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Abstract

Discrimination among individuals is very well documented in the literature, but much less is known about how discrimination is passed down through generations. By designing and conducting a randomized survey to study daycare choices and ethnic diversity, we provide evidence of how biases against ethnic minorities affect parental choices of early childhood education. We asked parents in Copenhagen to choose between two daycares — structured vs. free-play. Each daycare had testimonials from (fictive) parents whose child allegedly attended the daycare, and the survey randomized the names of the testifying parents across the sample. Another novelty of our study is that we are able to capture how discriminatory attitudes towards ethnic minorities interact with preferences for specific teaching styles. In our results we find bias against ethnic minorities among parents who prefer the structured daycare. We validate our results through data on willingness to travel to the preferred daycare, which is higher for parents who prefer the structured daycare when there was an ethnic minority name associated with the free-play daycare.

JEL codes: D15, D63, J15, I24.
Keywords: school choice, discrimination and intergenerational transmission

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1. Introduction

Discrimination among individuals has been well documented in the literature,[2] but there is much less evidence of how discrimination is passed down through generations. Recent evidence suggests that exposure to diversity changes one's perception of others, reduces bias against ethnic minorities and increases interracial social bonding.[3] Thus, discriminatory attitudes and segregation may create a self-perpetuating cycle in which one reinforces the other. In such a cycle, parents play an important role, not only directly by transferring their own attitudes about other racial and ethnic groups to their children,[4] but also indirectly by deciding to which extent their children are exposed to diversity through their choice of neighborhood daycares and schools for their children. On a broader sense, understanding how these attitudes towards race and minorities affect parents' choices is key to comprehending why and how discrimination persists over generations.

Our study contributes to this understanding by providing evidence that discriminatory attitudes towards minorities interact with parental preferences for a specific teaching style and affects school choice. We designed a field experiment in the form of a randomized online survey, which enabled us to reach parents of young children in the city of Copenhagen. This allowed us to understand (i) whether ethnic diversity affects parental decisions over daycares, (ii) how discrimination interacts with preferred teaching style (free-play vs. structured activities), and (iii) whether valuable additional information such as the professions of the minority parents mitigate possible discriminatory attitudes.

Our randomized online survey was administered by Statistics Denmark (the Danish National Statistical Office) in 2014 to 2,494 parents of newborn children in Copenhagen. As part of the survey, parents were asked to choose from two distinct types of daycares with differing degrees of formally structured activities.[5] The descriptions of each of the two daycares were given in the form of three testimonials from (fictive) parents whose child allegedly attended the daycare. While one daycare

[2] See, for example, Bertrand and Mullainathan's (2004) landmark paper using a correspondence survey. Similar studies finding person-to-person discrimination include Carlsson & Rooth (2007) in Sweden, Kaas & Manger (2012) in Germany, Weichselbaumer (2016) in Austria, Eckel and Petie (2011) in the United States, Behaghel, Crépon & Le Barbanchon (2015), and more generally Edelman, Luca & Svirsky (2017), Gneezy, List & Price (2012), Levitt (2005), List (2004), Yinger (1998), and Andersen and Guul (2019).

[3] See for example Boisjoly et al. (2006), Dobbie and Fryer (2015), and Carell et al. (2016). Similar studies within economics include Laar et al. (2005), Beaman et al. (2009), and Clingingsmith et al. (2009). In addition, Pettigrew and Tropp (2006) summarize the empirical evidence on intergroup contact theory.

[4] Bisin and Verdier (2001).

[5] The survey, which was developed in consultation with the city of Copenhagen, asked parents a broad battery of questions into their preferences and actual choices regarding daycares for their young children. We were able to compare some of the statements made in the survey to actual choices of daycares, thus verifying survey responses. See section 5.

was depicted as a more structured type of daycare with scheduled educational activities, the other was associated with a more free-play pedagogical profile.[6] Testimonials for the free-play daycare depict a child-centered daycare typically encountered and favored in Nordic countries while those for the structured daycare describe a classic well-structured daycare, which is also in demand among some Danish parents and preferred in many other cultures. To detect bias against ethnic minorities, we randomized the names of the testifying parents across the treatments such that in some institutions all the testifiers had typical "Danish" names, while in others one of the testifiers' names was associated with ethnic minorities. Furthermore, to check whether eventual ethnic bias depends on respondents' expectations about minorities' educational background, in some treatments parents also received information about the profession of the alleged testifying parents. The survey is described in more detail in section 2.

The city of Copenhagen is a particularly good case for our study since it (i) operates a centralized assignment mechanism that gives parents a free choice over all daycares in the city subject to capacity constraints and (ii) offers a diverse set of independently managed, publicly funded daycare facilities that match the diverse needs of its parents and their children. In general, the centralized assignment mechanism solves the problem of capacity constraints by always assigning a higher priority to the parent who has chosen a particular daycare facility to the oldest child in the queue. Therefore, given the nature of this assignment mechanism, the city does not directly control the peer composition at each daycare (Kennes et al., 2014).

Our results reveal that parental choices change if an ethnic minority name appears in the testimonial for daycares. This result is more pronounced if the minority name appears in a testimonial for the structured daycare. In this situation, the probability of selecting the structured daycare is lower. These results suggest that parents who prefer the structured daycare type display biased attitudes against minorities. We further explore whether this behavior reflects animosity towards minorities (indicating pure discrimination) or is simply due to a notion that a higher minority share in a daycare may be a sign to parents that the children in the daycare have poor language skills (Danish) or that the daycare has less resources for activities fostering child development if it has to spend more time on children with poor language skills. We test this by providing information in testimonials on

[6] Two daycares were labeled as A versus B, not as "structured" versus "free-play". However, the description made a clear distinction in how structured their pedagogy was. The full description of daycares can be seen in Table 1.

testifiers' professions (implying high levels of education) and find that information on profession does not significantly reduce bias.

We further quantified the magnitude of this discrimination by asking parents' willingness to travel to their preferred daycares. We find that the willingness-to-travel is higher if the respondent prefers the structured daycare, and if an ethnic minority name was included in the testimonial for the free-play daycare, suggesting that an ethnic minority child in free-play daycare "pushes" respondents towards the structured daycare. In other words, parents who prefer the structured daycare are willing to pay a higher price to avoid more diverse daycare.

Our contribution is noteworthy in several ways. First, real life data on school choice is often contaminated with many traits that are not under researchers' control. We do not encounter this problem because our survey design explicitly controlled the information provided to the parents through randomization. For instance, in an uncontrolled setting, parents may know that schools in districts with a high proportion of ethnic minorities are of low quality (while the same information is not necessarily available to researchers).[7] Parents' avoidance of such schools should not be attributed to discrimination. In our survey, the quality of the daycares is constant across treatments. Moreover, if parents associate low quality with ethnic diversity then it is still a form of (statistical) discrimination. While many controlled experiments suffer from external validity issues, we link our survey data to the census data and show that the choices made in our survey are consistent with the real-world choices outside of our survey.

Second, we find bias against ethnically diverse daycares among parents who prefer a specific type of daycare. As we mentioned before, discrimination among individuals has been well documented in the literature, but our study is the first to document how parental preferences for a specific teaching style (structured or free-play) interact with discriminatory attitudes. This result sheds some light on who is more likely to discriminate and whose offspring may consequently inherit the discriminatory attitudes of their parents. In this regard, our paper relates to the previous studies on intergenerational transmission of preferences such as educational attainment (Black et al., 2005) and political ideology (Hibbing et al., 2013). Moreover, this asymmetric response from parents in the form of discriminatory tastes has implications for the design of school choice policies. Many

[7] The achievement gap in education as well as strong ethnic segregation in primary schools has been documented for a number of European countries, including Britain (Dustmann, Machin, & Schönberg, 2010), France, Germany (Algan, Dustmann, Glitz, & Manning, 2010) and Denmark (Rangvid, 2007)

European countries struggle to find a school assignment system that balances both parental preferences and the societal goal of reducing socioeconomic inequalities and ethnic clustering. The nature of the survey and its conclusions are of interest to municipalities and local governments that have to balance the sometimes-conflicting objectives to offer diverse daycare options, diverse peer groups within daycares, and free parental choice. We present both negative and positive results related to these objectives.

Third, we contribute to the current literature on discrimination using randomized surveys in economics by adding the dimension of daycares and schools rather than individuals. While early theoretical studies in economics categorize discrimination into two types: statistical and taste-based (Becker, 1957; Phelps, 1972; Arrow, 1973; Arrow, 1998), only recently randomized controlled trials documented the existence of discrimination among individuals and attempted to separate the type (Bertrand and Duflo, 2017). Our study is the first randomized survey to look at parental tastes toward diverse daycares. Moreover, in order to differentiate the types of the discrimination, we exogenously varied the information on the professions of the testifying parents that was available to the respondents. Given that education is highly correlated with profession, one might expect that including the profession in the testimonials presented in our survey would reduce discriminatory attitudes. However, we did not find any significant difference in the degree of discriminatory behavior depending on whether the survey gave information on the profession of the individuals who had given testimonials of the daycares. We cautiously interpret this as suggestive evidence of taste-based discrimination.

Fourth, many audit and correspondence studies do not quantify the magnitude of the discrimination they find (Bertrand and Duflo, 2017). In order to introduce a "price tag" on discrimination choices, or, using Gary Becker's (1957) expression, to put a "price of prejudice", we asked parents how much they valued the daycare that they had initially chosen in terms of how far they would be willing to travel to get to their preferred daycare rather than the other type of daycare. Exploiting the variation in willingness-to-travel (WTT) to the initially favored daycare across different versions of the testimonials, we obtain a measure of the "price of prejudice". In this regard, our study contributes to the growing literature on price of prejudice such as Charles and Guryan (2008) and Hedegaard and Tyran (2018).

2. Institutional setting, data and experimental design

Institutional setting: daycares and daycare choice

Danish municipalities provide heavily subsidized universal daycare to all children between the ages of 0 and 6: nursery centers for 0 to 3 years-olds and preschools for 3 to 6 years-olds. Some daycares provide both a nursery and preschool; usually in separate divisions (Gørtz, 2012; Gørtz & Andersson, 2013). Public daycare is highly subsidized: parents pay 20-30% of the full cost of daycare with the exact percentage varying across municipalities. All daycares within a municipality charge the same fee, and low-income families below a certain threshold receive free daycare service. The staff in both nurseries and preschools consists of trained teachers and assistants; more than one in two staff members hold a bachelor's degree in pedagogy, while the other half are assistant pedagogues with some formal training.[8] Around one in ten staff members is male.

