

Ahmed, Ali; Hammarstedt, Mats; Karlsson, Karl

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Do Swedish schools discriminate against children with disabilities?

Ali Ahmed

**Department of Management and Engineering
Linköping University
SE-581 83 Linköping, Sweden
Email: ali.ahmed@liu.se**

Mats Hammarstedt

**Department of Economics and Statistics
Linnæus University
SE-351 95 Växjö, Sweden
Email: mats.hammarstedt@lnu.se**

and

**The Research Institute of Industrial Economics (IFN)
SE-102 15 Stockholm, Sweden**

Karl Karlsson

**Department of Economics and Statistics
SE-351 95 Växjö, Sweden
Email: karl.karlsson@icloud.com**

Abstract

We present results from a field experiment in which fictitious parents to children with certain types of disabilities, attention deficit hyperactivity disorder (ADHD) and type 1 diabetes mellitus (T1DM), make inquiries to Swedish schools about admission for their children to the compulsory preschool class. Our results reveal that Swedish schools discriminated against children with these disabilities and that discrimination is most prevalent in private schools. Private schools discriminated against boys with ADHD and T1DM and against girls with ADHD. Furthermore, public schools discriminated against girls with ADHD. One potential effect of our results is that children with disabilities are referred to less attractive schools than children with no such medical conditions. These results may have implications for the possibilities for individuals with ADHD and T1DM to succeed in the labor market in the long run.

Keywords: Schools, Disabilities, Discrimination

JEL codes: I24, J14, J71

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1. Introduction

A relatively large number of studies have provided evidence of discrimination against disabled people in the labor market across various countries.¹ The results in these studies in all essential conclude that disabilities reduce labor market prospects, and contribute to low income levels for the disabled.² Discrimination against disabled people has also been found in various housing markets (Aranda, 2015; Fumarco, 2017). However, research regarding the extent to which children with disabilities are discriminated against in school is scarce. In this paper, we fill this research gap by conducting a field experiment in which we test for discrimination against six-year old children with attention deficit hyperactivity disorder (ADHD) and type 1 diabetes mellitus (T1DM) whose parents made inquiries for their placements in Swedish schools.³

In Sweden, municipalities are responsible for arranging preschool for children from the age of one year according to the *Education Act* (Swedish Code of Statutes, 2010:800). At the age of six years, the preschool class in Sweden is obligatory. Parents in Sweden are eligible to choose school for their children and are free to apply to the school that they prefer. Schools in Sweden can be either public or private, but all schools are obliged to follow the same laws and adhere to the Swedish curriculum for the compulsory school, preschool class and school-age educare (The Swedish National Agency for Education, 2018). Discrimination against children, or their parents, due to ethnicity, gender, age, religious belief, sexual orientation and disabilities is prohibited by the *Discrimination Act* (Swedish Code of Statutes, 2008:567).

A study of discrimination against children with disabilities whose parents make inquiries about school placements is highly relevant for different reasons. First, previous research has underlined the importance of preschool attendance for the possibilities to succeed in the labor market as an adult.⁴ Second, a field experiment conducted in the US documented that schools were less likely to respond to inquiries from children with a special need.⁵ Further, research has also shown that school segregation in Sweden has become more prevalent as a result of the reform that allowed parents to choose school for their children that was implemented in the early 1990's.⁶ If children with disabilities are discriminated against when

¹ For an overview, see Jones (2008). For a recent experiment of labor market discrimination due to disabilities, see e.g. Ameri et al (2017).

² See WHO/World Bank (2011).

³ For a discussion about field experiment conducted on different markets in different countries, see Bertrand & Duflo (2017).

⁴ For an overview, see Dietrichson et al (2018).

⁵ See Bergman & McFarlin Jr (2020).

⁶ See Böhlmark et al (2016).

their parents search for school placements, it may have implications for their possibilities in the labor market later in life.

In the experiment, six fictitious parents (mothers) were randomly assigned to schools, and made inquiries to the schools with brief letters during late December 2019 and early January 2020. The mother explained that she was in search for a good school for her six-year-old child's admission to the compulsory preschool class for the autumn 2020. Two of the mothers that made inquiries stated that their child (one boy and one girl) had ADHD, while two other mothers (also one boy and one girl) stated that their child had T1DM. Finally, two parents mentioned no medical condition of the child. We then focused on two outcomes: the probability of receiving an invitation for a viewing of a school and the probability of receiving a promising placement prospect.

