remittances. (emphasis in original)

Figure 1 Survey instrument for the cost of education per child

[3] Note that tuition at Japanese universities varies by institution type and programs. Tuitions at private universities are typically higher than national or public universities. Also, for private universities, tuitions at STEM related programs tend to be higher than non-STEM programs. Since a majority (approximately 80%) of students in tertiary education are enrolled in four-year universities and more students are enrolled in non-STEM programs than in STEM programs, we chose non-STEM programs in private four-year universities for the information intervention.

Table 1 Descriptive statistics between control group and treatment group

	Control group	Treatment group	*p*-value
Marriage intention			
Do not intent to marry	0.339	0.359	0.278
Intent to marry	0.661	0.641	
Marriage desire			
Do not want to marry	0.070	0.082	0.846
Do not think about marriage	0.195	0.193	
Neither	0.209	0.211	
Want to marry	0.314	0.309	
Definitely want to marry	0.212	0.206	
Desired timing of marriage	5.475 (4.433)	5.301 (4.532)	0.319
Desired number of children	1.081 (1.062)	1.077 (1.051)	0.918
Desired timing of first birth	6.413 (3.705)	6.414 (3.831)	0.994
Age	27.860 (5.576)	27.804 (5.445)	0.788
Gender			
Men	0.553	0.539	0.432
Women	0.447	0.461	
Educational attainment			
Junior high	0.033	0.037	0.935
Senior high	0.202	0.213	
Vocational school	0.095	0.095	
Junior college	0.049	0.042	
University	0.434	0.435	
Graduate school	0.042	0.038	
Enrollment in school	0.145	0.139	
Area of residence			
Metropolitan area	0.608	0.655	0.009
Rural area	0.392	0.345	
N	1,464 (51.4%)	1,385 (48.6%)	

Notes. Means and proportions are reported. Standard errors are shown in parentheses. Differences are tested by t-test for continuous variables and by chi-squared test for categorical variables.

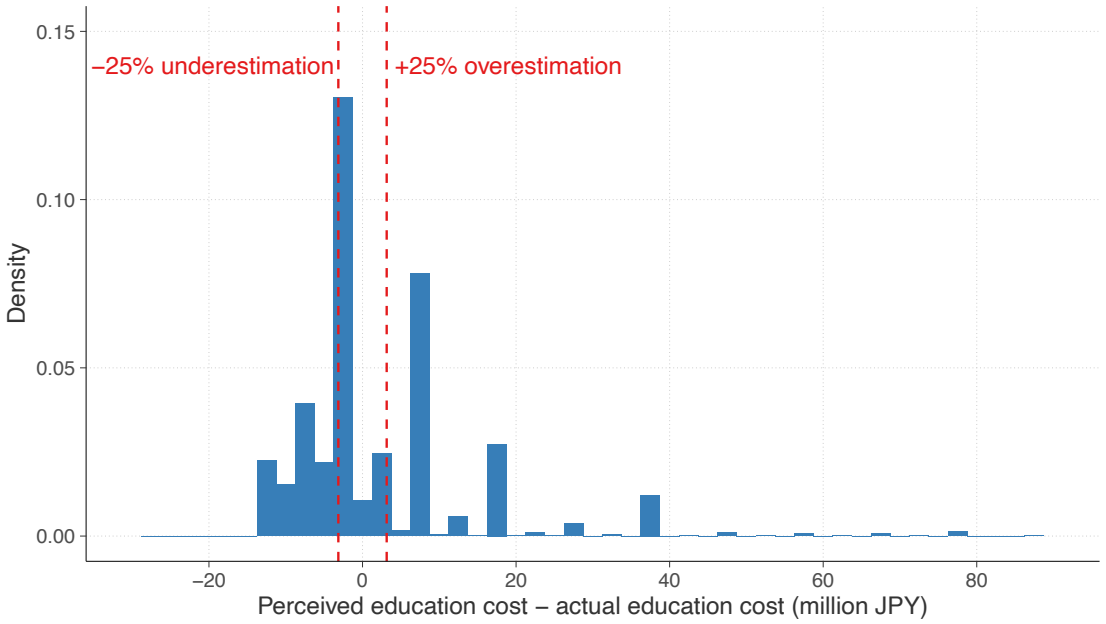


Figure 2 Distribution of the gap between perceived and actual education cost for treated respondents.
Note: Actual average education cost is 12.6 million JPY.

