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Attitudes towards single parents' children in private and state-dependent private schools: experimental evidence

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Abstract

Single parenthood is on the rise worldwide. While acceptance of single-parent households is increasing, some authors point out that single-parent families still suffer from negative societal attitudes compared to heterosexual two-parent families, while also being among the most vulnerable groups of society. Motivated by these findings, we study whether private and state-dependent private schools in Catalonia (Spain) are more reluctant to interact with single parents than with heterosexual couples. We conduct a field experiment during the children's pre-registration period. We create three types of fictitious families (heterosexual couple, single mother, and single father) and send e-mails to schools in which the family structure is made explicit. Our results indicate that schools are more prone to interact with single parents than with heterosexual couples.

Keywords Single parents · Schools · Discrimination · Field experiment · Children

JEL Classification H41 · I20 · J12

1 Introduction

Single parenthood is on the rise everywhere in the world. According to the latest data available, single parents constitute about 15% of households with dependent children in the EU. According to Eurostat, in 2018 Denmark (29%) and Estonia (28%) had the highest proportions of single-parent households among households with children, ahead of Lithuania and Sweden (both 25%), Latvia (23%), the UK (22%), and France

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(21%). In contrast, the lowest proportions of single-parent households were in Croatia (6%), Romania (7%), Greece, Slovakia, and Finland (all 8%).

In the vast majority of cases, this phenomenon concerns women. In the USA, about 15.76 million children were living with a single mother in 2019 and about 3.23 million children were living with a single father, compared to 7.45 million and 748 thousand in 1970, respectively (Statista). In 2015 there were approximately 13.7 million single parents raising 22.4 million children in the USA, which accounts for approximately 27% of children under 21—see the report "Custodial Mothers and Fathers and Their Child Support" released by the US Census Bureau every 2 years. Given the dramatic increase in the number of single-parent households and given that single parents are among the most economically vulnerable households, we believe that exploring discrimination against single mothers and fathers constitutes an important research agenda.[1]

Previous research suggests that family structure contributes to the formation of stereotypes (Ganong et al. 1990). The findings from the literature on social attitudes towards single parents are somewhat mixed regarding how those attitudes may vary depending on the gender of the single parent (i.e. single mother vs. single father). Yet, one consistent finding is that compared to standard heterosexual couples, single mothers and fathers alike still suffer from rather negative—or less positive—societal attitudes. Further, such attitudes seem to depend on the pathway leading to single parenthood. In particular, divorced single parents are considered more positively than never-married single parents.

In turn, the existence of negative societal attitudes towards single parents may potentially translate into discrimination against them in various areas. Such discrimination can even be institutionalized, to the point of forbidding access to assisted reproduction technologies (ART) for single or non-married individuals. According to Präg and Mills (2017), only half of European countries currently allow single women to use ART and even fewer grant access to lesbian women. Only six out of 22 European countries report that marriage is not a requirement for ART access.

While much has been said about single mothers' participation in the labour market (e.g. González 2004) and the several forms of discrimination they may suffer in the workplace, empirical evidence of discrimination against single-parent families in other contexts is scarce at best. To the best of our knowledge, there are only two articles that have investigated discrimination against this particular group, and both focus on the rental housing market: Lauster and Easterbrook (2011) and Murchie and Pang (2018). Using an online correspondence experiment, these studies find that single mothers and fathers receive significantly less positive responses to inquiries relative to heterosexual couples. In both studies, the authors suggest that single parents are facing discrimination mainly based upon their economic marginalization rather than other forms of prejudice (i.e. this is a case of statistical discrimination).

In this paper, we aim to determine whether single parents are being discriminated against regarding their children's access to private and state-dependent private schools.

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[1] For example, Western et al. (2008) observed that the growing number of single parents increased family income inequality by adding to the number of low-income families. Their analysis covers the period 1975–2005 in the USA.

More specifically, we test whether schools are more hesitant to interact with single-parent families than with heterosexual conventional families during the pre-registration period. Note that this is a kind of "subtle" discrimination, as it does not imply that such behaviour from schools would translate into actual discrimination in the administrative admission process. In the context of our sample of schools, where most of them (i.e. the state-dependent private schools) are publicly funded and hence should not charge tuition fees, we expect the financial element to be less salient than in other contexts such as the housing market. However, given the fact that those schools still require a monthly financial contribution from the families, which supposedly is voluntary, we do not rule out the potential existence of negative discrimination towards single parents based on their economic marginalization. Alternatively, negative discrimination towards this family type could also be due to the possible negative attitude of the school towards single parenthood, the expected negative behaviour of children raised in this type of household, or potentially lower academic achievement. Indeed, Barajas (2011), in his critical review of the literature, reveals that a large majority of studies show that children from single-parent families score lower on tests of cognitive functioning and standardized tests, receive lower GPAs, and complete fewer years of school compared to children from two-parent families. Nevertheless, in this schooling context, yet another possibility is that single-parent families benefit from positive discrimination, as schools may perceive this type of family as being more vulnerable in a range of aspects.

