



# **SCHOOL CHARACTERISTICS AND PARENTS' SECONDARY SCHOOL PREFERENCES**

The case of Ghent and Antwerp

Nele Havermans, Jolien De Norre & Sam Desiere



# **SCHOOL CHARACTERISTICS AND PARENTS' SECONDARY SCHOOL PREFERENCES**

The case of Ghent and Antwerp

**Nele Havermans, Jolien De Norre & Sam Desiere**

**Promotor: Nele Havermans**

Research paper SONO/2020/OL3.2/2

Gent, 2020

Het Steunpunt Onderwijsonderzoek is een samenwerkingsverband van UGent, KU Leuven, VUB, UA en ArteveldeHogeschool.

Gelieve naar deze publicatie te verwijzen als volgt:

Havermans, N., De Norre, J., & Desiere, S. (2020). *School characteristics and parents' secondary school preferences*. Gent: Steunpunt Onderwijsonderzoek.

Voor meer informatie over deze publicatie [nele.havermans@kuleuven.be](mailto:nele.havermans@kuleuven.be)

D/2020/4718/030 - ISBN 9789088361166

Deze publicatie kwam tot stand met de steun van de Vlaamse Gemeenschap, Ministerie voor Onderwijs en Vorming.

In deze publicatie wordt de mening van de auteur weergegeven en niet die van de Vlaamse overheid. De Vlaamse overheid is niet aansprakelijk voor het gebruik dat kan worden gemaakt van de opgenomen gegevens.

© 2020 STEUNPUNT ONDERWIJSONDERZOEK

p.a. Coördinatie Steunpunt Onderwijsonderzoek  
UGent - Vakgroep Onderwijskunde  
Henri Dunantlaan 2, BE 9000 Gent

Deze publicatie is ook beschikbaar via [www.steunpuntsono.be](http://www.steunpuntsono.be)

# Voorwoord

We onderzoeken welke schoolkenmerken een invloed hebben op de voorkeuren van ouders voor secundaire scholen. Hierbij nemen we de afstand van de school tot de woonplaats, de schoolsamenstelling, het onderwijsaanbod in de bovenbouw van de school, en het net van de school op. Ook zijn we geïnteresseerd in verschillen naargelang de sociaaleconomische achtergrond en thuistaal van het gezin. De analyses van dit rapport zijn uitgevoerd op data van het centraal aanmeldingsregister (CAR) van Gent en van Antwerpen.

# Inhoud

<b>Voorwoord</b>	<b>1</b>
<b>Inhoud</b>	<b>2</b>
<b>Lijst van tabellen en figuren</b>	<b>3</b>
<b>Beleidssamenvatting</b>	<b>4</b>
<b>Introduction</b>	<b>8</b>
<b>Literature review</b>	<b>9</b>
<b>Focus of this study</b>	<b>13</b>
<b>Data and methods</b>	<b>14</b>
<b>Results</b>	<b>22</b>
<b>Conclusion</b>	<b>31</b>
<b>Appendix</b>	<b>34</b>
<b>Appendix 1. Descriptive values for the original school enrollment data</b>	<b>34</b>
<b>Appendix 2. Descriptive values for socioeconomic and ethnic school composition by stream</b>	<b>34</b>
<b>Appendix 3. Distribution of educational network by stream</b>	<b>34</b>
<b>Appendix 4. Distribution of curriculum in upper secondary grades by stream</b>	<b>35</b>
<b>Appendix 5. Descriptive values for school size</b>	<b>35</b>
<b>Appendix 6. School composition by curriculum in upper secondary grades, and by educational network</b>	<b>35</b>
<b>Appendix 7. Educational network by curriculum in upper secondary grades</b>	<b>36</b>
<b>Appendix 8. Rank-ordered logit regression of school preferences with distance from home to school, school composition and school size of the school</b>	<b>36</b>
<b>References</b>	<b>38</b>

# Lijst van tabellen en figuren

Table 1. Number of pupils in final dataset of Ghent and Antwerp, by stream and in total .....	15
Table 2. Proportion of low SES students enrolling in the A-stream, B-stream and in total in Ghent and Antwerp.....	16
Table 3. Proportion of students with a non-Dutch home language enrolling in the A-stream, B-stream and in total in Ghent and Antwerp .....	17
Table 4. Distribution of parents' school preferences (% of preferences) according to distance between home municipality and school's address by stream for Ghent and Antwerp. ....	17
Table 5. Number of schools in the Ghent and Antwerp data, in total and by stream .....	18
Table 6. Descriptive statistics for socioeconomic and ethnic school composition (school year 2017-2018)....	19
Table 7. Descriptive statistics for school-level variables (school year 2017-2018).....	19
Table 8. Curriculum in upper secondary grades, by school .....	20
Table 9. Rank-ordered logit regression of school preferences with distance from home to school .....	22
Table 10. Rank-ordered logit regression of school preferences with distance from home to school, model with interaction between distance and parents' SES (Ghent and Antwerp) .....	23
Table 11. Rank-ordered logit regression of school preferences with distance from home to school, model with interaction between distance and home language (Ghent).....	23
Table 12. Rank-ordered logit regression of school preferences with distance from home to school and school composition.....	24
Table 13. Rank-ordered logit regression of school preferences with distance from home to school and school composition, with interaction effect between school composition and parents' SES .....	24
Table 14. Rank-ordered logit regression of school preferences with distance from home to school and school composition, with interaction effect between school composition and home language .....	25
Table 15. Rank-ordered logit regression of school preferences with distance from home to school, school composition and curriculum of the school (Ghent and Antwerp) .....	26
Table 16. Rank-ordered logit regression of school preferences with distance from home to school, school composition and curriculum of the school, with interaction effects between curriculum and parents' SES (Ghent and Antwerp).....	27
Table 17. Rank-ordered logit regression of school preferences with distance from home to school, school composition and curriculum of the school, with interaction effects between curriculum and home language (Ghent) .....	28
Table 18. Rank-ordered logit regression of school preferences with distance from home to school, school composition and educational network of the school (Ghent and Antwerp).....	29
Table 19. Rank-ordered logit regression of school preferences with distance from home to school, school composition and educational network of the school, with interaction effect between educational network and SES status (Ghent and Antwerp).....	29
Table 20. Rank-ordered logit regression of school preferences with distance from home to school, school composition and educational network of the school, with interaction effect between educational network and home language (Ghent) .....	30

# Beleidssamenvatting

In dit rapport trachtten we een beter inzicht te verkrijgen in de schoolkeuzes van ouders in Gent en Antwerpen voor het eerste jaar van het secundair onderwijs. We onderzoeken welke schoolkenmerken een invloed hebben op de voorkeuren voor scholen, die aan de basis liggen van de schoolkeuze van ouders. Hierbij nemen we de afstand van de school tot de woonplaats, de schoolsamenstelling, het onderwijsaanbod in de bovenbouw van de school en het net van de school op. Ook zijn we geïnteresseerd in verschillen naargelang de sociaaleconomische achtergrond en thuistaal van het gezin.

De analyses van dit rapport zijn uitgevoerd op data van het centraal aanmeldingsregister (CAR) van Gent en van Antwerpen. We gebruiken de aanmelddata van 2019 (voor het schooljaar 2019-2020) voor leerlingen die naar het eerste jaar van het secundair onderwijs gaan. Leerlingen uit voorrangsgroepen (broers en zussen van leerlingen en kinderen van leerkrachten) nemen we niet op in de analyses, omdat ze voorrang krijgen bij de toewijzing van scholen. Ook leerlingen die zich aanmelden voor het buitengewoon secundair onderwijs werden niet in de analyse opgenomen.

De dataset omvat de schoolvoorkeuren van 3.257 leerlingen (2.840 in de A-stroom en 417 in de B-stroom) voor 38 scholen in Gent, en van 4.973 leerlingen (3.901 in de A-stroom en 1.072 in de B-stroom) voor 55 scholen in Antwerpen. Het toewijzingssysteem in Gent en Antwerpen is nagenoeg bestendig tegen strategisch gedrag.