We focused on ADHD and T1DM because ADHD is considered one of the most common psychiatric conditions among children (Polanczyk et al., 2007; Willcutt, 2012;) and T1DM is considered one of the most common chronic diseases among children (Cox and Gonder-Frederick, 1992; Soltesz et al., 2007; Patterson et al., 2014). At the same time, ADHD require a different support system from schools than T1DM does. While ADHD require educational support efforts from the schools, T1DM require support related to selfcare. Furthermore, there is an ample of evidence that suggest that stigma, prejudice, and discrimination is associated with both ADHD (Mueller et al., 2012) and T1DM (Schabert et al., 2013). Most of this literature, however, is based on survey and other non experimental evidence. In contrast to previous literature, we provide direct evidence of discrimination based on a field experiment in this study.

We ended up with several interesting and policy relevant results: First, we document discrimination against boys and girls with ADHD and T1DM. Second, the magnitude of the discrimination was larger against children with ADHD than against children with T1DM. Finally, our results revealed that the magnitude of the discrimination was larger in private than in public schools.

The remainder of the paper is organized as follows: In Section 2 we present the experimental method. In Section 3 we present the basic results from the field experiment and also results from probit regressions conducted in order to further highlight the pattern observed in the results. Finally, Section 4 contains a discussion and the conclusions.

2. Method

2.1 Sample

We retrieved a list of all schools in Sweden from the Swedish National Agency for Education on December 18, 2019. The list consisted of 3,647 schools who provided the compulsory preschool class for six-year-olds in line with the Swedish school system. After removing schools with no contact information (email address), schools that focused on children with special needs, and schools that had the same contact information as another already included school, we ended up with a list of 2,613 schools. Another 459 schools had to be removed from the sample during the field experiment, for the most part because of email delivery failures. Hence, the data that supports the findings of the study presented in this paper consists of 2,154 schools. Twenty-five percent of the schools in the final sample were private and 75 percent were public.

2.2 Materials

We constructed a brief letter with the purpose of making email inquiries to schools from a fictitious parent. The fictitious parent that made the inquiry to the schools was always a mother and was given a typical Swedish-sounding first and family name, Pernilla Svensson. The narrative of the letter was as following. The mother explained in the letter that the family was just about to move in to the town during spring 2020. She therefore was in search for a good school for her six-year-old child's admission for autumn 2020. She then asked whether she could visit the school and if there were any placement possibilities for the autumn semester 2020. This ended the letter. Using this baseline letter, we then constructed different versions of it by varying some characteristics of the child. First, we randomly varied the sex of the child, boy or girl. Second, we randomly varied the medical condition of the child, where the child could have had ADHD, T1DM, or no medical condition. This resulted in six different email letters that we used in our field experiment.

Hence, all six letters started with the following phrases (English translation):

Hi! We are a family that are going to move to [name of the town] during spring 2020. We have a son/daughter that will turn six in April and needs to be admitted in a school starting with the autumn semester 2020.

Town was set to where the school was located. The child was randomly set to be either son or daughter. The sentence after the first phrases determined the medical condition of the child and was randomly set to one of the following formulations (English translation):

- ADHD condition: *Since our son/daughter currently is going through an ADHD assessment, we are keen to find him/her a placement at a good school.*
- T1DM condition: *Since our son/daughter has type 1 diabetes, we are keen to find him/her a placement at a good school.*
- Control condition: *We are keen to find him/her a placement at a good school.*

Finally, all letters ended with two questions, answers to which would form our dependent variables (English translation):

Are there any possibilities to visit your school, and how do the placement possibilities look for autumn 2020? Kindly, Pernilla Svensson

An email account was created for the fictitious mother, through which we sent the inquiry letters to the schools in our sample.