We create three fictitious profiles: single mother, single father, and heterosexual couple, and send e-mails to schools asking for an interview or visit. E-mails are sent randomly (in pairs: single mother and couple and single father and couple). Our results indicate that single parents benefit from positive discrimination; that is, schools are more prone to interact with them than with heterosexual couples. As far as we know, our analysis is the first to provide evidence of more positive attitudes towards single parents than towards standard heterosexual two-parent families.

Further, we observe that the gap in the response rate between single parents and heterosexual couples is higher for single mothers than for single fathers. Finally, our analysis suggests that the probability of response is not conditioned by schools' characteristics. While our experiment does not allow us to infer why single parents receive more answers than two-parent heterosexual families, we offer some plausible explanations.

The rest of the paper is structured as follows: Sect. 2 provides some figures regarding single parenthood, while Sect. 3 reviews the literature on attitudes and discrimination towards single parents. In Sect. 4, we describe the institutional setting that applies to the schooling system in Catalonia. Section 5 states our hypotheses, while in Sect. 6 we explain the experiment. Section 7 describes our results. We conclude in Sect. 8.

2 Single parents in Spain: some figures

Although two-parent families (within legal marriage or not) form the vast majority of families in Spain, there is an increase in single-parent families. Single parenthood encompasses a variety of profiles, characteristics, and family situations, and

the entry routes are multiple: marital breakup, the breakup of a common-law couple, widowhood, or single parenthood by choice. Although, historically, widowed women predominantly formed single-parent families, marital separation is currently the main pathway into single parenthood. According to census data, the proportion of single-parent families in Spain grew from 8.5 to 16.2% of family nuclei between 1981 and 2011 (Castro Martín and Seiz Puyuelo 2014).

According to the latest available data from the Continuous Household Survey, elaborated by the Spanish Statistical Office (INE), in 2018, single-parent households in Spain (i.e. formed by one single parent with children) represented 10% of households and mostly consisted of a mother with children. Specifically, there were 1,538,200 such households (81.9% of the total), compared to 340,300 for a father with children. The number of single-parent households increased by 2% compared with 2017, while single-father households grew by 12.3%. In 41.1% of single-mother families, the mother was a widow, in 37.4% separated or divorced, in 15.2% single, and in 6.3% married. In single-father families, 38.6% of fathers were a widow, 41.8% separated or divorced, 8.2% single, and 11.3% married.

A 2015 report by Save the Children (Save the Children 2015) reveals that 54% of children living in single-mother households in Spain are in poverty –12.5 percentage points more than for the overall population. Likewise, 65% of single mothers say they face difficulties in making ends meet, more than 75% need to reduce fixed household costs, and 37.8% cannot afford to keep their homes at an adequate temperature. According to the report, these families face a greater risk of falling into poverty, not only because of their economic situation but also due to issues related to employment, housing, health, or lack of a support network. In particular, the lack of work opportunities is a concerning factor.

3 Overview of the literature

3.1 Attitudes towards single parents

Existing research on societal views of single parents has documented less positive attitudes towards single parents compared to heterosexual married couples (Bryan et al. 1986; Bennett and Jamieson 1999; Valiquette-Tessier et al. 2016). However, attitudes towards single parents tend to vary depending on how single parenthood is reached. In particular, never-married single parents are viewed more negatively than divorced or widowed single parents. In this regard, Usdansky (2009) observes that during the twentieth century, society exhibited an increasing acceptance towards single-parent families who had reached this family status through divorce. However, this was not so for never-married single-parent families.

Another important issue is whether societal attitudes towards single parenthood differ depending on the gender of the custodial parent. In this sense, there is some consensus that motherhood and fatherhood are perceived differently (Valiquette-Tessier et al. 2016) and that these differences in perception persist over time (Ganong et al. 1990). Although the empirical evidence is not unequivocal, generally speaking, attitudes seem to be more positive towards never-married single mothers than towards

never-married single fathers (Chima 1999; Emmers-Sommer et al. 2003; Goldscheider and Kaufman 2006; Maier and McGeorge 2014). Maier and McGeorge (2014) report that single mothers are viewed as having more positive internal qualities than single fathers, who are viewed as having better situational qualities, for example, being more materialistic. In contrast, Haire and McGeorge (2012) and DeJean et al. (2012) observe the opposite, that is, that attitudes towards single fathers are more positive than attitudes towards single mothers. More specifically, in contrast with Maier and McGeorge (2014), participants in Haier and McGeorge's (2012) study viewed single mothers as having worse internal qualities and single fathers as having worse situational attributes. Participants in their study viewed single mothers as being inadequate people, while single fathers were viewed as people facing a challenging situation.

Regarding the employability of single parents, Eby et al. (2004) observe that from a labour perspective, single parents were perceived as being more mature and hence more employable for a merit-based job than single individuals without children. However, given that the former were perceived as having more mobility restrictions, they were less likely to be recommended for a job that might imply relocation.