Each municipality is responsible for the allocation of slots within subsidized daycare institutions. The allocation rules differ across municipalities but all parents who want a spot in a daycare for their young child must first submit a list of preferred daycares. More popular daycares have waiting lists, and open slots are distributed to children almost solely according to date of birth. The municipality administers the final allocation based on the waiting lists. Denmark has the highest daycare participation rate among the 0-3 year olds in Europe; around 2 out of 3 children in this age group were enrolled in subsidized formal childcare in 2014 (OECD, 2018). All subsidized daycare arrangements are subject to municipal supervision. Danish daycare institutions are generally considered to be of high quality (Bauchmüller et al., 2014; Esping-Andersen et al., 2012; Datta Gupta & Simonsen, 2010; Gørtz et al., 2018). They follow the Scandinavian pedagogical philosophy, which is child-centered and focuses on socialization rather than the development of early academic skills. The program stresses the importance of learning through play, creativity, social inclusion, outdoor activities, parental involvement, language development, nutrition, and physical exercise. Despite these common elements in the overall pedagogical approach, there is variation among daycares in terms of their pedagogical focus. While some daycares favor outdoor activities, others focus more on creative skills and musical activities. Daycares post their learning plan, pedagogical approach, and

[8] Previously, pedagogical assistants were often unskilled workers, who over time would receive some additional training. In recent years, however, vocational education for pedagogical assistants has been initiated. The program lasts 3-4 years with enrollment normally taking place immediately after lower secondary school.

information on general activities on their websites. Parents use this information when filling out their list of preferred daycare institutions.

Data

The data used in this paper are from the Copenhagen Daycare Survey, which we constructed and collected for the project. The survey provides information on preferences and choices of parents who are in the process of enrolling their young children for the first time in daycare in Copenhagen. The survey was carried out by Statistics Denmark in the summer of 2015 among a sample of 5,000 randomly drawn households in Copenhagen with children born in 2014. The survey, which was web-based, was sent to the household, and either parent could fill it out.[9] Out of the 5,000 households, 2,494 responded, translating into a response rate of almost 50 percent. The survey consisted of a broad battery of questions related to which daycares in Copenhagen the parents had or would sign up their child to, what characteristics of daycares that the parents considered to be important for that choice, and how parents weighed quality in daycares e.g. compared to their need to return to work. The empirical analysis in this paper focuses on a particular question in the survey in which parents were asked to state their preference relative to two distinct daycare institutions that each represent some typical characteristics of Danish daycares.[10]

We later merged the survey data with administrative register data in Statistics Denmark to obtain background information such as education, employment situation, and income for parents in the survey. It was possible to link 2,179 survey respondents who had answered our key question for this paper to relevant socioeconomic register information. This group, who thus responded to the key question and for whom we have a full set of relevant controls (including key demographic information on both parents of the child), makes up our main sample. The gender distribution of children in the completed survey is divided almost equally by gender. The age of the children ranges from 7 to 19 months at the time of the survey, with a mean age of 13 months.

[9] In 3 out of 4 cases, the mother answered the questionnaire.

[10] Before running the survey, we discussed the survey and its questions extensively with staff from the administrative unit in Copenhagen that is responsible for the allocation of daycare spots to parents. Moreover, in cooperation with Statistics Denmark, we conducted a careful pilot study to test the relevance of the questionnaire and check whether the questions were seen as meaningful and understandable by potential respondents in the target group of the survey.

Given that it is possible to link 4,885 out of the entire sample of 5,000 individuals that were initially drawn from Statistics Denmark's registers to background information in the registers, we are able to compare the socioeconomic background of parents who completed the questionnaire with that of the entire sample of randomly selected parents (see Table A1 of the Appendix). On average, the parents who completed the questionnaire (shown in columns 1-2) are more educated and more likely to be employed than the average parents in the total sample. In addition, they are slightly more likely to be living in a nuclear family and consequently less likely to be single parents.[11] Ethnic minority parents are slightly underrepresented, which is a well-known pattern from other surveys. However, all groups are represented in the survey, and differences in socioeconomic indicators across respondents and non-respondents are not overly large.

The option to link survey and register data also allowed us to carefully compare some of the responses given in the survey to actual choices of daycares. It was possible to link almost all the survey respondents to the register data. Moreover, we obtained access to administrative records on daycare waiting lists and assignment in Copenhagen. In section 5, we verify some of the statements regarding choices of daycares that were put forward in the survey with the actual waitlist data from the municipality administration regarding preferences for daycares.

Preferences for daycare type and experimental design

As mentioned, our key question concerns parental preferences for two distinct types of daycare institutions. The survey asked parents to choose between two distinct daycares; daycare A and daycare B. Henceforth, we mainly refer to A as the "structured" daycare and B as the "free-play" daycare for convenience, although the questionnaire did not present these names to the parents. Parents were given a description of the daycares in the form of testimonials from parents whose child could have attended that daycare. The questionnaire informed respondents that the daycares were fictive, but that the daycares represent realistic and typical features of daycares in Denmark.[12] Hypothetical questions that are meant to elicit preferences are quite standard in large surveys as e.g. the Health and Retirement Study (HRS) or European Values Survey (Michaud, van Soest, &

[11] The questionnaire included a number of additional questions regarding e.g. how long the child had been breastfeed, length of maternity and paternity leave, intra-household allocation of housework and childcare, the family's employment situation and expectations for the future.
[12] We verify that survey responses are consistent with actual choices in section 5.

Bissonnette, 2018) (Berggren & Nilsson, 2013). Table 1 presents the testimonials provided in the questionnaire.

Table 1: Testimonials about the two daycares in survey

Daycare A "Structured" daycare	Daycare B "Free-play" daycare
"The daycare has a structured plan, with activities organized for all days." (Parent I)	*"There are lots of opportunities for creative play and a focus on joint play and cooperation."* (Parent IV)
"I like that stories are often read aloud, and the children are encouraged to talk about their play and games with the teachers." (Parent II)	*"I like that the children were outside most of the time. The daycare might seem a bit messy and chaotic at times, and my child often came home with dirty clothes, but I saw that as a sign of having been outside a lot."* (Parent V)
"The daycare is always clean and organized. They issue a weekly newsletter, which makes it easy for me to coordinate our own activities and plan the week." (Parent III)	*"The personnel are fantastic. One can always go to them, and they take the time to talk about my child's development."* (Parent VI)

After presenting these testimonials, we then asked parents the following question:

"Given the descriptions of daycare A and B, which of the two daycares do you prefer, A or B?"

All respondents were given the exact same descriptions of the daycares, but as part of our experimental approach, we provided different information on the individuals who had allegedly

provided the testimonials ("Parent I" to "Parent VI" in Table 1).[13] Specifically, we randomly distributed different names and, in some cases, professions of the testifiers across the sample of respondents. In total, there were seven name-profession combinations, leading to seven "treatments" that were each randomly distributed to 1/7 of the population in the survey. Some respondents were only exposed to testimonials by individuals with typical Danish names, while others were exposed to testimonials by individuals with names that are typically associated with people of ethnic minority origin. Our seven treatments varied the names and professions of the testifiers as follows:

Treatment	**Description**
0 *NoNames*	No names, no professions
1 *AllDanes_NoProf*	All Danish names, no professions
2 *MinoFree_NoProf*	Danish names for five testifiers, ethnic-minority name for one testifier of daycare B (free-play), no professions
3 *MinoStruc_NoProf*	Danish names for five testifiers, ethnic-minority name for one testifier of daycare A (structured), no professions
4 *AllDanes_Prof*	All Danish names, information on profession
5 *MinoFree_Prof*	Danish names for five testifiers, ethnic-minority name for one testifier of daycare B (free-play), information on profession
6 *MinoStruc_Prof*	Danish names for five testifiers, ethnic-minority name for one testifier of daycare A (structured), information on profession

Our main interest is to investigate how parental preference for structural vs. free-play daycares varies with name and profession of the people behind the testimonials presented in treatments 1-6. In treatments 1 and 4 – *AllDanes_NoProf* and *AllDanes_Prof* – testifiers had only typical Danish names while in treatments 2, 3, 5 and 6 (*MinoFree_NoProf, MinoStruc_NoProf, MinoFree_Prof* and *MinoStruc_Prof*) one of the testifiers had an ethnic minority sounding name for. As a control, treatment 0 contained no information about the testifiers.

[13] This question is one of many similar queries in the same section of the survey. Respondents were then asked to choose one of the two for each question in the section. However, only the one question analyzed here is randomized across subjects.

As mentioned in the Introduction, economists categorize discrimination into two types: taste-based (sometimes referred to as pure) and statistical. In the former, individuals discriminate against members of a certain group because of a potential disutility of being exposed to that particular group. In the latter, having limited information on individuals outside one's group may lead some people to discriminate against others because of the group's common traits. For example, parents selecting daycares for their children may worry that ethnic minority children have deficient language skills and may have parents with limited employment and educational skills. We thus hypothesize that providing (additional) information about testifiers' profession may potentially reduce bias against choosing a daycare with ethnic minorities. In treatments 1-3, we provided the names but not the professions of the testifiers, while in treatments 4-6 we provided both their names and professions, which are highly correlated with their educational level. In particular, testifiers with ethnic minority names were either said to be journalists or teachers, which typically require a master's degree. By comparing responses to treatments 1-3 (*AllDanes_NoProf*, *MinoFree_NoProf*, and *MinoStruc_NoProf*) to treatments 4-6 (*AllDanes_Prof*, *MinoFree_Prof*, and *MinoStruc_Prof*), we are able to test whether the discrimination is statistical, where the missing information is the education and profession of the parents.

Table 2 provides an overview of the information given about the testifiers of the two daycares.