De afhankelijke variabele zijn de schoolvoorkeuren van ouders. Deze variabele is gemeten door de rangorde van scholen die ouders in het online aanmeldingssysteem opgegeven hebben. De meeste ouders hebben 3 scholen gerangschikt, maar in de B-stroom kozen de meeste (rond een derde) van de ouders slechts 1 school. De onafhankelijke variabelen zijn gemeten op het niveau van de ouders (of de leerling) en de scholen. Op het niveau van de ouders (of de leerling) meten we de sociaaleconomische status (indicatorleerling of niet), de thuistaal (Nederlands of niet), en de afstand van de school tot de gemeente van hun woonplaats. De onafhankelijke variabelen op schoolniveau zijn het percentage indicatorleerlingen, het percentage leerlingen met een niet-Nederlandse thuistaal, het onderwijsaanbod van de school in de bovenbouw, en het onderwijsnet. Informatie over de thuistaal van de leerling was enkel beschikbaar in de data van Gent.

Doorheen de analyses vonden we drie verbanden tussen schoolkenmerken en ouderlijke schoolvoorkeuren die consistent waren voor alle leerlingen, en robuust bleken doorheen de verschillende modellen. In de eerste plaats verkiezen ouders scholen die dicht bij huis zijn. Een dergelijke voorkeur voor de nabijheid van een school kan verklaard worden door de lagere pendelkosten die hieraan verbonden zijn, en/of de integratie van de school in de buurt (Collins & Snell, 2000; Jacobs, 2013; Burgess, Greaves, Vignoles & Wilson, 2014). In tegenstelling tot de bevindingen van een recente studie over de schoolvoorkeuren in het Vlaamse kleuteronderwijs (Havermans, Wouters, & Groenez, 2018), verschilt deze voorkeur voor nabijheid niet naargelang de sociaaleconomische achtergrond van de ouders.

Ten tweede blijkt in de verschillende analysemodellen dat de samenstelling van de school een significant verband toont met de schoolvoorkeuren van ouders. Ouders hebben een voorkeur voor scholen met een lager aandeel van leerlingen met een lage sociaaleconomische status (in Gent en Antwerpen) of met een lager aandeel van leerlingen waarvan de thuistaal niet het Nederlands is (in Gent). Deze bevinding geldt niet voor ouders van leerlingen die in Gent zich in de B-stroom aanmelden. We vonden hierbij geen interactie-effecten tussen de voorkeur voor schoolsamenstelling en de eigen sociaaleconomische status of thuistaal, met andere woorden: dit geldt evengoed voor ouders die zelf een lagere sociaaleconomische status hebben en voor ouders die thuis niet het Nederlands spreken, als voor ouders met een hogere sociaaleconomische status en Nederlandstalige ouders. Deze bevinding staat in tegenstelling tot vorig onderzoek waaruit bleek dat voorkeuren voor schoolsamenstelling sterker zijn voor groepen met een hogere sociaaleconomische status of voor ouders van etnisch-culturele meerderheden (Bifulco, Ladd, Ross, 2009; Glenn, 2011; Havermans, Wouters & Groenez, 2018; Saporito, 2003, 2009). Een mogelijke verklaring voor het gebrek aan een interactie-effect tussen de schoolvoorkeuren en de achtergrond van ouders is dat (de perceptie van) schoolkwaliteit kan samenhangen met de schoolsamenstelling. Aangezien we in onze data niet over een geschikte indicator voor schoolkwaliteit beschikken, kunnen we deze verklaring niet testen.

Ten derde blijkt uit de analyses dat ouders van leerlingen uit de A-stroom met een niet Nederlandse thuistaal in Gent een voorkeur hebben voor scholen die enkel ASO-richtingen aanbieden ten opzichte van scholen die ook niet-ASO richtingen aanbieden. Aangezien thuistaal als variabele niet beschikbaar was in de data voor Antwerpen, konden we niet testen of dit interactie-effect ook in Antwerpen te vinden was. De bevinding lijkt echter in de lijn te liggen met de resultaten van vorige studies die aantoonde dat ouders met een migratie-achtergrond een sterkere voorkeur hebben voor academische richtingen ten opzichte van beroepsgeoriënteerde richtingen (Tjaden & Hunkler, 2017; Jackson, Jonsson & Rudolphi, 2012; Heath & Brinbaum, 2007; Kao & Tienda, 1995).

Uit de analyses komen ook enkele verschillen naar voor tussen schoolvoorkeuren in Gent en in Antwerpen. Ten eerste vinden we dat, hoewel alle ouders een school op een kortere afstand van huis verkiezen, afstand een grotere impact bleek te hebben in Gent dan in Antwerpen. Dit kan verklaard worden door een sterkere concentratie van scholen in het stadscentrum in Gent. In Antwerpen hebben ouders meer keuze-opties voor scholen in hun eigen gemeente, en wordt afstand dus minder bepalend.

Ten tweede vonden we verschillende resultaten met betrekking tot voorkeuren voor het studieaanbod in de bovenbouw van de school. In Gent verkiezen ouders scholen waar geen ASO-richtingen worden aangeboden boven zowel scholen met ASO en niet-ASO richtingen als boven scholen met enkel ASO-richtingen. In Antwerpen verkiezen ouders dan weer scholen die enkel ASO-richtingen aanbieden boven scholen die geen ASO-richtingen aanbieden. In beide steden vonden we geen significante interactie-effecten met de sociaaleconomische status van de ouders. Aangezien er nog niet veel onderzoek is verricht naar ouderlijke voorkeuren voor de verschillende onderwijsvormen binnen scholen, kunnen we geen hypothese formuleren ter verklaring van deze bevindingen, en waarom ze verschillen tussen Gent en Antwerpen. Het verder verkennen van ouderlijke voorkeuren voor schoolaanbod en onderwijsvorm in de bovenbouw van het secundair



onderwijs zou daarom een interessante piste kunnen zijn in toekomstig onderzoek. Hierbij kan het bijvoorbeeld ook interessant zijn om voorkeuren voor domeinscholen mee te nemen.

Ten derde bleek dat het onderwijsnet van de school enkel in Antwerpen een significant verband houdt met de ouderlijke schoolvoorkeuren. Ouders van leerlingen uit de A-stroom verkiezen hier scholen uit het Gemeenschapsonderwijs boven scholen uit het Vrij Gesubsidieerd Onderwijs. Ouders van leerlingen uit de B-stroom verkiezen scholen uit het Gemeenschapsonderwijs boven scholen uit het Officieel Gesubsidieerd Onderwijs. In Gent werd geen significant verband gevonden. Dit suggereert dat voorkeuren voor onderwijsnet meer context-specifiek zijn dan verwacht. Verder onderzoek is nodig om hier verklaringen voor te kunnen voorzien.

Tot slot vonden we enkele verschillen in voorkeuren tussen ouders van leerlingen uit de A-stroom en de B-stroom. Over het algemeen waren er weinig significante resultaten bij leerlingen uit de B-stroom vergeleken met leerlingen uit de A-stroom. Aangezien het aantal B-stroom leerlingen in de data lager was, en deze leerlingen zich bovendien vaker voor slechts één school aanmeldden, is het gebrek aan significante resultaten voor de B-stroom wellicht aan deze methodologische kwesties te wijten. Niettemin zou dit in verder onderzoek verder onderzocht moeten worden.