3.2 Is there discrimination against single-parent households?

The existence of negative societal attitudes towards single parents might potentially translate into discrimination against them in various areas. Although this is an important issue, literature analysing discrimination against single-parent families is surprisingly scarce. To the best of our knowledge, there are only two articles that have investigated discrimination against this particular group, and they focus on the housing market. Lauster and Easterbrook (2011) conducted an internet field experiment to test for discrimination in the housing market in the metropolitan area of Vancouver (Canada). They sent inquiries made about flats for rent, simulating three fictitious family profiles: heterosexual couples, single fathers, and single mothers. They observe that relative to heterosexual couples, single mothers and single fathers were less likely to receive a positive call-back (14 and 16% less, respectively). The authors argue that owners may perceive single parents as being more economically vulnerable than two-parent families. That is, owners' attitudes towards single parents can be considered as a case of statistical discrimination rather than prejudiced/taste-based discrimination. More recently, Murchie and Pang (2018) did a similar experiment in the USA and observed that single parents were discriminated against, not only compared to heterosexual couples but also compared to other groups defined by gender, religion, race, and sexuality. Like Lauster and Easterbrook (2011), these authors explain their findings on the grounds of statistical discrimination.

In the context of (state-dependent) private schooling, besides the financial argument, one potential motive for discriminating against the children of single parents is the belief that such children will perform poorly from both a cognitive and a non-cognitive point of view; hence, school principals might have a preference for children coming from more conventional family structures. International studies tend to provide evidence that children raised in conventional families have higher grades and educational achievement, and report lower levels of misbehaviour: see Astone and McLanahan

(1991) and Lee (1993) for empirical evidence in the USA, Francesconi et al. (2010) for Germany; and Nonoyama-Tarumi (2017) for Japan.[2] In a cross-country study carried out in 28 OECD countries using PISA data, Woessmann (2015) finds that in nearly all countries, students living in single-parent families have lower achievement in math scores than students living in two-parent families.[3] All these results are confirmed in the critical review of the literature carried out in Barajas (2011), who finds that, compared to children from two-parent families, children from single-parent families complete fewer years of schooling, receive lower GPAs, and score lower on tests of cognitive functioning and standardized tests.[4]

4 Institutional setting

In Spain, there are three types of schools with respect to their ownership: public, state-dependent private, and private. Both private and state-dependent private schools are owned by private entities, but the regional government funds the latter. The education system in Spain is decentralized at the regional level; hence, public expenditures in education are budgeted for by each regional government. The precondition for schools to receive this governmental funding is that they must function with the same rules as public schools. In public schools, the admission of children is not discretionary. Despite the fact that public and state-dependent private schools are not allowed by law to charge any fee, in practice, state-dependent private schools illegally charge families a regular fee, generally on a monthly basis. This illegal practice is a concealed way to discourage low-income families from enrolling their children in those schools. Indeed, this is currently a very controversial issue in Spain. According to the Association of Private and Independent Schools, in Spain, nine out of ten private state-dependent schools illegally charge parents monthly fees, with Catalonia being the region with the highest average monthly fees (202€), followed by Madrid (133€) and the Basque Country (84€) (CEAPA-CICAE 2021). A recent survey of 1495 Spanish households with children carried out in 2021 by the *Organization of Consumers and Users* (OCU 2021) estimates that the average monthly expenditures per student—for all education levels—are 80€ in public schools, while in private state-dependent and

[2] More specifically, Nonoyama-Tarumi (2017) finds evidence that Japanese sixth-grade students from single-parent families perform worse than those from two-parent families. The author concludes that the performance gap for students of single mothers can be attributed mostly to the lack of economic resources, while for children of single fathers it is due to the lack of parenting resources. Likewise, Kearney and Levine (2017) observed that the main marriage premium for children's outcomes comes from the mother's own level of resources.

[3] Woessmann (2015) uses the 2000 and 2012 PISA waves. In his analysis, there is a group of countries for which this difference is particularly high (above 25 points): the US, the UK, Poland, Japan, the Netherlands, and Belgium.

[4] However, empirical evidence is not unequivocal. Björklund et al. (2007) carried out an empirical analysis for USA and Sweden. They initially observe that in both countries children living in a not-intact family have a poorer educational achievement; however, these differences become statistically insignificant once unobserved family characteristics are accounted for in the models. The authors conclude that these findings cast doubt on the causal interpretation of the negative link between family structure and child outcomes measured as years of schooling.

private schools these expenditures are 230€ and 610€, respectively. These expenditures include monthly fees in private schools, or the so-called voluntary contribution in state-dependent private schools, including extra-curricular activities, lunch and breakfast, and school transport. In state-dependent private schools, parents who decide not to pay this "voluntary contribution"—which indeed is masking an illegal fee—claim that their children are excluded from the activities taking place during school time but not in the schoolhouse (CEAPA-CICAE 2021).

State-dependent private schools constitute 95% of our sample. According to administrative data coming from the Catalan Statistics Bureau (Idescat), in 2016—the year we ran our experiment—33% of Catalan children attending primary education were enrolled in state-dependent private schools.[5] Further, unlike in public schools, in private and state-dependent private schools, interaction with parents before admission is common (more than 75% of these schools are Catholic).