Table 2: Overview of information given to respondents about testimonials on daycare A ("structured") and B ("free-play")

	Daycare A: "Structured"			**Daycare: "Free-play"**		
	Parent I	**Parent II**	**Parent III**	**Parent IV**	**Parent V**	**Parent VI**
0 ***NoNames***	No name	No name	No name	No name	No name	No name
1 ***AllDanes_NoProf***	Søren P father of Esther	Birthe mother of Emil	Lene K mother of Camilla	Torben M father of Mai	Mette mother of Emma	Helle G mother of Per
2 ***MinoFree_NoProf***	Søren P father of Esther	Birthe mother of Emil	Lene K mother of Camilla	Torben M father of Mai	**Hoada** **mother of Walid**	Helle G mother of Per
3 ***MinoStruc_NoProf***	Søren P father of Esther	**Hoada** **mother of Walid**	Lene K mother of Camilla	Torben M father of Mai	Mette mother of Emma	Helle G mother of Per
4 ***AllDanes_Prof***	Søren P father of Esther architect	Birthe mother of Emil Journalist	Lene K mother of Camilla student	Torben M father of Mai professor	Mette mother of Emma high school teacher	Helle G mother of Per public employee
5 ***MinoFree_Prof***	Søren P father of Esther architect	Birthe mother of Emil Journalist	Lene K mother of Camilla student	Torben M father of Mai professor	**Hoada** **mother of Walid** **high school teacher**	Helle G mother of Per public employee
6 ***MinoStruct_Prof***	Søren P father of Esther Architect	**Hoada** **mother of Walid** **Journalist**	Lene K mother of Camilla Student	Torben M father of Mai professor	Mette mother of Emma high school teacher	Helle G mother of Per public employee

3. Empirical Analysis

Descriptive statistics

In our empirical analysis, we investigate whether parental preferences for structured versus free-play daycares vary in a systematic way with the information in the testimonials that were randomized across respondents in the survey. In particular, we investigate whether stated preferences vary depending on whether the testimonials contain ethnic minority names. Table 3 shows the "raw" shares of parental preferences for structured and free-play daycares respectively.

On average, 77% preferred the free-play (B) option, while 23% preferred the structured daycare (A). When comparing responses across the seven groups (treatments), we find that the likelihood of preferring the structured daycare is lowest for parents who were subjected to the testimonials in treatment 3 – *MinoStruc_NoProf* - and 6 – *MinoStruc_Prof*. Simple pairwise double-sided t-tests indicate that the shares of those preferring the structured (versus free-play) daycare are significantly different across the treatments. In particular, the probability of preferring the structured daycare for treatment 3 – *MinoStruc_NoProf* - is statistically significantly different from treatment 1 – *AllDanes_NoProf* – and treatment 2 – *MinoFree_NoProf*. The p-values from t-tests are 0.09 and 0.08, respectively. Likewise, the probability of preferring a structured daycare in treatment 6 – *MinoStruc*_Prof - is (marginally) significantly different from treatment 4 – *AllDanes_Prof* - (p=0.12) and treatment 5 – *MinoFree_Prof* - (p=0.09). However, adding professional information does not change the preferences significantly for daycares.

Table 3: Percentage of parents choosing type A (structured) or type B (free-play) by treatment

Treatment		A Structured	B Free-play	N
0	*NoNames*	26.7%	73.3%	311
1	*AllDanesNoProf*	24.5%	75.5%	319
2	*MinoFree_NoProf*	24.9%	75.1%	293
3	*MinoStruc_NoProf*	19.0%	81.0%	321
4	*AllDanes_Prof*	23.3%	76.7%	317
5	*MinoFree_Prof*	23.8%	76.2%	311
6	*MinoStruc_Prof*	18.2%	81.8%	307
Total		22.9%	77.1%	2,179

Empirical model

To further investigate these findings, while controlling for possible non-random variation in socioeconomic characteristics across our randomized treatments (0-6), we next perform a regression analysis in two steps. We first estimate a model where all seven treatments are included individually. In order to directly measure the impact of including an ethnic minority name among testifiers on parental preferences for daycare, we model the probability of preferring structured daycare as a function of the seven treatments, controlling for household and district characteristics.

In our most general empirical model, the probability of preferring the *structured* daycare is given by:

$$p_i = \Pr[y_i = 1|X_i] = f(\alpha + \beta_1 AllDanes\_NoProf_i + \beta_2 MinoFree\_NoProf_i + \beta_3 MinoStruc\_NoProf_i + \beta_4 AllDanes\_Prof_i + \beta_5 MinoFree\_Prof_i + \beta_6 MinoStruc\_Prof_i + \gamma X_i) \quad (1)$$

where $y_i = 1$ if the respondent (the parent) prefers structured daycare (and $y_i = 0$ if the respondent prefers the free-play daycare). $AllDanes\_NoProf_i$ *to* $MinoStruc\_Prof_i$ are dummy variables that

take on the value 1 if the survey respondent was given this particular testimonial and 0 otherwise. X_i contains individual controls (characteristics of the respondent household, i.e. the mother, the father and the child, and residential district characteristics of the responding household).[14] As can be seen from appendix Table A2, the population is well balanced across the seven treatment categories with respect to observable characteristics. The category $NoNames$ (treatment 0), i.e. the group that received no information on neither names nor profession behind the testimonials, is here considered the baseline.

In the second step of our empirical analysis, we continue examining the impact of being exposed to a testimonial containing an ethnic minority name for the choice of structured daycare, but we now ignore whether information was given on the profession. Implicitly, we thus assume that the effects are equal across 1 and 4 (*AllDanes_NoProf* and *AllDanes_Prof*), across 2 and 5 (*MinoFree_NoProf* and *MinoFree_Prof*), and across 3 and 6 (*MinoStruc_NoProf* and *MinoStruc_Prof*). We thus combine the six treatments (1-6) in Table 3 into three main treatments, while the no-name treatment is the same:

Treatment		Description	Based on
0	*NoNames*	No names	Treatment 0
1	*AllDanes*	All Danish names	Treatment 1 + treatment 4
2	*MinoFree*	Ethnic minority name in free-play	Treatment 2 + treatment 5
3	*MinoStruc*	Ethnic minority name in structured	Treatment 3 + treatment 6

Our (constrained) empirical model in step 2 has the following form:

$$p_i = \Pr[y_i = 1|X_i] = f(\alpha + \beta_2 MinoFree_i + \beta_3 MinoStruc_i + \beta_0 NoNames_i + \gamma X_i) \quad (2)$$

[14] There are 15 districts in Copenhagen's daycare administration setting. These districts vary in terms of e.g. ethnic composition. We control for district level characteristics, including district fixed effects. Our district level characteristics include dummies for whether the district had a high (>10%) non-western population share (about 45% of the sample lived in districts with more than 10% non-Western inhabitants), whether a low share of district inhabitants are church members (around 12% of the sample), whether the district is on the government's official ghetto list (about 4% of the sample), and whether the district had a relatively high share of voters of populist right-wing party parties at last municipality elections (about 8% of the sample).

where $AllDanes$ (i.e. all Danish names in both structured and free-play) is now the base treatment. Our main parameters of interest, β_2 and β_3, therefore directly show the effect of replacing a Danish name with an ethnic minority name in one of the testimonials for the free-play and the structured institution, respectively.

Results

Equations (1) and (2) are estimated using a linear probability model (OLS).[15] Table 4 shows the estimation results for equation (1). Column 1 in Table 4 shows the results when including the six treatment dummies (*AllDanes_NoProf*, *AllDanes_Prof*, *MinoFree_NoProf*, *MinoFree_Prof*, *MinoStruc_NoProf*, and *MinoStruc_Prof*; note that treatment 0 – *NoNames* - is the base group), but no controls. Column 2 includes controls for household and residential district characteristics. Column 3 further includes district dummies. Compared to the baseline treatment (*NoNames*), we see that including names or names+profession reduces the likelihood of choosing the structured daycare in general. The differences are, however, only statistically significant for treatments *MinoStruc_NoProf* and *MinoStruc_Prof*, corresponding to the situation in which one of the testifiers of the structured daycare had an ethnic minority name.

To analyze the treatment effects across the treatments further, we perform a number of F-tests which are reported in the second half of Table 4 after the main regression results (p-values for each F-test are shown in the table).

In Part I, we ask whether the demand for structured daycare is different if the testimonial regarding the free-play daycare contains an ethnic minority name rather than all Danish names, thus comparing treatments *MinoFree_NoProf* to *AllDanes_NoProf* and *MinoFree_Prof* to *AllDanes_Prof*. When comparing the parameter estimates of corresponding treatments, we find no statistically significant differences in choosing the structured daycare between *MinoFree_NoProf* and *AllDanes_NoProf* treatments, and the same applies when comparing *MinoFree_Prof* to *AllDanes_Prof*. We thus do not find any discrimination against free-play daycares with testimonials containing ethnic minority names.

[15] We also performed all estimations by logit, but the results are very similar to the OLS regressions. For the ease of interpreting the coefficients, especially when including interaction terms, we chose the OLS specification of the model. Results from the logit regressions are available upon request.

In part II of Table 4, we analyze whether the demand for structured daycare is different if one of the testifiers' names for the structured daycare contains a non-Danish name. We thus compare treatment *MinoStruc_NoProf* to *AllDanes_NoProf*, finding a statistically significant difference (p=0.08) in the probability of choosing the structured daycare. This result indicates a negative effect on the choice of structured daycare when respondents observe an ethnic minority name in the testimonials for this same daycare. The probability of choosing the structured daycare is also lower for *MinoStruc_Prof* than for *AllDanes_Prof*, but the difference is not statistically significant (p=0.25). However, when we combine *MinoStruc_NoProf* and *MinoStruc_Prof* and test against the combined *AllDanes_NoProf* and *AllDanes_Prof*, we find that the probability of choosing the structured daycare is lower when an ethnic minority name is mentioned in the testimonial (p=0.04).

Finally, we analyze in Part III of Table 4 whether information on testifiers' profession changes the discriminatory choices, as suggested by the tests in Part I and II. We thus compare treatments *AllDanes_NoProf* to *AllDanes_Prof*, *MinoFree_NoProf* to *MinoFree_Prof*, and *MinoStruc_NoProf* to *MinoStruc_Prof*, respectively. If the effects of ethnic minority names are reduced by adding information on the profession of the testifier, this would suggest statistical (rather than taste-based) discrimination. However, these tests show statistically insignificant differences in the estimates. Our results, thus, do not provide evidence that the discrimination found is due to missing information on the skills of ethnic minority parents.