The email inquiry letters that were described above were sent on six days: December 18, 19, 20, 22 and 27, 2019, and January 1, 2020. We used a randomized correspondence test where each school in the sample randomly received one out of the six possible inquiry letters. We then let more than two months pass in order to give the schools sufficient time to respond to the inquiries. The collection of data was completed on March 11, 2020. Answers to the two questions asked in the email inquiry formed our dependent variables. Hence, the first dependent variable indicated whether the school responded with an invitation to visit the school for a viewing. The second dependent variable indicated whether the school provided a promising outlook regarding placement possibilities. Our main independent variables were the child's medical condition, whether the child was a boy or a girl, and whether the school was public or private. We also recorded in which county a school was located and the day the email inquiries were dispatched. The description of all variables of the data are presented in Table 1. The data were made openly available in Zenodo at <https://doi.org/10.5281/zenodo.3741734>.

Table 1. Description of variables

| Variables | Explanation |
|------------------------------|--|
| <i>Outcome variables</i> | |
| Invitation | 1 if the school responded with an invitation to visit the school for a view, 0 otherwise. |
| Placement | 1 if the school gave promising prospects about the placement at the school, 0 otherwise. |
| <i>Explanatory variables</i> | |
| ADHD | 1 if the letter of inquiry indicated that the child had ADHD, 0 otherwise. |
| T1DM | 1 if the letter of inquiry indicated that the child had T1DM, 0 otherwise. |
| Girl | 1 if child in the letter of inquiry was a girl, 0 otherwise. |
| Public | 1 if the school was a public school, 0 otherwise. |
| <i>Control variables</i> | |
| County fixed effects | 1 if the school was located in a particular county (one dummy for each county), 0 otherwise. |
| Email day fixed effects | 1 if the letter of inquiry was sent on a specific day (one dummy for each day), 0 otherwise. |

Notes: Sweden consists of 21 counties. Inquiries were sent out through e-mail on 18th, 19th, 20th, 22nd, and 27th December 2019 and on 1st January 2020 . Full set of data are available in Zenodo at <https://doi.org/10.5281/zenodo.3741734>.

3. Results

3.1 Basic results

Table 2 presents the percentage of email inquiries that led to an invitation for viewing of a school. The first row of Table 2 presents the results for the total sample. It shows that the email inquiries led to an invitation for a viewing of a school in 49, 41, and 45 percent of the time when the child concerned had no medical condition, ADHD, and T1DM, respectively. The differences across experimental conditions were statistically significant, $\chi^2(2, N = 2,154) = 10.62, p < .01$. The second and third row of Table 2 present the data according to whether the child concerned was a boy or a girl. When it was a boy, the email inquiries led to an invitation for a viewing of a school in 51, 40, and 44 percent of the time when the child concerned had no medical condition, ADHD, and T1DM, respectively. The differences across experimental conditions were statistical significant, $\chi^2(2, N = 1,057) = 8.48, p < .05$. When it was a girl, the differences across experimental conditions were not statistically significant, $\chi^2(2, N = 1,097) = 3.21, p = .200$. Finally, Table 1 arranges the data in public and private schools. Public schools

invited the family for a viewing in 47, 43, and 46 percent of the time when the child concerned had no medical condition, ADHD, and T1DM, respectively. These differences were not statistically significant, $\chi^2(2, N = 1,625) = 2.62, p = .270$. However, there were statistically significant differences across experimental conditions among private schools, $\chi^2(2, N = 529) = 14.93, p < .001$. Private schools invited the family for a viewing in 53, 33, and 42 when the child concerned had no medical condition, ADHD, and T1DM, respectively.

Table 2. Percentage of inquiries that led to an invitation for a visit

| | Control | ADHD | T1DM | Hypothesis testing |
|--------------|--------------------|--------------------|--------------------|--|
| Total sample | 49.0% (355/725) | 40.5% (295/729) | 44.9% (314/700) | $\chi^2(2, N = 2,154) = 10.62,$ $p < .01$ |
| Boy | 50.6% (178/352) | 39.8% (142/357) | 44.0% (153/348) | $\chi^2(2, N = 1,057) = 8.48,$ $p < .05$ |
| Girl | 47.5% (177/373) | 41.1% (153/372) | 45.7% (161/352) | $\chi^2(2, N = 1,097) = 3.21,$ $p = .200$ |
| Public | 47.3% (246/520) | 42.5% (242/569) | 45.7% (245/536) | $\chi^2(2, N = 1,625) = 2.62,$ $p = .270$ |
| Private | 53.2% (109/205) | 33.1% (53/160) | 42.1% (69/164) | $\chi^2(2, N = 529) = 14.93,$ $p < .001$ |

Notes: Actual fractions (number of cases) are given in parentheses.