Private schools do not receive government subsidies, which means that families cover the cost of schooling—although private schools may also receive funding from private institutions and religious orders. These schools use their own, separate enrolment criteria and procedures, which prospective parents have to learn on a case-by-case basis.

When applying to public and state-dependent private schools, parents have to fill in their preferences, ranking up to ten schools they have selected. When the number of applications exceeds the available spots in a given school, the priority criteria establish which child takes precedence by giving eligibility scores to families. Access to a school is determined solely by the application of general criteria, and in case of a tie, large or single-parent families receive additional points. General criteria include proximity, family benefits (e.g. siblings already attending the school), minimum income, and disability variables.

5 Hypotheses

One aspect worth highlighting is the heterogeneity of single-parent families, since they may be the result of divorce, widowhood, or simply an individual's decision to have a child on his or her own. From the literature we surveyed above, it appears that attitudes towards single parents may vary depending on the particular pathway leading to such status. Yet, as a general conclusion it can be stated that, despite the increasing acceptance of single parenthood, attitudes towards single parents are generally less positive than those towards heterosexual couples. In turn, this fact might potentially translate into discrimination against single parents in various areas.

One recurrent issue when studying discrimination is whether discriminated individuals suffer from taste-based or statistical discrimination. However, the motives for discriminating are hard to disentangle empirically. Generally speaking, taste-based discrimination originates in some kind of prejudice against a particular population group or minority. In the context of our research, taste-based discrimination could

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[5] According to data from the *Consorci d'Educació de Barcelona*, in Barcelona city this figure was even more important, 56%.

arise because a person or institution deems a divorce or being a never-married single mother to be reprehensible, which would materialize into schools being reluctant to interact with such families. This kind of prejudice may result from religious or other personal convictions. Our data tell us whether schools are laic or religious; therefore, if we find that religious schools are indeed less prone to interact with single parents, we could reasonably consider this to be the result of taste-based (prejudiced) discrimination. However, and as we do not make the path leading to single parenthood explicit in our fictitious emails, an equally plausible finding is that respondents (religious or not) feel empathetic towards the challenges of single parenthood, especially if they contemplate the possibility that the latter was reached through more dramatic paths such as widowhood—thereby increasing the probability of a response. Therefore, in the context of schooling, both negative and positive taste-based discrimination are plausible alternatives.

We mentioned earlier the empirical evidence showing that single parents are discriminated against in the rental housing market compared to households with two heterosexual parents. Surely, we cannot rule out the possibility that owners have a prejudice against single-parent families, but it seems more likely that the average landlord/landlady perceives that single parents are economically vulnerable and hence believes that renting a flat to them may jeopardize rent collection. In such situation, the part offering the service lacks information about potential applicants and decides as a result to discriminate against all individuals belonging to that group. This would be a case of statistical discrimination.[6] Although the economic motive for discriminating should be less salient in the schooling than in the housing context, it might still play a significant role in the decision of schools not to answer emails from single parents. Indeed, as already mentioned, although state-dependent private schools are officially not allowed to charge tuition fees, the majority of them de facto does so.[7] Therefore, both private and state-dependent private schools might statistically discriminate against single parents on economic grounds.

Further, if schools happen to be reluctant to interact with single parents, it might also be the result of school principals expecting children from single-parent families to exhibit negative behaviour and/or to perform poorly academically, which in turn could undermine the performance of other classmates. Clearly, this would also be a case of statistical discrimination. Therefore, in our schooling context (and unlike the case of taste-based discrimination) it seems reasonable to expect that statistical discrimination would affect negatively single-parent families, irrespective of whether it originates in economic, behavioural, or academic motives.

Finally, given that children from single-parent families get extra points regarding the priority criteria for access to state-dependent private schools, it could mediate their probability of receiving an answer or invitation from these schools, also fostering positive discrimination.

According to the literature, the gender of a single parent seems to matter in terms of societal approval. Here the findings are not unanimous: while some studies find

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[6] Empirical studies analysing this issue typically cannot distinguish between taste-based and statistical discrimination.

[7] See Sect. 4 for a discussion and some numerical figures.

that single mothers are perceived more positively than single fathers, others find the opposite. Yet, one consistent finding is that regardless of whether they are positive or negative, participants' attitudes towards single mothers tend to be internal and connected to the latter's personhood, while comments about single fathers are rather situational and associated with their circumstances. As pointed out by DeJean et al. (2012), attitudes towards single parents are likely to be based on gender stereotypes. This inconclusive evidence makes it difficult to hypothesize about whether schools perceive single motherhood more or less negatively than single fatherhood.

Regarding school characteristics, conventional wisdom suggests that catholic schools could be more reluctant to interact with single-parent families than laic schools. Nevertheless, one could argue that such behaviour shall depend on the specific path leading to single parenthood. Indeed, while catholic schools might dislike single parents—generally mothers—who have never been married or are divorced, they might also exhibit relatively more empathy towards widowed single parents. Further, it is also possible that Catholic schools are just keen to help the most vulnerable families, hence the single-parent ones. Therefore, the effect of the school's religiosity is unclear.