Aan de resultaten in het rapport zijn verschillende beperkingen verbonden. Zo is een eerste beperking het kleine aantal leerlingen uit de B-stroom, zoals besproken in de vorige paragraaf. Ten tweede liet het relatief lage aantal scholen in Gent en Antwerpen niet toe om onderwijsnet en aanbod in de bovenbouw samen in één model toe te voegen. Ten derde bevatten de data geen informatie over ouders die aanmelden bij scholen buiten de LOP's van Antwerpen of Gent. Hierbij kan het gaan om ouders die bewust hun kind naar een school buiten Antwerpen of Gent sturen, of door ouders die 'op veilig spelen' en hun kind ook aanmelden in een school buiten het LOP. De schoolvoorkeuren zoals gegeven in het centraal aanmeldregister reflecteren daarom wellicht niet alle reële voorkeuren van ouders. Tot slot was de analyse beperkt door de beschikbare variabelen en indicatoren. Zo was het niet mogelijk om (de perceptie van) schoolkwaliteit aan de analyses toe te voegen, wat nochtans één van de belangrijkste factoren in de schoolkeuze van ouders zou zijn. Ook hadden we geen toegang tot het thuisadres van de leerlingen en werden we daardoor gedwongen tot het gebruik van een proxyvariabele (middenpunt van de thuisgemeente). Thuistaal van de leerling was niet beschikbaar in de data voor Antwerpen, waardoor we ook niet konden onderzoeken of de voorkeuren van anderstalige gezinnen in Gent en Antwerpen in dezelfde mate verschilden met de voorkeuren van Nederlandstalige gezinnen.

Toekomstig onderzoek waarin de huidige studie wordt gerepliceerd op andere centrale aanmeldregisters in Vlaanderen lijkt ons bijzonder waardevol. Dit zou toestaan om de robuustheid van de bevindingen uit deze studie te testen op een grotere dataset, en om contextuele factoren verder te onderzoeken. Andere onderzoeksmethoden zouden hierbij ook gebruikt kunnen worden om een beter inzicht te verkrijgen in een aantal van de onderzoeksresultaten. Zo zouden surveys of diepte-interviews inzicht kunnen verkrijgen in welke schoolkenmerken ouders belangrijk vinden, en hoe ze de scholen op hun ranglijst percipiëren op het vlak van schoolkwaliteit, schoolsamenstelling, en onderwijsfilosofie. Deze informatie kan gebruikt worden als aanvulling op bevindingen uit analyses op data van het aanmeldregister.

De resultaten uit deze studie hebben enkele beleidsimplicaties. Ten eerste, tonen de resultaten dat schoolsegregatie ten minste gedeeltelijk uit residentiële segregatie voorkomt, aangezien alle ouders een positieve voorkeur hebben voor de nabijheid van de school. Dit resultaat wordt ondersteund door een recente studie over de evolutie van de schoolsegregatie in Vlaanderen, dat rapporteerde dat de schoolse en residentiële segregatie gelijkaardige niveaus heeft voor leerlingen uit het secundair onderwijs (Havermans, Wouters & Groenez, 2018). Beleidsmakers dienen daarom ook voldoende aandacht te besteden aan het doen afnemen van residentiële segregatie, aangezien dit één van de belangrijkste mechanismes in schoolse segregatie blijft.

De bevinding dat alle ouders een voorkeur hebben voor scholen met een hoger aandeel aan hoge SES en/of Nederlandstalige leerlingen staat in tegenspraak met de hypothese dat alle ouders een tendens tot zelf-segregatie vertonen. Lage SES-ouders hebben immers ook een voorkeur voor scholen met veel hoge-SES leerlingen, en anderstalige ouders verkiezen ook scholen met veel Nederlandstalige leerlingen. Meer onderzoek is hierbij dan ook extra belangrijk om de rol van (de perceptie van) schoolkwaliteit te kunnen onderscheiden. De resultaten voor schoolsamenstelling suggereren wel dat schoolvoorkeuren niet in dezelfde mate tot een toename in schoolse segregatie leiden als in het kleuteronderwijs. Een recente studie naar de schoolvoorkeuren van Vlaamse ouders voor kleuterscholen toonde immers aan dat alle ouders een voorkeur hebben voor scholen met een sterke aanwezigheid van hun eigen sociale groep (Havermans, Wouters, & Groenez, 2018).

Desondanks blijft het niveau van schoolse segregatie in Vlaanderen aanzienlijk hoger in het secundair onderwijs dan in het basisonderwijs (Havermans, Wouters, & Groenez, 2018). Deze hogere mate van segregatie kan deels ook worden toegewijd aan de segregatie tussen onderwijsvormen in het secundair onderwijs (Wouters & Groenez, 2013). In de data uit Gent en Antwerpen kunnen we duidelijk waarnemen dat leerlingen die zich in de B-stroom aanmelden vaker uit een gezin komen met een lage SES of een andere thuistaal dan het Nederlands, dan leerlingen in de A-stroom. Aangezien niet alle scholen een B-stroom aanbieden, kan dit al in de eerste graad van het secundair onderwijs tot schoolsegregatie leiden.

Tot slot tonen onze resultaten ook hoe de schoolvoorkeuren van ouders context-specifiek blijken te zijn en enkele verschillen tonen tussen Antwerpen en Gent. Het lijkt ons belangrijk om dit verder te onderzoeken en ook andere contexten mee op te nemen. Deze bevinding onderschrijft ook het belang van steden, gemeentes, en lokale overlegplatformen in het inschrijvingsbeleid, aangezien het gemeentes toelaat om dergelijk beleid aan te passen aan hun specifieke context.

# Introduction

Increasing freedom of school choice has been a focal policy objective in different school systems (e.g. United States, Sweden, Spain) in the past decades. Freedom of school choice is believed to increase school quality, access of disadvantaged pupils to quality schools and parental school involvement in contrast to government-controlled school choice systems (Carlson, 2014; Harris, 2010). The research literature does however also point to an unwanted side-effect of freedom of school choice: liberating parental school choice often leads to more socioeconomic and racial school segregation (Bifulco & Ladd, 2006; Denessen, Driessena, & Slegers, 2005; Schneider, Schuchart, Weishaupt, & Riedel, 2012). Getting a better insight in the dynamic nature of parents' school preferences can be a useful tool to guide desegregation policies, as parents' school preferences are almost directly translated into school choices in educational systems with freedom of school choice.

In this study, we analyse the school preferences of students who apply to the first grade of secondary school in Ghent and Antwerp. Both cities are ethnically and socially diverse cities situated in Flanders, the northern, Dutch-speaking part of Belgium. Flanders forms an interesting context to investigate school preferences of parents for several reasons. Freedom of school choice has been embedded in the Belgian (and thus also the Flemish) educational system since the end of the 19th century to establish a balance between Catholic and government-lead schools. In addition, the Flemish levels of segregation and inequalities between ethnic and social groups are among the highest of OECD countries (PISA, 2015) (Jenkins et al., 2008). Enrollment in schools is free of charge, but school can charge fees at their own discretion. Schools can refuse a student only under certain strict conditions specified by law.

We focus on parents' preferences for the following five school characteristics: 1) proximity of the school; 2) school composition; 3) curriculum in upper secondary grades; and 4) educational network. For each school characteristic, we investigate how they are related to parents' preferences and whether these preferences differ according to parents' socioeconomic and ethnic background. The analyses are conducted on an administrative dataset that comprises parents' secondary school preferences for the school year 2019-2020 in the urban areas of Ghent and Antwerp. We also have information on certain relevant parent/pupil characteristics (distance to schools, socioeconomic background) and school characteristics (socioeconomic composition, ethnic composition, curriculum, educational network, address of the school). The interrelations between parents' school preferences, parents' and pupils' background characteristics and school characteristics are explored by means of rank-ordered logit regression analyses.

# Literature review

Parents' school preferences are formed by an interplay between characteristics of the schools in their choice set, their own background characteristics and some system characteristics (Fiel, 2015). In the following paragraphs we discuss the different components of parents' school preferences for secondary schools and whether these preferences are affected by parents' social and ethnic background.

## School proximity

An important component in parental school preferences is the proximity of the school to their place of residence. Because of the importance attached to the embedment of the school in the local community and the financial and social costs of commuting time, it is assumed by most scholars that all parents prefer schools at a smaller distance (Collins & Snell, 2000; Jacobs, 2013; Burgess, Greaves, Vignoles, & Wilson, 2014).