Table 3 presents the percentage of email inquiries that led to promising placement responses from schools. Again, the first row gives the results for the total sample across experimental conditions. Twenty-one, 15, and 18 percent of the email inquiries led to a promising placement response when the child concerned had no medical condition, ADHD, and T1DM, respectively. These differences were statistically significant, $\chi^2(2, N = 2,154) = 9.02, p < .05$. The promising placement response rates were 21, 15, and 17 percent when the child concerned was a boy and had no medical condition, ADHD, and T1DM, respectively. Corresponding percentages were 21, 15, and 19 percent when the child concerned was a girl. The differences across experimental conditions were statistically significant when the child was a boy, $\chi^2(2, N = 1,057) = 4.87, p < .10$, but not when the child was a girl, $\chi^2(2, N = 1,097) = 4.28, p = .118$. Finally, public schools provided promising placement responses in 21, 16, and 18 percent of the time while private schools provided promising placement responses in 22, 11, and 16 percent of the time when the child concerned had no medical condition, ADHD, and T1DM, respectively. The differences across experimental conditions were statistically significant among private schools, $\chi^2(2, N = 529) = 8.26, p < .05$, but not among public schools, $\chi^2(2, N = 1,625) = 3.59, p = .167$.

Table 3. Percentage of inquiries that led to a positive placement response

| | Control | ADHD | T1DM | Hypothesis Testing |
|--------------|--------------------|--------------------|--------------------|---|
| Total sample | 21.0% (152/725) | 15.0% (109/729) | 17.6% (123/700) | $\chi^2(2, N = 2,154) = 9.02$, $p < .05$ |
| Boy | 20.7% (73/352) | 14.6% (52/357) | 16.7% (58/348) | $\chi^2(2, N = 1,057) = 4.87$, $p < .10$ |
| Girl | 21.2% (79/373) | 15.3% (57/372) | 18.5% (65/352) | $\chi^2(2, N = 1,097) = 4.28$, $p = .118$ |
| Public | 20.6% (107/520) | 16.2% (92/569) | 17.9% (96/536) | $\chi^2(2, N = 1,625) = 3.59$, $p = .167$ |
| Private | 22.0% (45/205) | 10.6% (17/160) | 16.5% (27/164) | $\chi^2(2, N = 529) = 8.26$, $p < .05$ |

Notes: Actual fractions (number of cases) are given in parentheses.

To sum up, three main results are found. First, unequal treatment is found between children with ADHD or T1DM and children who report no medical condition in their applications. Second, unequal treatment seems to be larger when the child concerned has ADHD than when the child has T1DM. Thirdly, the overall response rate is higher among private than among public schools, but unequal treatment are mostly concentrated to private schools.

3.2. Regression analysis

Table 4 presents the marginal effects of being a child with ADHD and T1DM, respectively, on the probability of receiving an invitation to a viewing of a school (Models *i–ii*) or a promising placement response (Models *iii–iv*), estimated using probit reression models. All regressions models included a dummy variable for whether the child was a girl, a dummy variable for whether the school was public, county dummies, and dummies for the days when emails were dispatched. Corresponding logit and linear probability models (which are available upon request) yielded very similar results. Table 5 presents post-regression hypothesis tests for differences in marginal changes in the outcome variables for various comparisons that we do below.