Table 4: Regression results, main estimation, equation (1)

	(1)	(2)	(3)
1 *AllDanes_NoProf*	-0.0224	-0.0112	-0.0122
	(0.0335)	(0.0322)	(0.0323)
2 *MinoFree_NoProf*	-0.0177	-0.0243	-0.0224
	(0.0342)	(0.0329)	(0.0330)
3 *MinoStruc_NoProf*	**-0.0768****	**-0.0683****	**-0.0677****
	(0.0334)	(0.0322)	(0.0322)
4 *AllDanes_Prof*	-0.0334	-0.0360	-0.0394
	(0.0335)	(0.0323)	(0.0323)
5 *MinoFree_Prof*	-0.0289	-0.0317	-0.0337
	(0.0337)	(0.0325)	(0.0325)
6 *MinoStruc_Prof*	**-0.0845****	**-0.0791****	**-0.0764****
	(0.0338)	(0.0326)	(0.0325)
Constant	0.267***	0.319***	0.293***
	(0.0238)	(0.0403)	(0.0489)
Observations	2,179	2,179	2,179
R-squared	0.005	0.088	0.097
Controls	NO	YES	YES
District FE	NO	NO	YES
F-tests across treatments (p-values)			
Part I: Ethnic minority in free-play			
1 vs 2: *AllDanes_NoProf* vs *MinoFree_NoProf*	0.892	0.687	0.756
4 vs 5: *AllDanes_Prof* vs. *MinoFree_Prof*	0.893	0.894	0.859
1+4 vs 2+5: *AllDanes* vs. *MinoFree*	0.848	0.847	0.922
Part II: Ethnic minority in structured			
1 vs 3: *AllDanes_NoProf* vs. *MinoStruc_NoProf*	**0.101***	**0.074***	**0.083***
4 vs 6: *AllDanes_Prof* vs. *MinoStruc_Prof*	0.129	0.184	0.253
1+4 vs 3+6: *AllDanes* vs. *MinoStruc*	**0.026****	**0.028****	**0.042****
Part III: Information about profession			
1 vs 4 : *AllDanes_NoProf* vs. *AllDanes_Prof*	0.739	0.438	0.397
2 vs 5: *MinoFree_NoProf* vs. *MinoFree_Prof*	0.743	0.823	0.734
3 vs 6: *MinoStruc_NoProf* vs. *MinoStruc_Prof*	0.820	0.738	0.788

Note: Base group is *NoNames*. Controls included in columns 2-3 are dummies for single parent, child is boy, mother's highest education is primary school, mother has college education, low income family, mother works, child in poor health, child low birthweight, child has handicap, child is non-western, father responded to survey, and a number of residential district dummies for high non-western population share, low church member share, being on official ghetto list, district high share of populist right-wing party voters. Estimates shown in column 3 include residential district dummies. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Given that we reject (in part III, Table 4) the hypothesis that providing information on testifiers' professions makes a difference to respondents' choices, we proceed by simplifying our empirical model as in Equation (2) where treatments are combined to three (four) main treatments. In Table 5, we show the results of our estimation of Equation (2). The group with all Danish names – Treatment 1, *AllDanes* - is now the base.

Table 5: Regression results, main estimation, equation (2)

	(1)	(2)	(3)
2: *MinoFree*	0.00438	-0.00455	-0.00239
	(0.0238)	(0.0230)	(0.0230)
3: *MinoStruc*	**-0.0527****	**-0.0500****	**-0.0462****
	(0.0236)	(0.0227)	(0.0228)
0: *NoNames*	0.0279	0.0236	0.0258
	(0.0290)	(0.0280)	(0.0280)
Constant	0.239***	0.296***	0.267***
	(0.0166)	(0.0365)	(0.0458)
Observations	2,179	2,179	2,179
R-squared	0.005	0.088	0.096
Controls	NO	YES	YES
District FE	NO	NO	YES

Note: Base group is *AllDanes*. Controls included in columns 2-3 are dummies for single parent, child is boy, mother's highest education is primary school, mother has college education, low income family, mother works, child in poor health, child low birthweight, child has handicap, child is non-western, father responded to survey, and a number of district dummies for high non-western population share, low church member share, district being on official ghetto list, district high share of populist right-wing party voters. Estimations shown in column 3 include local district dummies. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Results for the estimation of Equation (2) confirm the findings obtained by estimating Equation (1). The effect of *MinoStruc* — i.e. of replacing one testifier's name in the structured daycare with a non-Danish name — reduces the demand for that daycare by almost 5 percentage points. This reduction corresponds to a drop of more than 20% when compared to an overall demand for structured daycare

of 23%. The result is robust to adding individual and district level controls. As before, the effect of *MinoFree* – i.e. the presence of an ethnic minority child in the testimonial for the free-play daycare - does not have any significant impact (neither statistically nor numerically) on the demand for one type of daycare over the other. In other words, when the ethnic minority is associated with free-play daycare, there is no discrimination.

4. Willingness to travel (WTT) to favored choice

In order to further elicit the strength of the preferences for the two types of daycares, structured (A) and free-play (B), we study how parental choices change when they have to pay a price, in terms of travelling distance, to keep their preferred type of daycare. We asked parents to elaborate on their choice of A and B, respectively, by responding to the following question:

"If A-type (B-type) daycare is your preferred institution, imagine it being further away than the other type, B (A), how much further would you be willing to travel to go to your preferred institution?"

We observe the demand of structured and free-play daycare in several distance intervals: 0-200m, 200-400m, 400-800m, 800m-1.6km, 1.6-3.2km, "Would not consider other than preferred" or "Do not know or no answer". We interpret the responses given in the category "Would not consider other than preferred" as evidence of a high willingness to travel (above 3.2 km). Table 6 shows responses; columns 1-2 are responses for those who prefer the structured daycare, and columns 3-4 for those who prefer the free-play daycare. On average, parents who prefer free-play daycare are willing to travel for a longer distance in order to keep their child in the preferred daycare compared to parents who prefer structured daycare. The median WTT is 800-1600 meters for both groups, and the weighted average WTT is 1,600-2,200 meters (depending on how values are chosen for each distance interval, i.e. if we use mid-point or top-point of each interval). The unconditioned differences in WTT across the two groups, A and B, are small.

Table 6: Willingness-to-travel (WTT) for preferred daycare for the two daycare types.

	A - Structured – is preferred		B - Free-play – is preferred	
	Number	Percent	Number	Percent
0-200m	45	9.2	61	3.7
200-400m	71	14.5	188	11.3
400-800m	115	23.5	464	27.9
800m-1.6km	117	23.9	473	28.4
1.6-3.2km	35	7.1	140	8.4
More than 3.2km*	96	19.6	324	19.5
Do not know or no answer	11	0.4	14	0.8
Number of respondents to question	490	100	1,664	100
Weighted average of distances				
Top distance in interval**	2,177		2,265	
Midpoint distance in interval***	1,628		1,697	

Notes: *) Response was "Would not consider other than preferred", **) Average based on top distance in each distance interval, ***) Average based on midpoint in each distance interval.

Travelling to a daycare located far away from home is costly to parents. Our design estimates how high a value parents assign to their preferred choice, and how the value varies across treatments, i.e. across daycares with or without ethnic minorities. In the terminology of Becker (1957), and, more recently (Charles & Guryan, 2008; Hedegaard & Tyran, 2018), the travel distance across our randomized treatments may provide a measure of the "price of prejudice" in the form of the opportunity cost of choosing a daycare that requires more daily transportation due to ethnic composition considerations. Figure A1 and A2 in the appendix show WTT for parents who prefer structured daycare and free-play daycare under each treatment (except treatment 0: *NoNames*), respectively.

We now move on to estimate the differences in WTT in a framework where we can control for differences in background characteristics of the parents. We model the (natural log of) willingness to travel distance, *WTT*, as a function of our randomized treatments and a number of controls, including a control for whether the respondent initially preferred structured or free-play daycare.

$$WTT_i = \beta_0 + \beta_1 Structured + \beta_2 MinoFree_i + \beta_3 MinoStruc_i + \beta_4 NoNames_i$$

$$+ \beta_5 Structured * MinoFree_i + \beta_6 Structured * MinoStruc_i + \beta_7 Structured * NoNames_i$$

$$+ \gamma X_i + e_i \quad (3)$$

We estimate the model by OLS. As respondents were asked to choose between distances in a number of distance intervals, we chose the top distance in each interval as the WTT if the respondent had marked that interval. For the top interval without an upper limit, we chose to limit WTT to 6,400 meters, using as dependent variable the natural log for WTT in the estimation.[16] Table 7 below shows the estimates from this regression. The base is the *Structured* category.

[16] The model was also estimated using ordered logit using the intervals in order of distance.

Table 7: Estimation of willingness-to-travel for preferred daycare, equation (3)

	(1)	(2)	(3)	(4)	(5)
Structured	**-0.143*** **	**-0.138*** **	**-0.296*** **	**-0.228** **	**-0.222** **
	(0.0513)	(0.0514)	(0.0933)	(0.0939)	(0.0941)
MinoFree		-0.00733	-0.0737	-0.0599	-0.0561
		(0.0567)	(0.0649)	(0.0645)	(0.0646)
MinoStruc		0.0564	0.0352	0.0357	0.0407
		(0.0563)	(0.0632)	(0.0628)	(0.0630)
NoNames		0.00534	-0.0860	-0.0794	-0.0824
		(0.0693)	(0.0799)	(0.0796)	(0.0797)
Structured*MinoFree			**0.279** **	**0.257* **	**0.249* **
			(0.133)	(0.132)	(0.132)
Structured*MinoStruc			0.0712	0.0513	0.0334
			(0.139)	(0.139)	(0.139)
Structured*NoNames			**0.370** **	**0.348** **	**0.359** **
			(0.160)	(0.159)	(0.160)
Constant	**7.280*** **	**7.264*** **	**7.301*** **	**7.478*** **	**7.416*** **
	(0.0243)	(0.0414)	(0.0452)	(0.0932)	(0.115)
Observations	2,143	2,143	2,143	2,143	2,143
R-squared	0.004	0.004	0.008	0.030	0.038
Controls	NO	NO	NO	YES	YES
District FE	NO	NO	NO	NO	YES

Note: Estimated by OLS on log distance in meters. Base is the *AllDanes* preferring *Structured* category. Controls included in columns 4-5 are dummies for single parent, child is boy, mother's highest education is primary school, mother has college education, low income family, mother works, child in poor health, child low birthweight, child has handicap, child is non-western, father responded to survey, and a number of district dummies for high non-western population share, low church member share, district being on official ghetto list, district high share of populist party voters. Estimates in column 5 include local district dummies. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

In general, willingness-to-travel (WTT) to the preferred daycare is higher if one initially chose the free-play rather than the structured daycare.[17] This result also holds when including the full set of controls in columns 4-5 of Table 7. Effect sizes suggest that the WTT for the preferred choice is 22% higher if the respondent had initially chosen free-play rather than structured daycare in the estimation with full set of controls (column 5).