Regarding private schools, given that they have their own enrolment rules and procedures, we would expect this type of school to feel less compelled to reply to and invite certain family types (namely single parents) compared to state-dependent private schools.

We could not find any paper or survey focussing specifically on attitudes towards single parents in Spain. Whether single parents in Spain are likely to be discriminated against in the schooling context is thus an empirical question that remains open, to which we contribute with the present experiment.

6 The experiment

The experimental design is similar to the one used by Diaz-Serrano and Meix-Llop (2016), who examined school feedback discrimination against children of homosexual parents, and Ahmed et al. (2021), who studied school discrimination against children with a medical condition. The experiment was carried out in March 2016 in Catalonia, a region in north-western Spain. This is the period when parents must choose a school for their children. We obtain the e-mails of all Catalan schools from the regional authority. We contact schools by e-mail, in which we introduce the fictitious parent or parents and ask for a visit. For our purpose, an online field experiment is the best option, as this type of experiment enables us to observe the uninfluenced responses of the participants. In addition, this methodology is not costly, as it allows us to contact all the schools and get their feedback without much effort.

We create three fictitious family profiles: one where parents are a heterosexual couple (man and woman), one with a single female parent, and one with a single male parent. To contact schools, we create an e-mail account for each type of family to which schools can respond. We also use fictitious names for the fictitious parents and sons. We choose only one gender for children because considering both genders is more costly in terms of the number of observations per group (family type). To avoid origin bias of the fictitious parents and children, we randomly assign them a (gender-unique) name

among the most common Spanish names. The three e-mail accounts for each of the fictitious families have the following structure: name.surname.number@gmail.com.

To test for potential discrimination against single parents, we randomly split the sample of schools into two groups (A and B) and send two e-mails to each school. To assign schools to each of the two groups, we assign a random binary number (0, 1) to all the schools. With this procedure, group A is composed of 305 schools, while group B is composed of 301 schools. Schools in group A receive one email from a couple and another from a male single parent, while schools in group B receive one email from a couple and another from a female single parent. Within each pair of e-mails (conventional vs. single-parent family), we also randomize which of the e-mails is sent first (the second e-mail is sent 3 days later). We send two emails instead of three to each school as a way to gain credibility—essentially, we minimize the schools' suspicions. An alternative experimental design would be to split the sample of schools into three groups and send one email from each of the three family types to each group of schools. However, with our experimental design we double the number of observations.

In the emails, we make the family structure (i.e. single parent or not) explicit in the signature of the e-mails: male and female for conventional couples, male for single fathers, and female for single mothers. In the body of the email, the name of the child is also mentioned, thus making explicit that he is a boy, while an appointment to visit the school is requested. Since emails are sent with a time interval of 2–3 days, to avoid suspicions the wording of the emails is not exactly the same. The three e-mails share a common structure, and we do not include any additional information that might alter the probability of response for any of the three family types. Whenever a school answers one of our e-mails, we immediately decline the invitation. The content of the e-mails is shown in "Appendix".[8]

7 Results

7.1 Main results

Once all the responses are processed, our data consist of two outcomes (response and invitation) and some school controls (private/state-dependent private, laic/Catholic, and size of the municipality where the school is located). The variables denoting school characteristics used as school controls in the regression analyses are summarized in Table 1. We observe that the characteristics of the schools in each of the two samples are

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[8] The emails for conventional heterosexual couples and for single parents are slightly different. We proceed in this way because we believe that schools might find suspicious to receive two identical emails within a time span of only 2–3 days. In this setting, the person who reads the emails may recall the contents of the previous email. The email templates used in this experiment are the same as the ones used in Diaz-Serrano and Meix-Llop (2016). In that experiment, heterosexual and lesbian couples received the same number of responses, and significantly more responses than gay couples. On the contrary, in this paper we observe that heterosexual parents receive fewer responses than both male and female single parents. The fact that the same templates used in two different studies provide opposite results indicates that the different wording in the two e-mails does not influence the outcome, so that the schools' decision to respond is mainly determined by the family type.

Table 1 Distribution of school characteristics and order of the emails across treatments

	Couple and single father		Couple and single mother		Diff.	t value
	Prop.	S.D	Prop.	S.D		
Single parent email sent first	0.518	0.500	0.508	0.500	0.010	0.240
School characteristics						
State-dependent private	0.961	0.194	0.940	0.237	0.020	1.161
Religious	0.666	0.472	0.628	0.483	0.038	0.971
City size						
< 10.000	0.111	0.315	0.086	0.281	0.025	1.036
10.000–50.000	0.233	0.423	0.236	0.425	− 0.003	− 0.090
50.000–100.000	0.134	0.341	0.136	0.343	− 0.002	− 0.064
> 100.000	0.243	0.429	0.243	0.429	0.000	0.003
Barcelona city	0.279	0.448	0.299	0.458	− 0.020	− 0.552
Number of schools	305		301			

similar, which suggests that the randomization of the experiment was done properly.