Table 4. School response probabilities estimated by probit regressions

| | Model <i>i</i> Invitation | Model <i>ii</i> Invitation | Model <i>iii</i> Placement | Model <i>iv</i> Placement |
|----------------------|------------------------------|-------------------------------|-------------------------------|------------------------------|
| ADHD | −0.082*** (0.026) | −0.248*** (0.068) | −0.060*** (0.018) | −0.106** (0.048) |
| T1DM | −0.045* (0.027) | −0.209*** (0.070) | −0.041** (0.018) | −0.087* (0.047) |
| Girl | −0.002 (0.022) | −0.134* (0.070) | 0.015 (0.016) | −0.077 (0.051) |
| Public | 0.019 (0.026) | −0.135** (0.059) | 0.002 (0.019) | −0.094* (0.048) |
| Girl × Public | | 0.142* (0.083) | | 0.133** (0.067) |
| ADHD × Girl | | 0.106 (0.109) | | −0.008 (0.084) |
| ADHD × Public | | 0.206** (0.085) | | 0.083 (0.074) |
| ADHD × Girl × Public | | −0.083 (0.120) | | −0.009 (0.095) |
| T1DM × Girl | | 0.187* (0.104) | | 0.080 (0.094) |
| T1DM × Public | | 0.202** (0.086) | | 0.076 (0.073) |
| T1DM × Girl × Public | | −0.183* (0.108) | | −0.080 (0.066) |
| Observations | 2,154 | 2,154 | 2,154 | 2,154 |
| Pseudo R^2 | 0.024 | 0.028 | 0.071 | 0.076 |

Notes: The table presents the marginal changes in the probability of receiving an invitation or a placement promise from a school estimated using probit regression models. Standard errors are given in parentheses. Corresponding linear probability models and logit models generate similar results. The dependent variable is an invitation dummy in Models *i–ii* and a placement promise dummy in Models *iii–iv*. Also included in each regression are county dummies and email dispatching day dummies. Description of all variables are provided in Table 1. *** $p < .01$, ** $p < .05$, * $p < .10$.

According to the results of the first specification (Model *i*) an email inquiry had 8 percentage points lower probability of receiving an invitation for a viewing of a school when the child concerned had ADHD than when the child had no medical condition. An email inquiry had almost 5 percentage points lower probability of receiving an invitation for a viewing at a school when the child concerned had T1DM compared to when the child had no medical condition.

Next, a full set of interaction variables were added in Model *ii*. It shows that an email inquiry resulted in 25 percentage points lower probability of receiving an invitation for a viewing at a private school when the child concerned was a boy with ADHD than when the

child was a boy with no medical condition. Similarly, an email inquiry resulted in 21 percentage points lower probability of receiving an invitation for a viewing at a private school when the child concerned was a boy with T1DM than when the child was a boy with no medical condition.

In public schools, boys with ADHD had about 4 percentage points lower probability of receiving an invitation than boys with no medical condition. For boys with T1DM the probability of receiving an invitation from public schools was less than 1 percentage point lower than for boys with no medical condition. Both these differences were statistically insignificant.

Turning to girls with ADHD, we find that the probability of receiving an invitation from a private school was about 14 percentage points lower than for a girl with no medical condition. The difference between girls with ADHD and girls with no medical condition in public schools was statistically insignificant. This was also the case when girls with T1DM was compared to girls with no medical condition in private as well as in public schools.

A comparison between girls and boys yields small and statistically insignificant differences. In the private schools, the difference of receiving an invitation is around 3 percentage points higher for boys with ADHD than for girls with ADHD. However, in public schools the opposite occurs. Girls with ADHD had about 3 percentage points higher probability of receiving an invitation than boys with ADHD.

The third specification (Model *iii*) shows that the propensity of receiving a promising placement response was about 6 percentage points lower for a child with ADHD than for a child with no medical condition. Further, the propensity of receiving a promising placement response was about 4 percentage points lower for a child with T1DM than for a child with no medical condition.

When the full set of interactions was included in Model *iv* it emerges that boys with ADHD had almost 11 percentage points lower probability of receiving a promising placement in private schools than boys with no medical condition. For boys with T1DM the difference in the probability of receiving a promising placement was about 9 percentage points lower in private schools compared to boys with no medical condition. As regards public schools the difference between boys with ADHD or T1DM and boys with no medical condition were small.

For girls with ADHD the propensity of receiving a promising placement in a private school was about 11 percentage points lower than for a girl with no medical condition. The difference between girls with ADHD and girls with no medical condition in public schools amounted to 4 percentage points.

Finally, the difference in the propensity of receiving a promising placement between girls with T1DM and girls without no medical condition was very small in private as well as in public schools.