Introducing in column 2 the randomized treatments, *MinoFree*, *MinoStruc* and *NoNames*, has no significant effect on WTT. However, when interacting the treatments with the dummies for *Free-play* and *Structured* in column 3, we observe a positive and (marginally) significant effect of *Structured*MinoFree*. This suggests that parents who initially preferred structured daycare have a higher willingness to travel to their favored (structured) daycare rather than accepting a closer free-play daycare when there is a minority child in the testimonial for the free-play daycare (compared to only Danish names in the testimonials). The WTT for these parents is around 25% higher than for other parents. There are, however, no significant effects in WTT across treatment for parents who initially preferred free-play daycare.

5. Heterogeneity and Robustness

Parental preferences for type of daycare differ according to background characteristics of the respondents measured at the individual and district level (see Table A3). Households are, on the one hand, *more* likely to prefer structured daycare if the mother has a low level of education, the child is of non-western background, the child is of poor health (self-reported), and the father responded to the survey (rather than the mother). On the other hand, households are *less* likely to prefer structured daycare if the child is a boy, the family is low-income, or the mother works. These results are confirmed by Table A4 showing how the probability of choosing structured daycare varies with household and district characteristics.

One might thus worry that the results shown in Tables 4-5 on the variation in the demand for structured daycare across treatments would mainly be driven by minority parents. However,

[17] Comparing the parameter estimate for *Structured* to the constant term which reflects the natural log to WTT for free-play parents, and taking inverse logs, we see that parents who prefer free-play daycare are willing to travel 200-400 meters longer to their favored daycare than parents who prefer structured daycare depending on the set of included controls for background characteristics and treatments.

estimations on a sample of parents excluding minority families confirm the results shown above (this result is reported in Figure A3 in the appendix).

As the probability of choosing structured (over free-play) daycare is positively related to certain child, family and district characteristics, we furthermore investigated whether subgroups of our sample react differently to being exposed to ethnic minority names in the two types of daycares. In particular, we investigated whether the estimates vary with the following twelve background characteristics (measured by dummies): whether mother had a college degree, whether mother had no education beyond primary school, whether mother was working, whether the child is a boy, whether the child had low birthweight, whether the child was of non-Western background, whether the family is a low-income family, whether the father responded to the survey[18], and four district level dummies for whether the district had a high share of non-Westerners, whether the district had a low share of church members, whether the district was on the official "ghetto list", and whether the district had a high share of voters for populist parties at the most recent public election.

Generally, none of the interaction terms between our three treatment variables, *MinoFree*, *MinoStruc*, and *NoNames*, and the dummies for child, parent or district background were significant. [19] However, we do find that some of the combinations of the treatment variable and the interaction between treatment and socioeconomic background dummy are jointly significant and numerically stronger than the main effect. In particular, we find that the negative effect of *MinoStruc* is *weaker* if the mother works, if the father is the respondent, or if the district has a high share of non-Westerners, and *stronger* if the family has low income or the child is of non-Western background.

6. Survey responses' reliability and compliance with real-world choices

One might perhaps worry that as our main question of interest on parental preferences for structured versus free-play daycare is of a somewhat hypothetical character, survey responses would not necessarily reflect true preferences or actions. As concern is sometimes raised about how reliable survey responses are in general when it comes to eliciting preferences and responding to hypothetical

[18] Responding households could choose themselves whether the father or the mother would respond to the survey. Households where the father responded are more likely to be of non-western origin.

[19] The results are shown in Table A5 in the appendix, where each column shows the result of a regression where we interacted the treatment variables, *MinoFree*, *MinoStruc*, and *NoNames* with one background variable at a time. In panel A of the table, treatments are interacted with characteristics of the child and the mother, and in panel B, treatments are interacted with a dummy for whether the father responded (by choice) to the survey, household income and four variables that characterize the district in which the family lives.

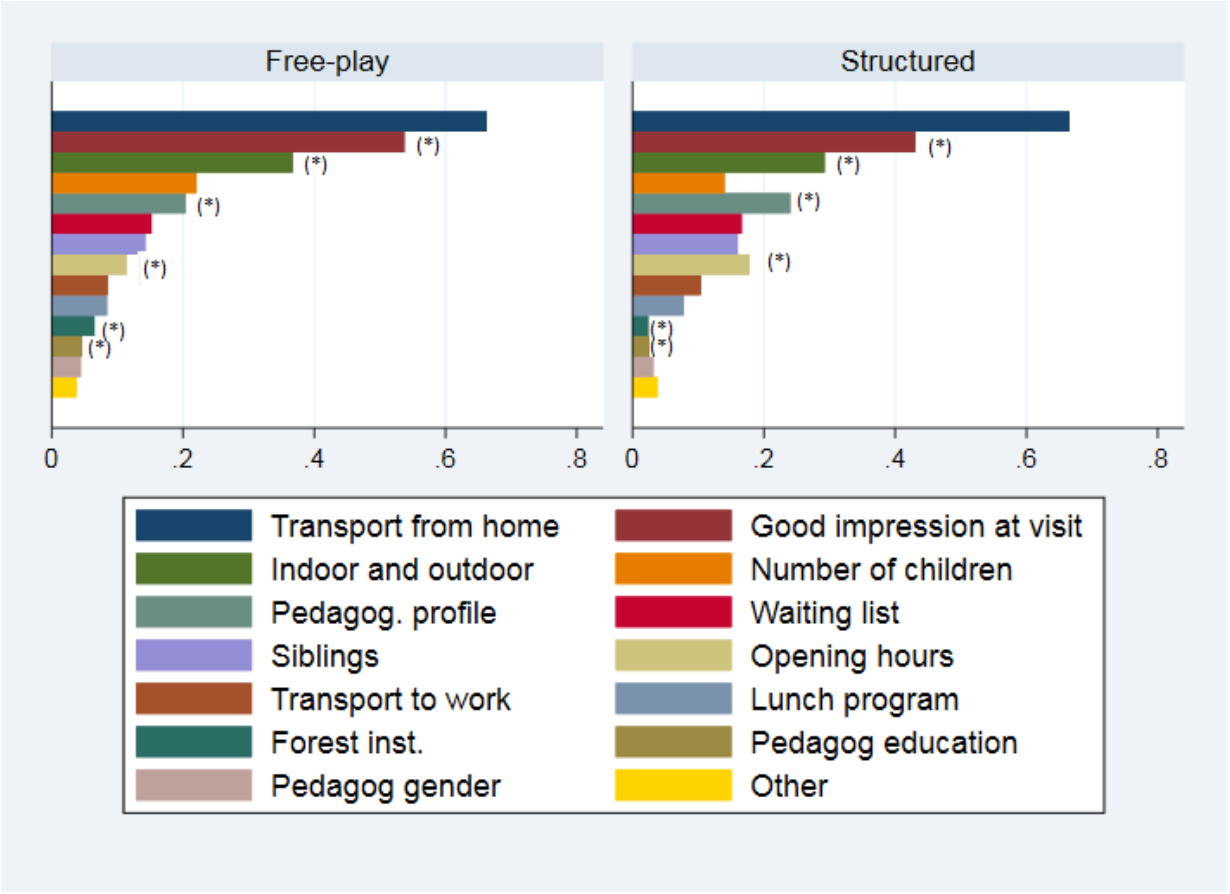
questions where stated answers have no real consequences, we investigated how well individual responses are aligned with respondents' real-world choices and with socio-economic characteristics found in the register data.

First, we checked how reliable the survey responses generally are compared to real-world daycare choices by comparing the two daycares that respondents in the survey claim that they have signed up for to the two daycares that they actually signed up for according to the administrative register data from the Copenhagen municipality. We find that in as much as 97% of the cases, our respondents report in the survey to have chosen the *exact same* daycare institution as the one that they actually ended up signing up for according to administrative data. This suggests that the survey responses on preferred daycares are almost perfectly in line with actual choices.

Secondly, those who prefer the structured daycare differ systematically from those who chose free-play on a number of socio-economic characteristics, as shown in Tables A3 and A4. Thus those who prefer structured daycare are generally more likely to be of non-Western background, the mother has less education and is less likely to be employed.

Thirdly, the survey asks which characteristics of a daycare institution that parents find most important when choosing a daycare to sign their child up for. In Figure 1, we show how the weight that parents put on different characteristics of daycares correlate with whether they prefer structured or free-play daycare. Detailed results can be find in the appendix Table A8. We find that parents who prefer the free-play daycare are significantly more likely to put weight on their impression from visiting the daycare before signing up (54% vs. 43%), on their view of the outdoor facilities and environment (37% vs. 29%), and on the number of children in the daycare (22% vs. 14%). Those who preferred the structured type of daycare, on the other hand, are placing significantly more weight on pedagogical profile (24% vs. 20%), and on opening hours (18% vs. 11%). As outdoor activities and time for the individual child are qualities that were highlighted in the testimonials for the free-play daycare, parents' responses seem to be consistent across different parts of the survey. Moreover, from the priorities mentioned, it seems that it is less likely that parents who prefer the structured daycare have paid a visit to the daycare before making their prioritization of daycares, suggesting perhaps that parents who choose the structured daycare spend less time searching for a daycare. This is also consistent with lower WTT for structured daycare in general.

Figure 1. Characteristics of daycares favored by respondents by preferred daycare type.



Note: (*) indicates that shares are significantly different (p-values below 0.10) across free-play and structured daycare.