Table 2 OLS regression models predicting marriage and fertility intentions and desires by information provision treatment

	Marriage intention (1/0)	Marriage desire (5–1)	Desired timing of marriage (continuous)	Desired number of children (5–0)	Desired timing of the first birth (continuous)
Treatment	-0.015	-0.034	-0.150	0.006	0.082
	(0.018)	(0.046)	(0.172)	(0.039)	(0.157)
Perceived-actual gap	-0.000	-0.002	0.003	0.001	-0.006
	(0.001)	(0.002)	(0.010)	(0.002)	(0.007)
Treatment x	-0.002	0.001	-0.010	-0.001	-0.011
Perceived-actual gap	(0.001)	(0.004)	(0.013)	(0.003)	(0.012)
N	2,849	2,849	2,633	2,849	1,659

Notes. $^{+}$ $p < .1$, * $p < .05$, ** $p < .01$ (two-tailed tests). Heteroskedasticity-robust standard errors in parentheses. Controls for age, age squared, gender, educational attainment, and region of residence. Desired timing of marriage and first birth was defined as the difference between the desired age of marriage or first birth and the respondent's current age. Since desired age of marriage was not asked for those who chose "I don't want to marry," the sample size is smaller. Desired age at first birth was only asked of those who wanted to have at least one child, so the sample size is smaller.

Table 3 OLS regression models predicting marriage and fertility intentions and desires by information provision treatment by age and gender

	Marriage intention (1/0)	Marriage desire (5–1)	Desired timing of marriage (continuous)	Desired number of children (5–0)	Desired timing of the first birth (continuous)
Age 20–27					
Treatment	0.021	0.048	-0.019	0.060	0.233
	(0.023)	(0.061)	(0.227)	(0.055)	(0.216)
Perceived-actual gap	0.001	0.000	-0.010	0.003	-0.001
	(0.001)	(0.003)	(0.011)	(0.003)	(0.008)
Treatment x Perceived-actual gap	-0.002	0.002	-0.011	-0.001	-0.029*
	(0.002)	(0.004)	(0.016)	(0.004)	(0.013)
N	1,514	1,514	1,423	1,514	1,008
Age 28–39					
Treatment	-0.058*	-0.136*	-0.294	-0.060	-0.093
	(0.027)	(0.069)	(0.260)	(0.054)	(0.227)
Perceived-actual gap	-0.003+	-0.007+	0.031+	-0.003	-0.018
	(0.002)	(0.004)	(0.018)	(0.004)	(0.014)
Treatment x Perceived-actual gap	-0.001	-0.001	-0.013	0.001	0.041
	(0.002)	(0.006)	(0.024)	(0.005)	(0.025)
N	1,335	1,335	1,210	1,335	651
Women					
Treatment	-0.003	-0.004	-0.282	0.033	0.005
	(0.025)	(0.068)	(0.247)	(0.057)	(0.196)
Perceived-actual gap	-0.001	-0.005	0.036*	-0.001	0.008
	(0.001)	(0.003)	(0.016)	(0.003)	(0.009)
Treatment x Perceived-actual gap	-0.002	-0.002	-0.035+	0.000	-0.026+
	(0.002)	(0.005)	(0.021)	(0.004)	(0.015)
N	1,293	1,293	1,180	1,293	723
Men					
Treatment	-0.028	-0.063	-0.044	-0.021	0.119
	(0.025)	(0.061)	(0.241)	(0.053)	(0.239)
Perceived-actual gap	0.001	-0.001	-0.027*	0.004	-0.014
	(0.001)	(0.003)	(0.010)	(0.004)	(0.010)
Treatment x Perceived-actual gap	-0.001	0.003	0.013	-0.001	-0.002
	(0.002)	(0.005)	(0.016)	(0.005)	(0.017)
N	1,556	1,556	1,453	1,556	936