There are however some studies that make distinctions in the importance of this preference, depending on parents' background or residential neighborhood. First of all, O'Shaughnessy (2007) and Schneider et al. (2012) found that ethnic minorities and groups with a lower socio-economic status have a stronger preference for proximity than majority, high-status groups. It is suggested that the burden of commuting costs is more decisive for these parents. An additional distinction relates to the parents' residential neighborhood. Jenkins, Micklewright, & Schnepf (2008) found that the importance of proximity decreases if parents have more school options in their neighborhood. Finally, the preference for proximity can be counterbalanced by other preferences. For instance, parents may prefer a more distant school with a "better" school composition over a school nearby their home. There is evidence that high SES parents who live in socioeconomically disadvantaged neighborhoods are more likely to choose a school outside the neighborhood, and thus at a larger distance (Havermans et al. 2018b; Yang & Gustafsson, 2016).

## Ethnic and socioeconomic school composition

A large part of the literature on school choice/preferences and school segregation discusses the differential preferences for ethnic and socioeconomic school composition. There is no consensus in the research literature on the direction in which school preferences for the composition of the school go and whether they are similar for different ethnic and socioeconomic groups.

Some studies find that social and ethnic groups tend to prefer schools with a high proportion of members of their own group, and that all groups have a tendency to self-segregate without rejecting members of out-groups (Bifulco & Ladd, 2006; Booker, Zimmer, & Buddin, 2005; Denessen, Driessena, & Slegers, 2005; Weiher & Tedin, 2002).

There are however other studies that find that only high-status groups engage in such self-segregation, and that ethnocentrism is not as neutral as the aforementioned theory suggests. Groups with lower social status, such as non-whites and poor families, have been found to demonstrate weaker preferences for racial and socioeconomic school composition (Bifulco, Ladd, & Ross, 2009; Glenn, 2011; Saporito, 2003, 2009). A potential explanation for the weaker preferences for school composition among groups with a lower social status is the trade-off hypothesis. This theory poses that low-status parents face a trade-off between a preference for high-quality schools (which often coincides with the presence of pupils from a more advantaged background) and schools with a high proportion of pupils with a similar background (Hastings, Kane, & Staiger, 2009). Evidence for the trade-off hypothesis was found in a study on parents' preferences for pre-primary schools in Flanders (Havermans, Wouters, & Groenez, 2018). The analysis found that high SES and native parents have a stronger preference for schools with members of their own 'social group' compared to low SES or non-Dutch speaking parents.

## School quality

Although one can expect that all parents prefer to send their children to a high-quality school, studies often report that low-status families have a weaker preference for school quality than high-status families (Ball, Vincent, & Ball, 1998; Burgess et al., 2014; Kristen, 2008; Teske & Schneider, 2001; Havermans et al., 2018). An often-used explanation stems from Bourdieu's cultural capital theory and states that families with a higher socioeconomic status tend to better understand the importance of education in society and attach more significance to status maintenance (Sikkink & Emerson, 2008).

An alternative explanation states that groups with a low socioeconomic status or ethnic minorities are less informed about the quality of schools in their neighborhood and the overall system of school enrollment and therefore attach more importance to other criteria, such as proximity (Ball et al., 1998; Burgess et al., 2014; Kristen, 2008; Teske & Schneider, 2001). Availability and intelligibility of information on local school quality is indeed an important link in understanding school preferences. In an experimental study, Hastings & Weinstein (2008) revealed that once presented with simplified information on school test scores, parents changed their school choices to higher scoring schools. This was especially the case for disadvantaged families.

The element of school quality poses a conceptualization problem. In educational systems with centralized testing, test scores can be used as an indication of the school's quality if they are made public. However, yearly test scores disaggregated at the school level can be very volatile and thus imprecise (Kane & Staiger, 2002). Outcome-based measures of school quality also do not measure school effectiveness, i.e. whether a school causes improvements in student outcomes (Abdulkadiroglu et al., 2017). In addition, parents can have different views on what constitutes a high-quality school. Academic achievement may be the main element for some parents, but the concept of school quality can also be constructed based on aspects such as student well-being or school climate (Jacob & Lefgren, 2007). Finally, there is evidence that parents' perception of school quality is informed by the proportion of high-status students (Rothstein, 2006; Abdulkadiroglu et al., 2017; Havermans, Wouters, & Groenez, 2018). Measuring school quality is therefore not a straightforward task, and is easily confounded with school composition factors.

## School philosophy

An important argument in favor of school choice relates to the parents' freedom to choose a school with a philosophy they relate to, be it religious, pedagogical, or other. In the literature, there is strong evidence that religious parents tend to prefer schools with the same denomination for their children, and that this preference is stronger for parents with higher levels of religiosity (Denessen et al., 2005; Cohen-Zada & Sander, 2008).

In Flanders, one way to distinguish school philosophies are the educational networks (groupings of schools according to funding and management type). There are three educational networks in Belgium: the schools financed and organised by the Flemish community (“GO – Gemeenschapsonderwijs”); the subsidized schools run by municipalities or provinces (“OGO – Officieel Gesubsidieerd Onderwijs”); and the subsidized, privately run educational network (“VGO – Vrij Gesubsidieerd Onderwijs”). The large majority of schools in the latter network are Catholic schools. However, there remains a lot of diversity within these school networks, and we therefore should be very careful in interpreting school network as a proxy for school philosophy. In Flemish pre-primary school choice, preferences for educational network are very small and differ only slightly according to parents' socioeconomic and ethnic background (Havermans, Wouters & Groenez, 2018). Non-Dutch speaking parents had a stronger positive preference for schools of the subsidized, privately run educational network than Dutch-speaking parents.

## Tuition costs

Another component at school level are the tuition costs of schools. Especially in educational systems without subsidies for non-public schools, tuition costs can be an important barrier for parents with low socioeconomic status (Bosetti, 2004; Lankford & Wyckoff, 1992). In many Western European countries, amongst which Flanders, tuition costs are relatively low in the large majority of schools that offer pre-primary, primary and secondary education (EACEA, Eurydice & Eurostat, 2012). In Flanders, there is no registration fee in secondary education. Schools can however charge fees for goods and services (books, school trips, used materials, etc.). There is a large dispersion of school fees between schools, and although parents can request information on their expected contribution, there is no systematic comparative information at school level (De Norre, Havermans & Groenez, 2019).

## Tracking in secondary schools

Ability tracking, an approach used in many countries at the level of secondary education, further complicates the process of school choice. As ability tracking leads to a segmentation of the school market, it further limits the school choice set for parents, especially if there is a high degree of specialization by schools. Furthermore, there is strong evidence that students of lower socioeconomic background and students of non-majority ethnicities are overrepresented in pre-vocational tracks compared to high-status students, especially in early-tracking systems such as Flanders (Van de Werfhorst, & Mijs, 2010; Karsten et al., 2006). When educational tracks overlap with schools or when schools can specialize and narrow down the tracks they offer, this may reinforce school segregation. Evidence from the Netherlands shows that schools that only offer one type academic track (the pre-university track) attract very few non-Western pupils, whereas

schools that only offer pre-vocational tracks have an overrepresentation of ethnic minority pupils. Schools offering all tracks were found to be highly segregated internally. Over time, these schools also became less popular choices for parents (Karsten et al., 2006). Kruse (2019) found that ability-tracking could however also lead to less school segregation. Since group-specific access to different tracks implies high internal segregation in schools, it would also imply less outgroup exposure within the schools. It would therefore matter more to parents which track to choose, than which school.

When it comes to school preferences and choice in an early-tracking system, the literature on educational aspirations provides additional insights. In this regard, several studies find that immigrant parents have a stronger preference for academic tracks over vocational tracks, compared to their native peers. There is no consensus on the explanation for this phenomenon, and hypotheses range from “immigrant optimism” as a common character trait in immigrant parents, information deficits on the host country’s education system, to anticipated discrimination in the labour market (Tjaden & Hunkler, 2017; Jackson, Jonsson & Rudolphi, 2012; Heath & Brinbaum, 2007; Kao & Tienda, 1995).