7. Discussion and conclusion

A parent's choice of a daycare is shaped not only by the institution's location, resources and pedagogical profile, but also by the anticipated participation of other parents and their children. We developed and conducted a simple randomized online survey to study the interaction of such factors on parental daycare choices. The randomized survey employed what seemed like six personal vignettes from six parents to vary the characteristics of the two hypothetical daycares under consideration. While the majority of parents (75%) in Copenhagen prefer a 'free-play' over a 'structured' daycare, we found that the parental preference for the structured daycare is lower when a testimonial for structured daycare includes an ethnic minority name. However, the parental

preference for the free-play daycare is unchanged when one of the testimonials for the free-play daycare is assigned an ethnic minority name.

Our survey design included additional controls as a means to isolate the possible mechanisms behind our results. We considered an additional treatment by which we assigned all fictive parents (who had allegedly given the testimonials) a typical middleclass occupation such as high school teacher or journalist. This treatment was meant to isolate statistical discrimination factors that occur when respondents make implicit judgements about the minority parents' backgrounds. We found that the addition to testimonials of information about occupation did not change our results. Although this is only suggestive evidence, we cannot rule out that the discrimination is taste-based rather than statistical.

We further confirmed the results by quantifying the magnitude of the discrimination. In the survey we asked each parent a willingness to travel (strength of preference) question, where parents were asked to report the additional travel distance they would be willing to travel to stay with their original choice (structured or free-play). Interestingly, we found that parents who choose structured daycares are willing to travel a longer distance to attend their preferred daycare if the alternative free-play daycare contained a minority parent name than when it contained all Danish names. Thus, willingness to travel to the most favored daycare type is higher if the alternative is a daycare with minority children (and if the favored daycare is a structured daycare). We do not observe this pattern for parents who prefer free play daycares.

Overall, our results indicate that parental sorting into daycares may be influenced by relatively small changes in their peer composition even in a highly liberal and diverse city of Copenhagen, supported by our findings that (i) parental preference for structured daycare is lower if this daycare has an ethnic minority, and (ii) that parents are more willing to travel to their preferred daycare pedagogy if the alternative free-play daycare is associated with an ethnic minority name. However, we also found that there is a relatively large group of parents who prefer the free-play daycare and whose preferences are unaffected by the presence of a minority parent and child.

If the sorting mechanism is true, we can expect that a fraction of parents who are signing their children up for daycare are sensitive to information about the ethnic peer composition in the daycare. Looking at the actual daycare choices of the parents in our sample, we found that their answers in the survey were generally consistent with their real-world choices in the Copenhagen daycare assignment. This gives us some confidence in the external validity of our results.

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Appendix. Supplementary tables and figures

Table A1: Comparison estimation sample, sample with responses to survey and entire sample

	Estimation sample	Survey response	Total sample
# of observations	2179	2494	4885
Employment			
Mother's employment			
Employed	80.8	77.7	72.3
Student	6.7	6.3	7.1
Not employed	6.8	7.0	11.0
Unknown empl. status	5.7	9.1	9.5
Father's employment			
Employed	81.9	80.9	76.1
Student	3.5	3.5	4.4
Not employed	5.2	6.2	8.9
Unknown empl. status	9.3	9.4	10.7
Education			
Mother's education			
No education beyond primary school or unknown	4.0	4.7	8.8
High school, vocational or short further education	20.8	20.5	23.5
College (bachelor level)	29.2	27.7	26.0
Master level	38.2	35.9	29.2
Unknown education	7.8	11.4	12.5
Father's education			
No education beyond primary school or unknown	5.5	5.9	9.9
High school, vocational or short further education	26.3	26.6	28.3
College (bachelor level)	20.5	19.7	17.9
Master level	34.0	33.1	27.7
Unknown education	13.7	14.6	16.3
Family type			
Nuclear family	90.7	90.7	86.8
With mother and partner	2.0	2.0	2.5
With single mother	6.9	7.0	10.1
With father and partner	0.0	0.0	0.0
With single father	0.3	0.4	0.5
Ethnic background			
Ethnic Dane	89.0	86.8	84.0
Ethnic minority	11.0	13.2	16.0

Table A2: Balancing test of background characteristics across treatment categories

	AllDanes_ NoProf	MinoFree_ NoProf	MinoStruc_ NoProf	AllDanes_ Prof	MinoFree_ Prof	MinoStruc_ Prof	NoNames
Single parent	0.053	0.085	0.081	0.063	0.051	0.052	0.064
Child is boy	0.514	0.522	0.514	0.495	0.511	0.489	0.460
Mother primary school	0.116	0.126	0.094	0.126	0.141	0.114	0.109
Mother college education	0.671	0.683	0.688	0.672	0.659	0.651	0.691
Low income family	0.188	0.188	0.171	0.192	0.158	0.147	0.151
Mother works	0.793	0.799	0.773	0.801	0.826	0.837	0.830
Child in poor health	0.009	**0.034****	0.013	0.022	0.016	0.026	0.006
Child low birthweight	0.009	0.021	0.019	0.013	0.016	0.026	0.010
Child has handicap	0.013	0.021	0.016	0.019	**0.032***	0.013	0.013
Child is non-western	0.129	0.154	0.131	0.170	0.154	0.107	0.154
Father responded to survey	0.235	0.287	0.227	0.233	0.251	0.254	0.283
District high non-western pop share	0.436	0.440	0.427	0.464	0.428	0.482	0.466
District low church member share	0.103	0.130	0.081	0.145	0.129	0.140	0.125
District on official ghetto list	0.022	0.041	0.031	**0.054****	0.029	**0.049***	**0.051***
District high share of populist party voters	0.075	0.072	0.084	0.085	0.077	0.088	0.061

Note: All balancing tests are two-sided t-tests against column 1, the *AllDanes_NoProf* category. *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Characteristics of respondents preferring free-play and structured daycares

	Free-play		Structured		t-test
	mean	sd	mean	sd	p-value
Mother primary school	0.085	0.279	0.228	0.420	**0.000**
Mother college education	0.709	0.454	0.555	0.497	**0.000**
Mother works	0.829	0.376	0.737	0.440	**0.000**
Child in poor health	0.012	0.108	0.038	0.192	**0.000**
Child is non-western	0.101	0.301	0.285	0.452	**0.000**
Father responded to survey	0.233	0.423	0.317	0.466	**0.000**
District on official ghetto list	0.032	0.175	0.066	0.249	**0.000**
District low church member share	0.113	0.316	0.152	0.360	**0.020**
Child is boy	0.512	0.500	0.463	0.499	**0.050**
Single parent	0.060	0.238	0.078	0.269	0.150
Child low birthweight	0.014	0.119	0.022	0.147	0.230
Low income family	0.173	0.378	0.164	0.371	0.670
Child has handicap	0.019	0.135	0.016	0.126	0.720
District high share of populist party voters	0.077	0.266	0.080	0.272	0.800
District high non-western pop share	0.448	0.497	0.451	0.498	0.920
N	1680		499		

Note: The differences in characteristics between structured and free-play are tested using double-sided t-tests.

Table A4: Probability of preferring structured daycare

	prob(Structured)
Single parent	0.0711
	(0.0366)
Child is boy	**-0.0273****
	(0.0174)
Mother no education beyond primary school	**0.135*****
	(0.0334)
Mother college education	-0.0248
	(0.0224)
Low income family	**-0.136*****
	(0.0273)
Mother works	**-0.0626****
	(0.0264)
Child in poor health	**0.243*****
	(0.0658)
Child low birthweight	0.0388
	(0.0698)
Child has handicap	-0.0499
	(0.0654)
Child is non-western	**0.204*****
	(0.0286)
Father responded to survey	**0.0511***
	(0.0203)
District high non-western pop share	-0.0234
	(0.0474)
District low church member share	0.0610
	(0.0361)
District on official ghetto list	-0.0182
	(0.0598)
District high share of populist right-wing voters	**-0.0513****
	(0.0368)
Constant	**0.254*****
	(0.0438)
Observations	2,179
R-squared	0.093
Controls	YES
District FE	YES

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Treatment Effects interacted with selected background characteristics.

Panel A	Treatment interacted with *X*:					
	Interaction with mother's characteristics			Interaction with child characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)
	X: Mother has college	*X*: Mother no education beyond primary school	*X*: Mother is working	*X*: Child is boy	*X*: Child has low birthweight	*X*: Child of non-Western background
MinoFree	0.0462	-0.00910	0.00454	-0.0162	-0.00387	0.0114
	(0.0402)	(0.0246)	(0.0522)	(0.0328)	(0.0232)	(0.0250)
MinoStruc	-0.0380	**-0.0427***	**-0.115****	-0.0475	**-0.0442***	-0.0371
	(0.0397)	(0.0242)	(0.0510)	(0.0322)	(0.0230)	(0.0245)
NoNames	**0.102****	0.0130	0.0806	-0.0179	0.0276	0.0377
	(0.0498)	(0.0297)	(0.0662)	(0.0387)	(0.0281)	(0.0304)
*MinoFree*X*	-0.0723	0.0528	-0.00820	0.0272	0.0635	-0.0908
	(0.0491)	(0.0692)	(0.0581)	(0.0460)	(0.197)	(0.0642)
*MinoStruc*X*	-0.0122	-0.0371	0.0859	0.00229	-0.110	-0.0629
	(0.0485)	(0.0724)	(0.0569)	(0.0455)	(0.189)	(0.0674)
*NoNames*X*	**-0.111***	0.115	-0.0654	**0.0926***	-0.177	-0.0780
	(0.0601)	(0.0885)	(0.0731)	(0.0562)	(0.282)	(0.0777)
Constant	**0.240*****	**0.269*****	**0.278*****	**0.278*****	**0.267*****	**0.260*****
	(0.0504)	(0.0460)	(0.0532)	(0.0480)	(0.0459)	(0.0461)
Observations	2,179	2,179	2,179	2,179	2,179	2,179
R-squared	0.099	0.098	0.099	0.098	0.097	0.097
Controls	YES	YES	YES	YES	YES	YES
District FE	YES	YES	YES	YES	YES	YES
F-tests (p-values)						
MinoFree + MinoFree*X	0.336	0.744	0.986	0.835	0.941	0.366
MinoFree + MinoStruc*X	0.124	0.106	**0.041****	0.126	0.112	**0.089***