Notes. $^{+}$ $p < .1$, * $p < .05$, ** $p < .01$ (two-tailed tests). Heteroskedasticity-robust standard errors in parentheses. Controls for age, age squared, gender, educational attainment, and region of residence. Desired timing of marriage and first birth was defined as the difference between the desired age of marriage or first birth and the respondent's current age. Since desired age of marriage

was not asked for those who chose “I do not want to marry,” the sample size is smaller. Desired age at first birth was only asked of those who wanted to have at least one child, so the sample size is smaller.

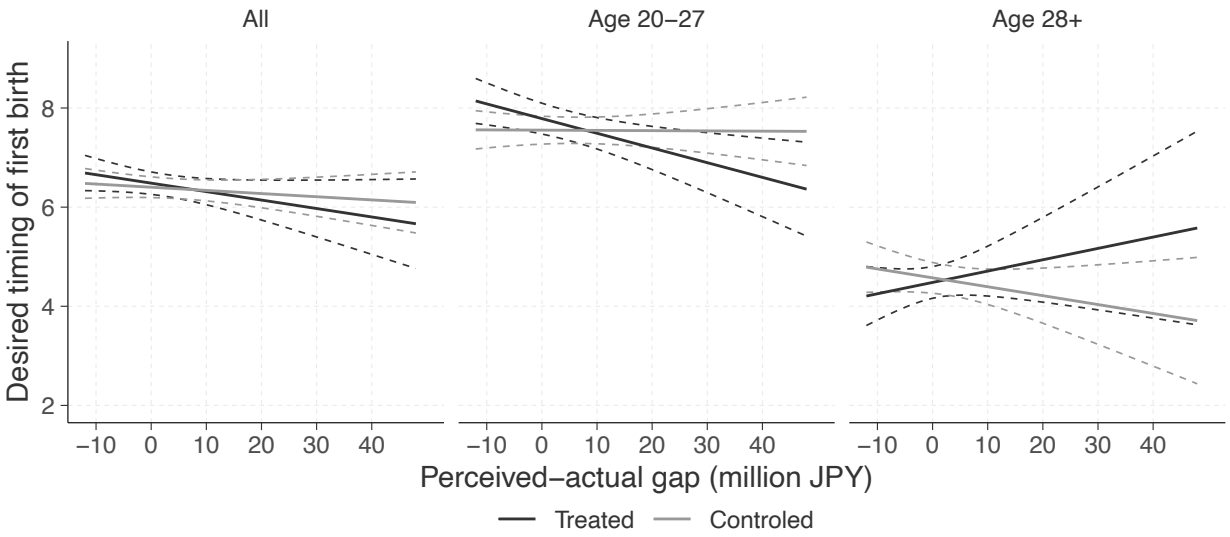


Figure 3 Predicted desired timing of first birth for treated and control groups by perceived-actual education cost gap

Appendix Table 1 Multinomial logit model predicting marriage desire by information provision treatment

	Definitely want to marry (vs. Do not want to marry)	Want to marry (vs. Do not want to marry)	Neither (vs. Do not want to marry)	Do not think about marriage (vs. Do not want to marry)
Treatment	-0.169	-0.135	-0.150	-0.190
	(0.165)	(0.163)	(0.156)	(0.164)
Perceived-actual gap	-0.005	-0.004	-0.004	-0.009
	(0.008)	(0.008)	(0.008)	(0.008)
Treatment x Perceived-actual gap	0.006	0.001	-0.004	0.009
	(0.013)	(0.012)	(0.012)	(0.012)
N	2,849			

Notes. $^{+}$ $p < .1$, * $p < .05$, ** $p < .01$ (two-tailed tests). Heteroskedasticity-robust standard errors in parentheses. Controls for age, age squared, gender, educational attainment, and region of residence.