## School assignment mechanisms

Many cities around the world use centralized school assignment systems. Depending on the used algorithm and the capacity of available places in (popular) schools in the area, these assignment mechanisms may lead to strategic choice behavior and give parents an incentive to misrepresent their true preferences in the assignment systems (Abdulkadiroğlu & Sönmez, 2003; Agarwal & Somaini, 2018; de Haan, Gautier, Oosterbeek & van der Klaauw, 2015).

The most well-known mechanisms are the Boston mechanism (also known as Immediate Acceptance mechanism) and the deferred acceptance mechanisms. The Boston mechanism is an example of an algorithm that is not strategy-proof. In theory, the Boston mechanism gives an advantage to parents who do not reveal their true preferences (Pathak & Sonmez, 2008). There is however no consensus in the literature on the relation between social and ethnic background and proneness to strategic behavior. This is partly because most available data does not allow researchers to distinguish between parents’ “true” preferences and the preferences they register (Dur, Hammond & Morrill, 2015). There is some limited evidence that parents from a lower socioeconomic background are somewhat more concerned about uncertainty, which is connected to overcautious choice behavior (De Haan et al., 2015; He, 2017).

The school assignment mechanisms in Ghent and Antwerp use the deferred acceptance algorithm. Under deferred acceptance, parents are more likely to reveal their true preferences, because a rejection at the most-preferred school does not reduce the acceptance probability at the next school on their ranking (de Haan et al., 2015). In Ghent, the algorithm is combined with an optimization round, to cross-check for preference rankings. This optimization round does imply a small risk of strategic behavior, but these cases are very rare and parents would need a lot of information for the manipulation to be successful (Wouters, Havermans & Groenez, to be published). Overall, we can safely assume that the mechanism incentivizes parents to reveal their true preference list.

## Focus of this study

In this study, we explore the relation between a number of school characteristics and parents' school preferences, and whether this relation differs according to parents' socioeconomic status and ethnic background.

In the literature review, we gave an overview of a number of school characteristics that have been linked to parental school choice or preferences in previous research. Because we do not have access to data on school quality or tuition costs, these two school characteristics are not taken into account in the present study. We also do not perform an analysis of the impact of the assignment mechanism on parents' school preferences, as the assignment mechanisms in Ghent and Antwerp are very similar: both urban regions use school-proposed deferred acceptance mechanism, but with the difference that Ghent also performs an optimisation algorithm on the data and Antwerp does not do this.

The relation between parents' school preferences and the following school characteristics are investigated: 1) proximity of the school; 2) school composition; 3) curriculum (tracks offered) in upper secondary grades; and 4) educational network. For each school characteristic, we investigate how they are related to parents' preferences and whether these preferences differ according to parents' socioeconomic and ethnic background.

We perform the analyses for the Antwerp and Ghent context separately. This enables us to investigate the degree to which parents' school preferences are similar in these two contexts. In addition, we also conduct separate analyses for the pupils enrolling in the A-stream and the B-stream. This gives us a better insight in (potential) differences in school preferences of the parents of these two groups of students.



# Data and methods

## School enrollment data of Ghent and Antwerp

We use school enrollment data for the school year 2019-2020 generated by the online school assignment procedures for the cities of Ghent and Antwerp. School enrollment in the first grade of secondary school in Ghent and Antwerp takes place by means of a central admission register. Parents can register their school preferences through an online admission system ([www.meldjeaansecundair.antwerpen.be](http://www.meldjeaansecundair.antwerpen.be), [www.meldjeaansecundair.gent.be](http://www.meldjeaansecundair.gent.be)). In this online admission system, they are asked to give some information on a number of background variables (e.g. educational level mother, reception of school allowance, home language, municipality) and to rank their preferences for schools that are situated in the local consultation platform ('LOP') of Antwerp or Ghent. After this registration period, an allocation algorithm is run on the school preferences. As mentioned earlier, both Antwerp and Ghent use a school-proposed deferred acceptance algorithm. In the algorithm, it is specified that pupils who have a sibling enrolled in a school, or a parent working at a school enjoy an absolute priority for that school. The other pupils are ranked for each school on their preference list by their own socioeconomic background, a lottery number and the intensity of their own preferences (for more information on the allocation algorithm, we refer to Havermans, Wouters & Groenez, to be published). The deferred acceptance algorithm assigns the available places at each school to the students in multiple rounds. After the allocation algorithm is run, parents are either assigned a school in which they can enroll their child, or they are not assigned to a school and are placed on a waiting list. Parents can choose to enroll their child in the assigned school, or they can attempt to enroll their child at a different school. Assigned places that are not claimed are offered to parents on the waiting list.

The dataset consists of ranked parental preferences for enrollment in the first grade of secondary education for the school year 2019-2020. The original dataset provides information on the school preferences of 4,490 enrolling pupils in Ghent and 6,334 enrolling pupils in Antwerp.<sup>1</sup> Children of school staff and students with siblings in the school they apply to, have priority in the enrollment mechanism. These priority students (26% of students in Ghent and 24% in Antwerp) have been removed from the final dataset. In the dataset for Ghent, we also exclude the pupils who are enrolling for special secondary education. This brings the final number of enrolling non-priority students in the dataset to 3,257 in Ghent and 4,973 in Antwerp. The analyses are performed for Ghent and Antwerp separately, and for the pupils enrolling for the A-stream and the B-stream separately.<sup>2</sup> 3901 pupils (or 78%) in Antwerp enroll for the A-stream and 1072 pupils (or 22%) enroll

---

<sup>1</sup> We provide some descriptive statistics on the original school enrollment data for Ghent and Antwerp in Appendix 1.

<sup>2</sup> Technically, the first two grades of secondary education have a common curriculum, and tracking into vocational, technical and academic education start in the third grade. However, it is possible that parents already have a preference (influenced by the child or the primary schools advice) for schools with a distinct curricular profile in the higher grades. In addition, the first two grades of secondary education have a separate B-stream for students who have not obtained a certificate of primary education. Students in the B-

for the B-stream. In Ghent, 2840 pupils (or 87%) enroll for the A-stream and 417 pupils (or 13%) enroll for the B-stream.

Table 1. Number of pupils in final dataset of Ghent and Antwerp, by stream and in total

	Ghent		Antwerp	
	N	%	N	%
A-stream	2840	87.2	3901	78.4
B-stream	417	12.8	1072	21.6
Total	3257	100.0	4973	100.0

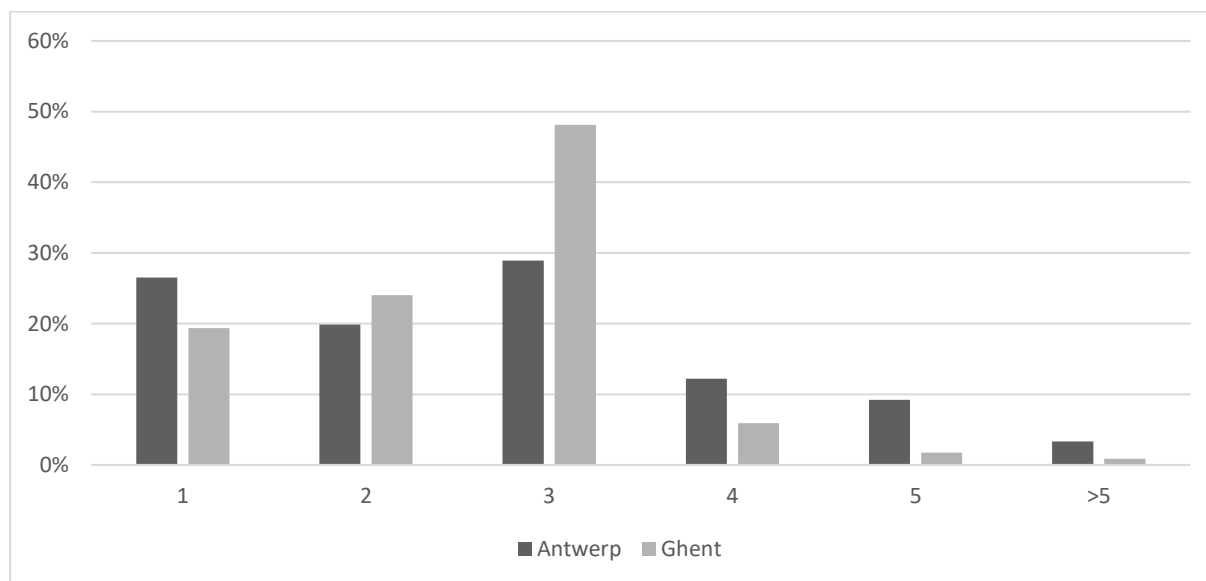
Source: LOP Antwerpen, 2019; LOP Gent, 2019.