A summary of the schools' response rate to the different family types is shown in Table 2. The response rate is not high: in group A 62% of the schools did not reply to either of the two emails, while this figure is 72.4% in group B. This result may be due to the fact that either the recipient of the emails decided not to answer, or the anti-spam protection system blocked our e-mails, since among other criteria, anti-spam protection systems are designed to block e-mails with a significant number of recipients (hidden or not). Note that those schools that did not reply to either of the two emails, either voluntarily or involuntarily, do not have an impact on the calculation of discrimination since they treat couples and single parents equally.

Out of the schools that received the couple/single father paired e-mails (Group A), 11.5% replied to both e-mails, 10.1% replied only to the fictitious couple, and 16.4% replied only to the fictitious single father. That is, compared to couples, the probability of receiving a call-back is 6.2 percentage points higher for single fathers. For the paired e-mails couple/single mother (Group B), these figures are 4.6%, 4.3%, and 18.6%, respectively. In this case, compared to couples, the probability of receiving a call-back is 14.3 percentage points higher for single mothers. In both cases, the results of McNemar's test for paired data indicate that the difference in call-back rates between couples and single parents is statistically significant. The figures for differences regarding invitations are practically identical as most of the call-backs are accompanied by an invitation.

The numbers reported in Table 2 show that in both groups single parents received practically the same number of responses; however, in Group A the response rate to couples is significantly higher than in Group B, 21.6% versus 8.9%. This fact explains why the response rate for singles mothers is significantly higher than for couples in Group B, compared with the difference between single fathers and couples in group

Table 2 Distribution of call-backs and invitations

	Couple versus single	Schools	No reply to either		Replied both		Replied only couple (1)		Replied only single parent (2)		Net discrimination (2)–(1)		McNemar's χ^2 test
Call-back	Father (A)	305	189	62.0%	35	11.5%	31	10.1%	50	16.4%	19	6.2%	4.46***
	Mother (B)	301	218	72.4%	14	4.6%	13	4.3%	56	18.6%	43	14.3%	26.8****
Invitation	Father (A)	305	207	68.8%	25	8.2%	27	8.8%	48	15.7%	23	7.5%	7.25***
	Mother (B)	301	236	78.4%	10	3.3%	7	2.3%	48	15.9%	41	13.6%	30.5**

In the McNemar's test the null hypothesis is: (1)–(2) = 0

**** Significant at 1% level

** Significant at 5% level

A. We acknowledge that this difference in the response rate to couples between Group A and B is striking. However, we do not have an explanation for this difference, since the assignment of schools to Group A or B and the order of the emails was properly randomized, as can be seen in Table 1. Thus, to carry out a suitable analysis of the responses, Groups A and B should be treated as two separate experiments where response rates of single mothers and fathers are not directly comparable.

In the statistical analysis of the difference in the call-back and invitation rates between couples and single parents, we estimate the following model:

$$y_{ij} = \alpha + \delta(\text{SingleParent})_i + \beta X_j + u_{ij} \tag{1}$$

where y_{ij} is our outcome variable taking the value 1 if the school j calls back/invites couple/single parent i. SingleParent$_i$ is a dummy variable taking the value 1 if the e-mail is sent by the fictitious single parent i. We estimate two separate models for the group of e-mails couple/single father and couple/single mother and for each outcome variable. In all models the control group is couple; hence, the model measures whether there are statistically significant differences in the outcome between couples and each type of single parent, controlling for the set of school characteristics (X_j).

To test whether there are differences in the outcome between single mothers and single fathers, in model (1) we also test for the equality of the coefficients associated with single parenthood, i.e. single father versus single mother. This test simply reports whether the gap in the response rate between single mothers and heterosexual couples is different from the gap between single fathers and heterosexual couples.

Equation (1) is estimated using a linear probability model. The matrix X contains a set of variables picking up whether the school receives (private state-dependent) or not (private) public funding, is catholic or laic, and the size of the municipality where the school is located. We also include a dummy variable picking up which of the two e-mails was sent first.

Results of the estimation of Eq. (1) for call-backs are reported in Table 3, whereas the results for invitations are reported in Table 4. Since each school receives two emails, standard errors of the estimated coefficients are clustered at the school level. In both tables, we start with a parsimonious specification that considers only the dummy indicating the type of family, and the remaining of the covariates picking up schools' characteristics are included sequentially. This procedure can be considered as a sensitivity check to analyse the stability of our coefficient of interest. The estimates of the coefficients associated to the single-parent dummy in Eq. (1) reproduce the same differences already reported in Table 2. That is, compared to couples, the probability of receiving a call-back is 6.2 percentage points higher for single fathers, whereas this difference is of 14.3 percentage points in favour of single mothers (Table 3). For invitations (Table 4), we get essentially the same results as for call-backs (0.075 vs. 0.136). Importantly, the coefficients of interests remain the same in all specifications, whether parsimonious or complete.