Table 5. Post-regression hypothesis tests for differences in marginal changes

| Hypothesis | Δ | χ^2 |
|---|----------|----------|
| <i>Hypothesis test for Model i</i> | | |
| T1DM vs ADHD | −0.037 | 1.92 |
| <i>Hypothesis tests for Model ii</i> | | |
| Control-boy-public vs ADHD-boy-public | −0.042 | 1.32 |
| Control-boy-public vs T1DM-boy-public | −0.007 | 0.08 |
| Control-girl-private vs ADHD-girl-private | −0.142 | 3.81* |
| Control-girl-public vs ADHD-girl-public | −0.019 | 0.50 |
| Control-girl-private vs T1DM-girl-private | −0.022 | 0.14 |
| Control-girl-public vs T1DM-girl-public | −0.003 | 0.17 |
| ADHD-boy-private vs ADHD-girl-private | −0.028 | 0.12 |
| ADHD-boy-public vs ADHD-girl-public | 0.031 | 0.47 |
| T1DM-boy-private vs T1DM-girl-private | 0.053 | 0.45 |
| T1DM-boy-public vs T1DM-girl-public | 0.012 | 0.00 |
| <i>Hypothesis test for Model iii</i> | | |
| T1DM vs ADHD | −0.019 | 1.00 |
| <i>Hypothesis tests for Model iv</i> | | |
| Control-boy-public vs ADHD-boy-public | −0.023 | 1.17 |
| Control-boy-public vs T1DM-boy-public | −0.011 | 0.45 |
| Control-girl-private vs ADHD-girl-private | −0.114 | 3.53* |
| Control-girl-public vs ADHD-girl-public | −0.040 | 3.05* |
| Control-girl-private vs T1DM-girl-private | −0.007 | 0.14 |
| Control-girl-public vs T1DM-girl-public | −0.011 | 1.92 |
| ADHD-boy-private vs ADHD-girl-private | −0.085 | 1.51 |
| ADHD-boy-public vs ADHD-girl-public | 0.039 | 1.03 |
| T1DM-boy-private vs T1DM-girl-private | 0.003 | 0.00 |
| T1DM-boy-public vs T1DM-girl-public | 0.056 | 0.84 |

Notes: Δ gives the difference in the marginal change of outcome variable between two types of email inquiries. *** $p < .01$, ** $p < .05$, * $p < .10$.

4. Conclusions and discussion

While much attention has been paid to discrimination against disabled individuals in the labor market, less is known about the extent to which children with disabilities are discriminated against in school. We add knowledge to this area by presenting results from a field experiment conducted in order to study discrimination against children with ADHD and T1DM whose parents makes inquiries about the compulsory preschool class admission in Sweden.

Our overall results reveal discrimination against children with ADHD as well as with T1DM. The results are in line with results from a field experiment in the US, which documented low response rates from schools to children with a special need.⁷ The overall result in our study hides an interesting pattern. Our findings suggests that private schools discriminate against boys as well as against girls with ADHD. Furthermore, our results also suggest that boys with T1DM are discriminated against when their parents makes inquiries about admission to private schools. Finally, our results also suggests that girls with ADHD are discriminated against when their parents makes inquiries to public schools.

To sum up, we can conclude that children with certain types of disabilities, i.e. ADHD and T1DM seem to have less access to schools in Sweden in comparison with children with no medical condition. The discrimination is more prevalent in private than in public schools. The policy relevance of the results is obvious since limited access to school admission may affect children negatively in different ways. Research has shown that preschool attendance is positively related to an individual's years of educational degree completed later in life. Furthermore, preschool attendance is also positively related to an individual's employment and earnings as an adult.⁸ Also, if children with disabilities are discriminated against when they apply for school placements this may increase school segregation. A likely result of this type of discrimination is that children with disabilities are referred to less attractive schools than children without such disabilities. Thus, the fact that children with disabilities are discriminated against in school admission have may long run for consequences, and is a potential obstacles for individuals with certain types of disabilities to succeed on the labor market as adults.

⁷ See Bergman & McFarlin Jr (2020). A field experiment conducted in Spain has revealed discrimination against children with homosexual parents, see Diaz-Serrano & Meix-Llop (2016).

⁸ See Dietrichson et al (2018).

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