## Variables

### Individual-level variables

We analyze parents' school preferences as the dependent variable in the analyses. These preferences are operationalized by the preference list of parents on the online admission system. Parents can put as many schools on their preference list as they want. On average, parents list 2.5 schools in Ghent and 2.7 schools in Antwerp. About 19% of the parents in Ghent and 27% of parents in Antwerp only mention one option. The distribution of the number of preferences is presented in Figure 1. Three schools is the mode for both cities.

Figure 1. Distribution of number of preference in Antwerp and Ghent

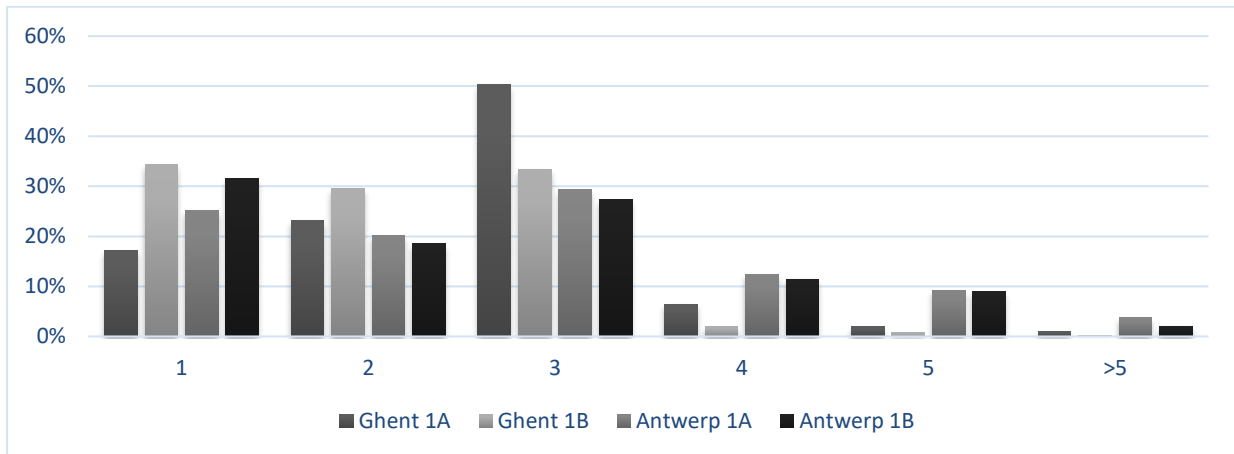


Source: LOP Antwerpen, 2019; LOP Gent, 2019.

stream can either catch up to continue with some delay into the common curriculum (A-stream), or continue in vocational education.

The distribution of the number of preferences differs between the parents of pupils enrolling in the A-stream and pupils enrolling in the B-stream (Figure 2). Around one third of the parents of pupils enrolling in the B-stream only register one school preference in the central admission system. The proportion of parents with only one school preference is lower for parents of pupils enrolling in the A-stream, namely 17% in Ghent and 25% in Antwerp.

Figure 2. Distribution of number of preferences.



Source: LOP Antwerpen, 2019; LOP Gent, 2019.

The socioeconomic status of pupils is operationalized by the dummy variable ‘low SES’. The low SES group (value 1) consists of children whose mother did not obtain a degree of higher secondary education or who receive a school allowance. 34% percent of the pupils enrolling in Ghent and 67% of the pupils enrolling in Antwerp have a low socioeconomic status. We can observe strong differences in the socioeconomic status between the A-stream and the B-stream. In Ghent, the proportion of low SES students enrolling in the B-stream is more than 40 percentage points higher than the proportion low SES students enrolling in the A-stream. In Antwerp, this difference is 25 percentage points.

Table 2. Proportion of low SES students enrolling in the A-stream, B-stream and in total in Ghent and Antwerp

	% low SES - Ghent	% low SES - Antwerp
A-stream	28.8	61.6
B-stream	69.2	86.7
Total	33.9	67.0

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

We measure pupils’ ethnic background with the dummy variable ‘non-Dutch home language’ (0= Dutch spoken at home; 1= other language than Dutch spoken at home). This information is self-reported by parents via a formal declaration upon registration. This variable is only available in the Ghent data, we do not have information on the home language in the Antwerp data. Additional information on nationality or country of birth of pupils and/or their parents is not available for both datasets.

18% of pupils in Ghent live in a household where another language than Dutch is spoken (Table 2). Also here, a difference between the A-stream and B-stream can be observed: 14% of pupils enrolling

in the A-stream have a non-Dutch home language. This proportion is three times higher among pupils enrolling in the B-stream in Ghent. The correlation between the socioeconomic background and the home language is significant and moderately high ( $r= 0.3693$ ,  $p<0.0001$  in Ghent).

Table 3. Proportion of students with a non-Dutch home language enrolling in the A-stream, B-stream and in total in Ghent and Antwerp

	% non-Dutch - Ghent
A-stream	14.4
B-stream	43.4
Total	18.2

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

We include a variable measuring the distance between home and school in the analyses on school preferences. The datasets of Antwerp and Ghent have information on the ‘home municipality’ of the pupil (i.e. the municipality where the pupil lives). We added information on the exact address of each school in their preference list based on administrative data. Because we do not have information on the address of pupils, it is not possible to calculate the exact distance between the school and the pupil’s home. We decided to construct a proxy measure of this distance, by calculating the distance between the central points of the student’s home municipality and the exact address of the school. The proxy variable measuring distance between home and school is a categorical variable with three categories: 1) pupil lives in the same municipality as the school is located; 2) the distance between the focal point of the pupils’ home municipality and the school is less than 6 kilometers; and 3) the distance between the focal point of the pupils’ home municipality and the school is more than 6 kilometers.

We present the distribution of the distance for all schools in the preference list in Table 3. In Ghent, 32% of parents’ school preferences are for schools in the same municipality as the home address. This percentage is higher for pupils enrolling in the B-stream (44%) than for pupils enrolling in the A-stream (31%). In Antwerp, 44% of parents’ preferences are for schools in the same municipality. The differences between the A-stream and B-stream are smaller in Antwerp than in Ghent.

Table 4. Distribution of parents’ school preferences (% of preferences) according to distance between home municipality and school’s address by stream for Ghent and Antwerp.

Variables	Ghent			Antwerp		
	A-stream	B-stream	Total	A-stream	B-stream	Total
Same municipality	30.7	44.4	32.2	43.3	45.8	43.8
<6 km	36.4	33.0	36.0	44.2	42.8	43.9
≥6 km	32.9	22.6	31.8	12.5	11.4	12.3

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

We explored the differences in distance between home and school between Ghent and Antwerp more in detail in order to find an explanation for the higher proportion of preferences for a school in the same municipality in Antwerp compared to Ghent. We find that in Ghent, more than half of the schools (55.8%) are situated in the city centre (postal code 9000), but that only 27% of the pupils live in the city centre. In Antwerp, the clustering of schools in the city centre (postal code 2000) is smaller: 15% of schools are located in postal code 2000, and 32% of the pupils live in postal code 2000. The higher prevalence of schools in the Ghent city centre (compared to the number of pupils

living there) may potentially explain why less parents have a preference for a school in the same municipality in Ghent compared to Antwerp.