Panel B	Treatment interacted with *X*:					
	Interaction with family characteristics			Interaction with district characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)
	X: Family has low income	*X*: Father is respondent	*X*: District high share of non-Westerners	*X*: District low share of church members	*X*: District on ghetto list	*X*: District high share of voters for populist right-wing parties
MinoFree	0.00336	0.00605	-0.00745	0.00494	0.000444	0.000493
	(0.0254)	(0.0265)	(0.0308)	(0.0246)	(0.0234)	(0.0239)
MinoStruc	-0.0372	**-0.0581****	**-0.0606****	**-0.0500****	**-0.0443***	**-0.0478****
	(0.0251)	(0.0261)	(0.0307)	(0.0242)	(0.0232)	(0.0238)
NoNames	0.0373	0.0429	0.0610	0.0245	0.0324	0.0334
	(0.0306)	(0.0327)	(0.0380)	(0.0300)	(0.0287)	(0.0290)
*MinoFree*X*	-0.0308	-0.0326	0.0116	-0.0564	-0.0742	-0.0364
	(0.0599)	(0.0531)	(0.0463)	(0.0691)	(0.123)	(0.0859)
*MinoStruc*X*	-0.0510	0.0491	0.0315	0.0365	-0.0530	0.0168
	(0.0604)	(0.0535)	(0.0458)	(0.0709)	(0.118)	(0.0825)
*NoNames*X*	-0.0680	-0.0621	-0.0759	0.0119	-0.142	-0.120
	(0.0761)	(0.0634)	(0.0562)	(0.0848)	(0.134)	(0.113)
Constant	0.262***	0.266***	0.268***	0.266***	0.266***	0.266***
	(0.0463)	(0.0466)	(0.0470)	(0.0461)	(0.0459)	(0.0460)
Observations	2,179	2,179	2,179	2,179	2,179	2,179
R-squared	0.097	0.098	0.098	0.097	0.097	0.097
Controls	YES	YES	YES	YES	YES	YES
District FE	YES	YES	YES	YES	YES	YES
F-tests (p-values)						
MinoFree + MinoFree*X	0.872	0.825	0.964	0.713	0.830	0.910
MinoStruc + MinoStruc*X	**0.091***	**0.083***	**0.099***	0.117	0.115	0.123

Note: OLS regressions. Controls included are dummies for single parent, child is boy, mother's highest education is primary school, mother has college education, low income family, mother works, child in poor health, child low birthweight, child has handicap, child is non-western, father responded to survey, and a number of district dummies for high non-western population share, low church member share, being on official ghetto list, district high share of voters for populist right-wing parties, and district dummies. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Interaction estimations - Respondent non-Western and district characteristics

		Treatments interacted with *X*		
	X: District high share of non-Westerners	*X:* District low share of church members	*X*: District on ghetto list	*X*: District high share of voters for populist parties
MinoFree	-0.00496	0.0174	0.0139	0.00619
	(0.0328)	(0.0265)	(0.0252)	(0.0258)
MinoStruc	-0.0529	**-0.0433***	-0.0357	-0.0391
	(0.0323)	(0.0257)	(0.0247)	(0.0253)
NoNames	0.0614	0.0301	0.0390	0.0423
	(0.0405)	(0.0322)	(0.0309)	(0.0312)
*MinoFree*ChildNonWest*	-0.0141	-0.0945	-0.0986	-0.0403
	(0.0931)	(0.0722)	(0.0682)	(0.0688)
*MinoStruc*ChildNonWest*	-0.113	-0.0630	-0.0697	-0.0739
	(0.106)	(0.0770)	(0.0740)	(0.0739)
*NoNames*ChildNonWest*	-0.00252	-0.0389	-0.0479	-0.0620
	(0.119)	(0.0872)	(0.0838)	(0.0832)
*MinoFree*X*	0.0387	-0.0601	-0.142	0.0777
	(0.0505)	(0.0799)	(0.180)	(0.0999)
*MinoStruc*X*	0.0368	0.0563	-0.0927	0.0351
	(0.0494)	(0.0829)	(0.194)	(0.0976)
*NoNames*X*	-0.0531	0.0760	-0.0451	-0.107
	(0.0612)	(0.0979)	(0.188)	(0.135)
*MinoFree*ChildNonWest*X*	-0.145	0.0194	0.181	**-0.418****
	(0.129)	(0.163)	(0.253)	(0.203)
*MinoStruc*ChildNonWest*X*	0.0489	-0.0680	0.0907	0.00103
	(0.138)	(0.169)	(0.256)	(0.190)
*NoNames*ChildNonWest*X*	-0.120	-0.225	-0.155	-0.0156
	(0.159)	(0.199)	(0.275)	(0.249)
*ChildNonWest*X*	**0.150***	**0.205***	0.0308	0.170
	(0.0912)	(0.120)	(0.173)	(0.133)
Constant	0.269***	0.264***	0.258***	0.260***
	(0.0473)	(0.0463)	(0.0462)	(0.0463)

Observations	2,179	2,179	2,179	2,179
R-squared	0.100	0.100	0.099	0.100
Controls	YES	YES	YES	YES
District FE	YES	YES	YES	YES
F-tests (p-values)				
***MinoFree* joint test with:**				
*MinoFree*ChildNonWest*	0.965	0.418	0.352	0.842
All interactions with *MinoFree*	0.517	0.566	0.613	0.176
***MinoStruc* joint tests with:**				
*MinoStruc*ChildNonWest*	**0.068***	**0.083***	0.112	**0.081***
All interactions with *MinoStruc*	0.161	0.210	0.255	0.257

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

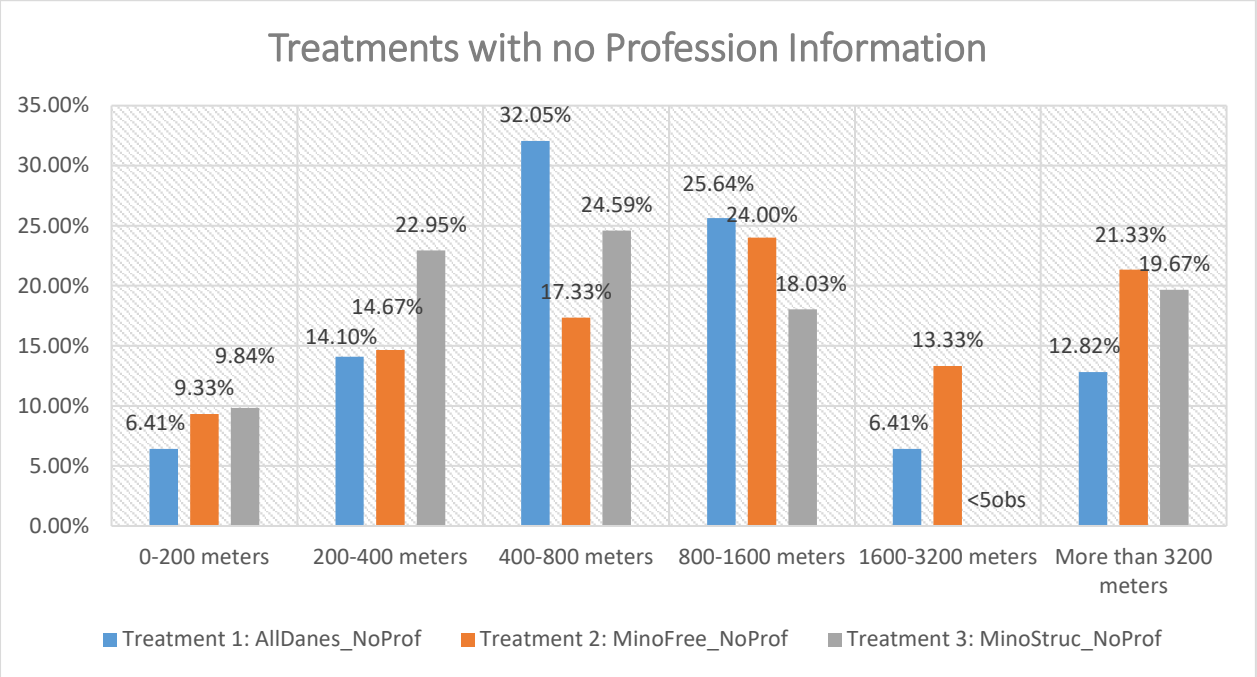
Table A7: Characteristics of daycares favored by respondents who prefer daycare A Structured and B Free-play

	A structured	B free-play	t-test, p-values
Transport from home to daycare	66.5%	66.5%	0.99
Good impression at visit	**42.9%**	**53.6%**	**0.00**
Outdoor facilities and environment	**29.2%**	**36.6%**	**0.00**
Number of children	**13.9%**	**22.1%**	**0.00**
Pedagogical profile	**24.0%**	**20.4%**	**0.08**
Waiting list	16.7%	15.3%	0.45
Siblings in daycare	15.9%	14.2%	0.34
Opening hours	**17.7%**	**11.4%**	**0.00**
Transport from daycare to work	10.5%	8.6%	0.19
Lunch program	7.9%	8.4%	0.71
Forest daycare	**2.4%**	**6.6%**	**0.00**
Education of staff	**2.8%**	**4.7%**	**0.07**
Gender balance of staff	3.2%	4.4%	0.24
Other characteristics	3.8%	3.8%	1.00