We have also carried out F-tests of equality of coefficients for single mothers and singles fathers for our two outcome variables. For call-backs, we reject the null hypothesis at the 5% level (F value $= 4.13$), whereas for invitations the null hypothesis is rejected at the 10% level (F value $= 2.78$). This result indicates that the gap in

Table 3 Estimation of the determinants of the probability of receiving a call-back

	Group A: single male parent versus heterosexual couple				Group B: single female parent versus heterosexual couple			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Single parent	0.0623**	0.0623**	0.0623**	0.0623**	0.143***	0.143***	0.143***	0.143***
	(0.0294)	(0.0294)	(0.0294)	(0.0296)	(0.0264)	(0.0264)	(0.0265)	(0.0266)
Email sent the second		− 0.0445	− 0.0391	− 0.0419		− 0.0777**	− 0.0793**	− 0.0777**
		(0.0397)	(0.0404)	(0.0410)		(0.0318)	(0.0317)	(0.0316)
State-dependent private			− 0.0703	− 0.0151			0.00120	− 0.0308
			(0.120)	(0.116)			(0.0580)	(0.0599)
Religious			0.0586	0.0554			0.0395	0.0598*
			(0.0405)	(0.0432)			(0.0334)	(0.0341)
10.000–50.000				− 0.177**				0.0821
				(0.0762)				(0.0572)
50.000–100.000				− 0.0697				0.0343
				(0.0880)				(0.0644)
> 100.000				− 0.1313*				0.127**
				(0.0732)				(0.0518)
Barcelona city				− 0.124*				0.0276
				(0.0752)				(0.0531)
Constant	0.216***	0.238***	0.264**	0.313**	0.0897***	0.128***	0.103*	0.0626
	(0.0236)	(0.0308)	(0.116)	(0.132)	(0.0165)	(0.0287)	(0.0581)	(0.0791)
Observations	610	610	610	610	602	602	602	602
R-squared	0.005	0.008	0.012	0.033	0.038	0.049	0.052	0.075

Robust standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; standard errors are clustered by school

Table 4 Estimation of the determinants of the probability of receiving an invitation

	Group A: single male parent versus heterosexual couple				Group B: single female parent versus heterosexual couple			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Single parent	0.0754***	0.0754***	0.0754***	0.0754***	0.136***	0.136***	0.136***	0.136***
	(0.0277)	(0.0278)	(0.0278)	(0.0279)	(0.0234)	(0.0234)	(0.0235)	(0.0236)
Email sent the second		−0.0150	−0.0104	−0.0123		−0.0391	−0.0414	−0.0372
		(0.0365)	(0.0372)	(0.0371)		(0.0289)	(0.0288)	(0.0284)
State-dependent private			−0.109	−0.0618			−0.0109	−0.0347
			(0.116)	(0.119)			(0.0528)	(0.0533)
Religious			0.0319	0.0330			0.0520*	0.0623**
			(0.0385)	(0.0402)			(0.0295)	(0.0309)
10.000–50.000				−0.211***				0.0562
				(0.0684)				(0.0481)
50.000–100.000				−0.130				0.0318
				(0.0801)				(0.0542)
> 100.000				−0.174**				0.0902
				(0.0695)				(0.0558)
Barcelona city				−0.140*				0.0229
				(0.0719)				(0.0458)
Constant	0.164***	0.171***	0.252**	0.355***	0.0565***	0.0757***	0.0544	0.0220
	(0.0213)	(0.0281)	(0.113)	(0.129)	(0.0133)	(0.0247)	(0.0515)	(0.0652)
Observations	610	610	610	610	602	602	602	602
R-squared	0.009	0.009	0.012	0.034	0.043	0.046	0.052	0.059

Robust standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; standard errors are clustered by school

the response/invitation rate between single mothers and couples (Group B) is higher than between single fathers and couples (Group A). Note that this finding should be interpreted with caution, since it is due to the significantly lower response rate to couples in Group B. Indeed, in absolute terms, single mothers and single fathers receive practically the same number of responses (Table 2).

Regarding the control variables, we observe that catholic schools are more responsive than laic schools (by about 6 percentage points in both Groups A and B). Given that this applies to *both* single parents and heterosexual couples, we can hardly interpret this result in terms of either positive or negative discrimination towards single parents. Further, city size dummies are not statistically significant, which is also the case of the dummy picking up whether the private school is state-dependent. Thus, we do not find that private schools—with their own discretional admission criteria—are more reluctant to interact with single-parent families than state-dependent private schools.

The fact that the estimated coefficients reported in Tables 3 and 4 are identical to the raw mean differences reported in Table 2, combined with the fact that they are unaltered when schools characteristics are included, suggests that the probability of response is not conditioned by schools' characteristics.

7.2 Heterogeneity analysis

Table 5 in appendix reports the results of our heterogeneity analysis. As in Martinez de Lafuente (2021), we examine whether our findings are altered when considering a subsample of the schools depending on some particular feature or the characteristics of the area where they are located.