### School-level variables

The independent variables at the school-level are calculated by linking administrative school data for the school year of 2017-2018 to the school preference dataset. Identifying a ‘school’ in the administrative school data is not straightforward. With the exception of the variable ‘curriculum in upper secondary grades’, school-level variables are measured at the institutional level using the school’s unique institutional number.

This approach has two caveats. First, a school can consist of several branches, located at different addresses. For instance, some schools have two or more branches within the same municipality. We consider the different branches part of the same school and, hence, do not consider the branches separately in the analyses. Second, in some cases, schools with different institutional numbers form nevertheless one school entity in practice, and only use several institutional numbers for administrative reasons. This is the case if the schools are based on the same address (or in the same street or neighborhood), have a similar name and brand themselves as a single school. It occurs frequently that a school uses a different institutional number for the first two grades of secondary education than for the remaining four grades.

The second caveat has profound implications when determining the curriculum in the upper secondary grades. If we would only consider the institutional number as the unit of analysis, many schools would be misclassified as middle schools, i.e. schools only offering education in the first two grades, rather than as schools offering lower as well as upper secondary education. To correct this, we manually checked whether schools offering lower secondary education formed an entity with another school with a different institutional number offering upper secondary education. In sum, the variable ‘curriculum in upper secondary education’ takes into account that some schools with different institutional numbers should nevertheless be considered a single school.

There are 38 secondary schools in the Ghent dataset and 55 in the Antwerp dataset. In Table 4, we present the number of schools in the two datasets in total, and by the stream they offer in the school. ‘A-stream schools’ refer to the schools that are on the preference lists of pupils enrolling in the A-stream; ‘B-stream schools’ refer to the schools on the preference lists of pupils enrolling in the B-stream.

*Table 5. Number of schools in the Ghent and Antwerp data, in total and by stream*

	Total number of schools	A-stream schools	B-stream schools
Ghent	38	37	18
Antwerp	55	54	33

*Source: LOP Antwerpen, 2019; LOP Gent, 2019.*

We first include the socioeconomic and ethnic school composition of the secondary school (Table 4). The socioeconomic composition of the school indicates the proportion of pupils with a low socioeconomic background (mother without degree of secondary education or school allowance beneficiary) in the secondary school. The ethnic composition of the school is the

proportion of pupils with a non-Dutch home language. The secondary schools in the Ghent data have on average 28% pupils from a low SES background and 26% pupils with a non-Dutch home language. These percentages are noticeably higher in the Antwerp data with on average 42% low SES pupils and 41% pupils with a non-Dutch home language. The correlation between socioeconomic and ethnic school composition is significantly high ( $r=0.95$ ;  $p<.0001$  in Ghent;  $r=0.69$ ;  $p<.0001$  in Antwerp).

In Appendix 2, we present the socioeconomic and ethnic school composition for A-stream schools and B-stream schools. Both in Antwerp and Ghent, the B-stream schools have a higher percentage of low SES pupils and pupils with a non-Dutch home language. The differences by stream are more pronounced in Ghent than in Antwerp.

Table 6. Descriptive statistics for socioeconomic and ethnic school composition (school year 2017-2018)

	Mean	SD	Min	Max
<b>Ghent</b>				
Socioeconomic composition (% low SES pupils)	27.91	19.42	3.83	68.83
Ethnic composition (% pupils with non-Dutch home language)	25.66	22.33	2.10	82.41
<b>Antwerp</b>				
Socioeconomic composition (% low SES pupils)	42.31	20.77	8.26	84.44
Ethnic composition (% pupils with non-Dutch home language)	41.15	24.26	8.24	97.46

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

We also include a variable in the analyses that captures the educational network. We distinguish between 1) GO! schools (i.e. schools run by the Flemish community); 2) VGO schools (i.e. schools of subsidized, privately run educational network, mostly Catholic schools); and 3) OGO schools (i.e. schools run by the local government). Most secondary schools in the Ghent and Antwerp data are VGO schools, but the proportion of VGO schools is higher in Ghent than in Antwerp. The percentage of OGO schools is higher in Antwerp (27%) than in Ghent (10%).

In Appendix 3 we present the distribution for educational network for the A-stream schools and B-stream schools. The proportion of OGO schools is higher among B-stream schools in both Antwerp and Ghent, compared to the A-stream schools. We find the opposite for VGO schools: both in Antwerp and Ghent, the proportion of VGO schools is lower in the group of B-stream schools than in the group of A-stream schools.

Table 7. Descriptive statistics for school-level variables (school year 2017-2018)

	Ghent (%)	Antwerp (%)
GO	23.7	18.2
VGO	65.8	54.6
OGO	10.5	27.3

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

Next, we include information on the curriculum in upper secondary grades (grades 3-6). In Ghent and Antwerp most schools offer lower as well as upper secondary education. The dataset initially included 13 schools in Ghent and 13 schools in Antwerp that were labeled as middle schools. After our manual check (cfr. supra), we keep only two schools in Ghent and one in Antwerp as 'true'

middle schools that only offer education in the first and second secondary grades.<sup>3</sup> Because there are so few middle schools in Antwerp and Ghent, this category is excluded in the analyses for school curriculum. The largest group of schools in Antwerp (46%) offer academic as well as non-academic tracks, while 24% only offer academic tracks and 29% do not offer academic tracks. In Ghent, schools offering both academic and non-academic tracks are less common than in Antwerp (29% versus 46%).

In Appendix 4, we present the distribution of curricula in upper secondary grades for the schools offering the A-stream and the B-stream. Because the proportion of schools on the preference lists of pupils enrolling in the B-stream that offer only academic tracks in upper secondary is so small in Antwerp and Ghent, this category is not included in the analyses of the school preferences of B-stream pupils.

Table 8. Curriculum in upper secondary grades, by school

	Ghent (%)	Antwerp (%)
% Academic tracks only	31.6%	23.6%
% Middle school	5.3%	1.8%
% No academic tracks	34.2%	29.1%
% Combination academic and other tracks	28.9%	45.5%

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

In Appendix 5, we present descriptive values for school size. In Appendix 6, we present the results of additional bivariate analyses on the school-level variables. We explore whether school composition differs according to educational network and curriculum in upper secondary grades. We conduct a Anova-test to investigate significant differences in the proportion of low SES students and students with a non-Dutch home language by curriculum in the upper secondary grades. For Ghent, we find that the proportion of low SES students and students with a non-Dutch home language in schools that offer no academic tracks is significantly higher ( $p < 0.05$ ) than in the other categories of curriculum. We do not find significant differences in school composition by educational network. In Antwerp, the differences in school composition by curriculum in the upper secondary grades and educational network are not significant.

## Method

We perform rank-ordered logit regression analysis on the ranked preferences of parents. Ranked data can be represented as a series of choices by the same decision maker. First, the most preferred option is chosen from the whole choice set. The second option is the one that would be chosen from a set containing all schools except the most preferred one, etc. This idea, originally developed by Beggs, Cardell and Hausman (1981), is called rank-ordered (or exploded) logit.

<sup>3</sup> Even for these schools, one can discuss whether they can be considered ‘true’ middle schools. In Ghent, one of the two middle schools offers continued education in the upper secondary grades, but in a nearby municipality rather than in Ghent.

Take a student, who has schools A, B and C in the school choice set, with  $C \succcurlyeq B \succcurlyeq A$ . Then, following Train (2000), the probability to submit this ranking becomes:

$$Prob(C \succcurlyeq B \succcurlyeq A) = \frac{e^{V_{iC}}}{\sum_{j=A,B,C} e^{V_{ij}}} * \frac{e^{V_{iB}}}{\sum_{j=A,B} e^{V_{ij}}}$$

In this equation,  $V_{ij}$  is the deterministic part of utility  $U_{ij}$ , which represents the utility pupil (or parent)  $i$  derives from choosing school  $j$ . The total probability is obtained by the product of two probabilities. The first is the probability that school C is chosen from set (A, B, C); the second is the probability that school B is chosen from set (A, B) – after school C is removed from the choice set.