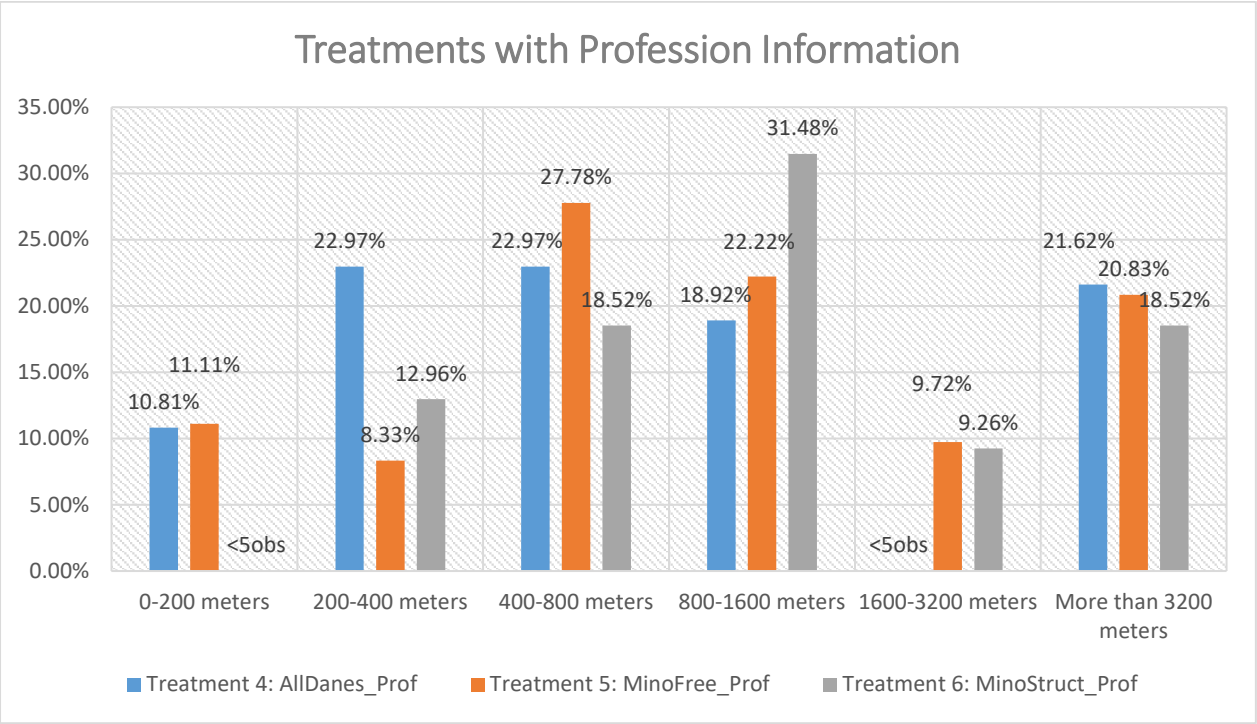
Note: The question asked in the survey was “What factors do you find important when choosing a daycare for your child (more than one response is allowed)”

Figure A1: Willingness to travel for parents who prefer structured daycare

Panel A. Treatments with no profession information



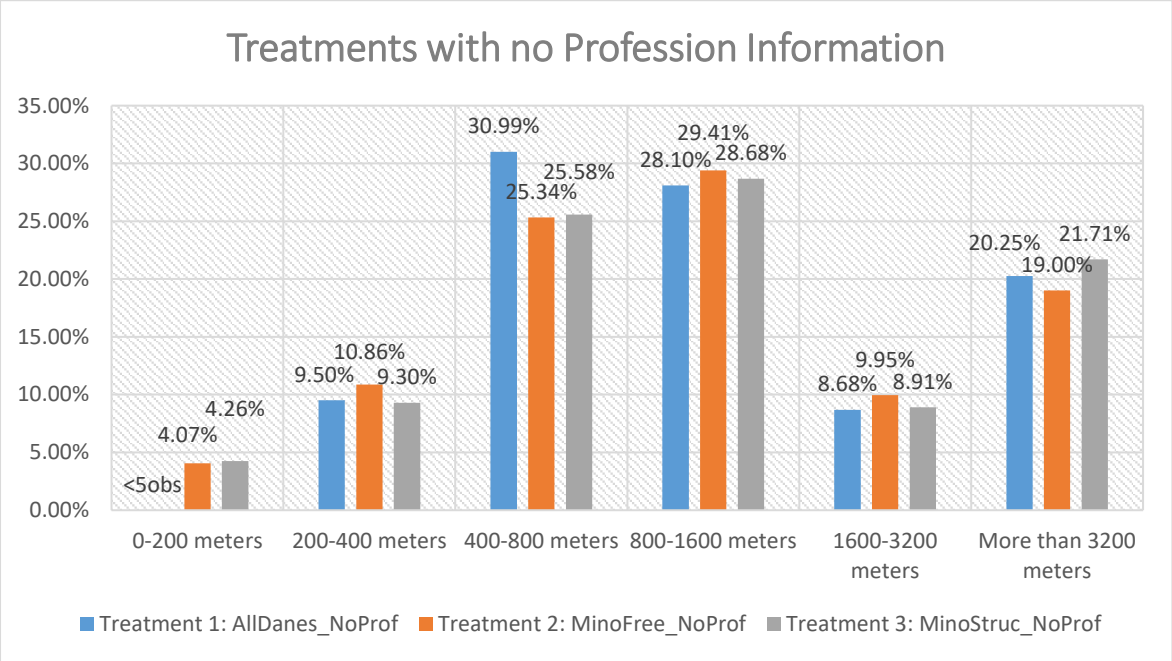
Panel B. Treatments with Profession Information



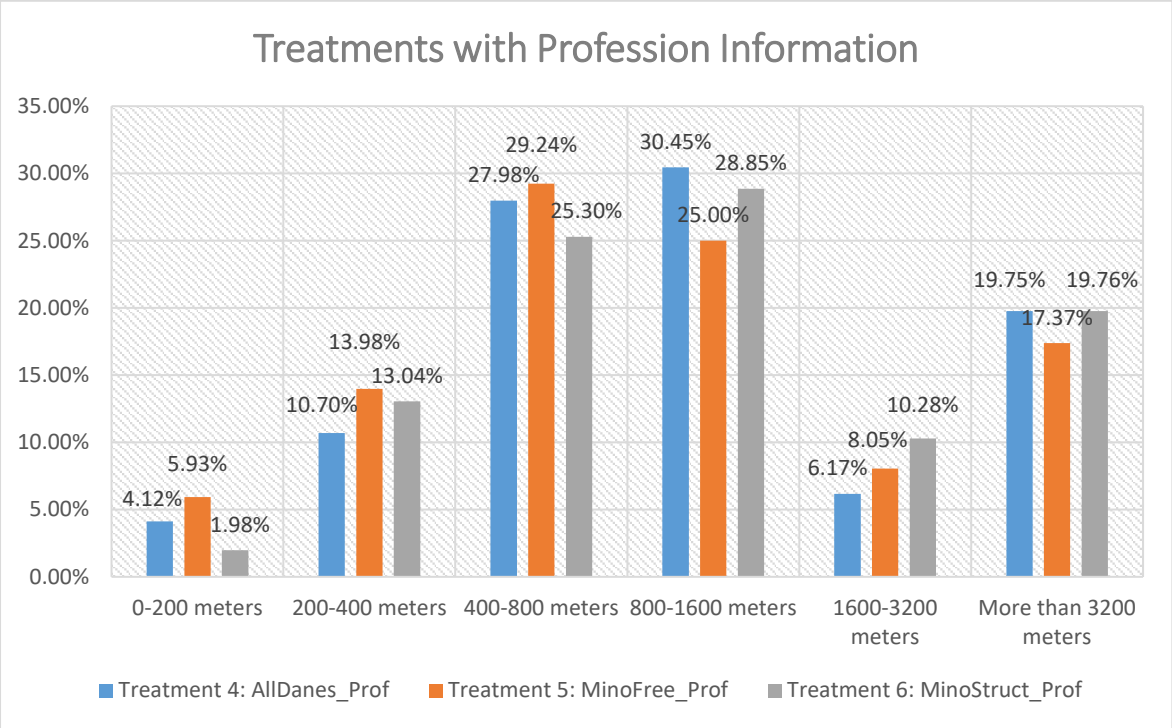
Note: Panel A plots WTT for parents who prefer structured daycare under treatment 1, 2 and 3 where the profession of the testifying parents are not given, and Panel B shows similar comparisons across treatments where information on profession was given to respondents.

Figure A2: Willingness to travel for Parents who initially prefer Free-play daycares

Panel A. Treatments with no profession information

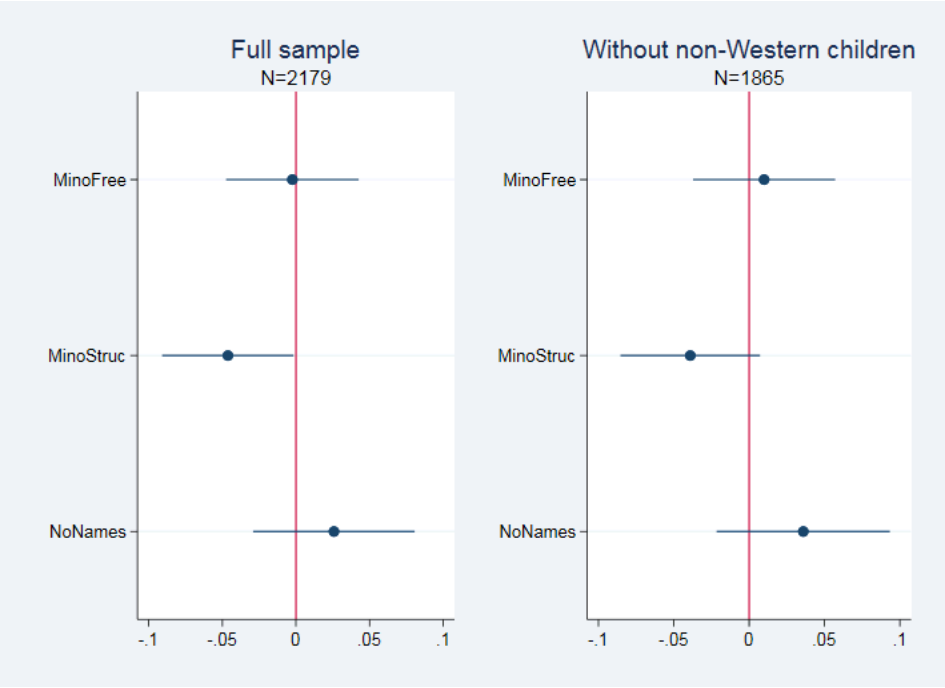


Panel B. Treatments with profession information



Note: Panel A plots WTT for parents who prefer free-play daycare under treatment 1, 2 and 3 where the profession of the testifying parents are not given, and Panel B shows similar comparisons across treatments where information on profession was given to respondents.

Figure A3: Comparison between Full sample and Ethnic Majority only sample



Note: This figure illustrates the coefficients from OLS regressions for Equation (2) when the full sample is used (left panel) and when non-Western children are excluded (right panel).