We first consider heterogeneity based on city size. We do not have a prior conjecture as to whether schools located in smaller (greater) cities should be expected to be more (less) prone to interact with single parents. While schools located in a greater city may well display a higher tolerance level for atypical family types, it could also be that schools located in smaller cities are more prone to interact with the latter due to higher closeness among city inhabitants in general. The only study we have found analysing this issue (Novakov 2021) concludes that there are no significant differences in the relationship between rural and urban areas towards single parenthood, except when it comes to extramarital motherhood.[9] As can be seen in Table 5, our results in this regard are somewhat puzzling, since the gap in the response rate between heterosexual couples and single-parent families is significant only in middle-sized cities, especially so for single mothers. We admit that we do not have an explanation for this result.

Second, we examine heterogeneity based on school religiosity. Again, the results to be expected are not obvious. On the one hand, as religious schools are arguably more conservative, they should also be more hesitant to interact with non-conventional family types. On the other hand, they might as well consider that single-parent families are more vulnerable and need their help. Here, we observe that while religious schools are equally likely to interact with single fathers and heterosexual couples, they are more

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[9] These results come from an empirical research conducted in the area of AP Vojvodina (Serbia) on a sample of 200 single parents.

prone to interact with single mothers than with heterosexual couples. In contrast, non-religious schools are keener to interact with both types of single parents. As before, we do not have an explanation as to why religious schools exhibit positive discrimination towards single mothers only.

Finally, our results remain true when considering only state-dependent private schools. However, we believe it would be erroneous to draw conclusions from the subsample of private schools given the very limited sample size (12 schools).

8 Conclusions

Perhaps surprisingly, our results suggest that schools are keener to engage in feedback with single parents than with heterosexual couples. Of course, we cannot infer from these results that formal applications of single parents' children to these schools would have led to the same outcome. Our experiment does not allow us to determine with certainty why single parents receive more answers than two-parent heterosexual families, but we can think of some plausible explanations. It could well be that there is a feeling of empathy towards single parents, triggered by the perception that their life is more challenging in many dimensions. Alternatively, such positive attitudes could result from the belief that single parents are more mature (as in Eby et al. 2004) or have better internal qualities, making schools willing to welcome their children. More trivially, it could just be that schools are surprised by this type of family composition and respond more energetically to these emails. Finally, this result might be partially due to the fact that children of single-parent families receive preference in the priority criteria designed by the regional government of Catalonia for access to public and state-dependent private schools. In any case, what we can conclude from our study is that if anything, single parents seem to benefit from positive attitudes within the school system.

Our results indicate that the gap in the response rate between single parents and couples is higher for single mothers than for single fathers. With this result, one might conclude that the response rate for single mothers is higher than for single fathers; however, we have to be cautious with this interpretation because the higher gap in favour of single mothers compared to couples is not due to the fact that single mothers receive more responses than single fathers; rather, it results from couples in Group A receiving significantly more responses than in Group B.

Finally, and contrary to what one might expect, we do not find evidence that private and catholic schools are less prone to interact with single-parent families compared to state-dependent private and laic schools, respectively.

Data availability The data generated and analysed in this study are not publicly available as they contain sensitive information.

Declarations

Conflict of interests The authors declare that they have no conflict of interest.

Ethical approval This article does not contain any study with human participants or animals performed by any of the authors.

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Appendix

Template of the heterosexual couple e-mail

Hello. We are Enrique and Pilar, and our son David, who is 5 years old, starts primary school next year. We are looking for a school for him, and we would like to know whether it is possible to visit your school before the pre-registration period ends. We look forward to hearing from you soon.

Sincerely,

Enrique and Pilar

Template of the single-parent e-mail:

Good morning. My name is XXX (male or female). My son and I plan to move into the area where your school is located. Victor is 5 years old and he is going to start the first cycle of elementary school next year. I have to fill in the pre-registration and I would like to know whether it would be possible to arrange a meeting, so I can visit your school. I look forward to hearing from you.

Sincerely,

XXX

See Table 5.

Table 5 Heterogeneity analysis for call-backs

	Group A: male single parent versus heterosexual couple		Group B: female single parent versus heterosexual couple	
	Coeff.	N	Coeff.	N
City size				
< 10.000	0.0882	68	0.154	52
	(0.110)		(0.0948)	
10.000–50.000	0.169***	142	0.254***	142
	(0.0608)		(0.0565)	
50.000–100.000	0.000	82	0.171***	82
	(0.0877)		(0.0610)	
> 100.000	0.0135	148	0.0959*	146
	(0.0630)		(0.0565)	
Barcelona city	0.0353	170	0.0778	180
	(0.0462)		(0.0485)	
Religiosity				
Non-religious	0.0882*	204	0.134***	224
	(0.0513)		(0.0418)	
Religious	0.0493	406	0.148***	378
	(0.0364)		(0.0346)	
Type of school				
Private not state-dependent	− 0.0833	24	0.0556	36
	(0.168)		(0.142)	
Private state-dependent	0.0683**	586	0.148***	566
	(0.0301)		(0.0271)	

Robust standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; standard errors clustered by school
Each estimated coefficient is obtained by a separate regression using observations referring to that specific school characteristic

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