After the model is specified, we still need to define the choice set (or consideration set), i.e. the set of schools parents actually take into consideration and compare to each other. In principle, any school can be chosen. With ranked data, the easiest option is to include only the schools appearing in the individual's ranking in the choice set, and to limit ourselves to the variance between these schools. However, the observed rankings will be incomplete. Their ranking will only contain those schools parents really like, not those they do not want to attend. We therefore include all schools in every pupil's choice set. The schools that were ranked by the individual are assumed to be weakly preferred to the non-ranked ones. We do not assume anything about the relative appreciation of schools within the set of non-ranked schools. For two observed but non-ranked schools  $O_1$  and  $O_2$ , we get:  $C \succcurlyeq B \succcurlyeq A \succcurlyeq O_1 \sim O_2$ .

## Structure of the analyses

We perform the analyses for four groups separately, namely 1) pupils enrolling in the A-stream in Ghent; 2) pupils enrolling in the B-stream in Ghent; 3) pupils enrolling in the A-stream in Antwerp; and 4) pupils enrolling in the B-stream in Antwerp.

The analyses are structured in a stepwise fashion. In each step, an additional independent variable is added to the model. We first analyze the role of school proximity, followed by school composition, school curriculum and educational network.<sup>4</sup> Because of the relative small number of schools in the datasets, it was unfortunately not possible to include school curriculum and educational network in one model. As can be seen in Appendix 7, the number of schools in some combinations of school curriculum and educational network is zero or close to zero.

In each section, we first present the model with no interaction effects before adding interaction effects with parents' SES (low vs. high) and the students' home language (non-Dutch vs. Dutch). Interaction effects with home language are only available for the Ghent data. If the interaction effects are not significant, they are excluded from the following steps in order to achieve better model parsimony and simplify model interpretation.

---

<sup>4</sup> In Appendix 8, we present additional analyses on the relation between school size and parents' school preferences.



# Results

## Proximity of the school

We first analyze the role of the proximity of secondary schools in parents' school preferences. In Table 3, we present the estimates for the model without interaction effects for Ghent and Antwerp.

Parents of pupils enrolling in the A-stream, have a lower preference for schools outside of their own municipality compared to schools in their own municipality. Schools that are situated more than 6 kilometres away have the lowest preference. For parents of pupils enrolling in the B-stream, we only find evidence for a negative preference for the distance to a school for Ghent: in Ghent, they prefer a school in their own municipality over a school that is more than 6 kilometres away. In Antwerp, parents of B-stream pupils have no significant preferences for the distance to a school.

If we compare the estimate sizes between Antwerp and Ghent, we can see that the estimates in Antwerp are noticeably smaller than in Ghent. This suggests that distance has a stronger impact on parents' school preferences in Ghent than in Antwerp. This can probably be explained by the fact that secondary schools are more clustered in Ghent than in Antwerp: almost half of the schools in Ghent are situated in the postcode 9000. In Antwerp, secondary schools are more scattered around the different municipalities. This implicates that parents in Antwerp have more options of schools in their own municipality. As a consequence, we can expect that they have a smaller preference for the proximity of schools than parents in Ghent.

Table 9. Rank-ordered logit regression of school preferences with distance from home to school

	Ghent		Antwerp	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)				
<6 km	-0.321*** (0.061)	0.264 (0.172)	-0.153*** (0.041)	-0.080 (0.079)
>6 km	-0.625*** (0.077)	-0.504* (0.245)	-0.287*** (0.065)	0.020 (0.120)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

In the following two tables, we present the results for the models with an interaction effect between distance and parents' SES (Table 4) and the home language (Table 5). The interaction effects are not significant in the two models. This indicates that the preference for distance does not differ according to these two parental background characteristics. This finding diverges from a previous study on parents' preferences for kindergarten schools in Flanders (Havermans, Wouters & Groenez, 2019), where it was reported that the proximity of a school is more important to low SES parents and for families with a non-Dutch home language.

Table 10. Rank-ordered logit regression of school preferences with distance from home to school, model with interaction between distance and parents' SES (Ghent and Antwerp)

	Ghent		Antwerp	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)				
<6 km	-0.365*** (0.075)	0.079 (0.337)	-0.155* (0.065)	0.022 (0.229)
>6 km	-0.714*** (0.093)	-0.300 (0.424)	-0.288** (0.106)	-0.208 (0.360)
<6 km* low SES pupil	0.114 (0.127)	0.268 (0.393)	0.004 (0.083)	-0.118 (0.244)
>6 km * low SES pupil	0.305 (0.170)	-0.363 (0.524)	0.001 (0.134)	0.259 (0.381)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Table 11. Rank-ordered logit regression of school preferences with distance from home to school, model with interaction between distance and home language (Ghent)

	Ghent	
	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)		
<6 km	-0.380*** (0.068)	-0.143 (0.311)
>6 km	-0.672*** (0.084)	-0.838* (0.378)
<6 km* Non-Dutch speaking pupil	0.276 (0.148)	0.590 (0.376)
>6 km * Non-Dutch speaking pupil	0.241 (0.214)	0.468 (0.511)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

## School composition

In a next step, we include school composition into the model. The findings for proximity of the school do not alter after the inclusion of this variable in the model. Regarding school composition, we can observe that parents have a negative preference for schools with a higher proportion of low SES pupils or non-Dutch speaking pupils. Only for parents of pupils who are enrolling in the B-stream in Ghent, school composition is not significantly related to school preferences.

Table 12. Rank-ordered logit regression of school preferences with distance from home to school and school composition

	Ghent		Antwerp		Ghent	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)						
<6 km	-0.327*** (0.061)	0.208 (0.179)	-0.166*** (0.041)	-0.092 (0.079)	-0.329*** (0.061)	0.273 (0.181)
>6 km	-0.640*** (0.077)	-0.647* (0.273)	-0.267*** (0.065)	0.045 (0.120)	-0.631*** (0.077)	-0.522 (0.266)
School composition						
% low SES pupils	-0.630*** (0.176)	-0.523 (0.435)	-0.710*** (0.101)	-0.532** (0.204)		
% non-Dutch speaking pupils					-0.673*** (0.164)	-0.561 (0.407)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

In the following tables, we present the results for two models in which we include the interaction effect between socioeconomic school composition and parents' SES (Table 13), and between the ethnic composition of the school and home language (Table 14). We can observe that the preference for school composition does not differ significantly according to parents' background characteristics. This is in contrast to the results found for pre-primary school choices in Ghent, where interaction effects with home language and SES status were significant (Havermans, Wouters, & Groenez, 2018).

Table 13. Rank-ordered logit regression of school preferences with distance from home to school and school composition, with interaction effect between school composition and parents' SES

	Ghent		Antwerp	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)				
<6 km	-0.327*** (0.061)	0.208 (0.179)	-0.166*** (0.041)	-0.088 (0.079)
>6 km	-0.639*** (0.077)	-0.647* (0.273)	-0.266*** (0.065)	0.031 (0.121)
School composition				
% low SES pupils	-0.808*** (0.229)	-0.519 (0.786)	-0.671*** (0.170)	-1.341* (0.530)
% low SES pupils * low SES	0.438 (0.358)	-0.005 (0.885)	-0.060 (0.211)	0.954 (0.576)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Table 14. Rank-ordered logit regression of school preferences with distance from home to school and school composition, with interaction effect between school composition and home language

	Ghent	
	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)		
<6 km	-0.326*** (0.061)	0.273 (0.181)
>6 km	-0.622*** (0.077)	-0.522 (0.266)
School composition		
% Non-Dutch speaking pupils	-0.858*** (0.191)	-0.561 (0.407)
% Non-Dutch speaking pupils * Non-Dutch	0.729 (0.376)	0.772 (0.560)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

## Curriculum of the school

In a third step, we add the curriculum of the school to the model. The inclusion of curriculum to the model does not change the interpretation of the results for distance and school composition.

Regarding the curriculum of the school, we use schools offering both academic and non-academic tracks as the reference category. We compare parents' preferences for schools offering academic and non-academic tracks with their preferences for schools that only offer academic tracks, or schools that only offer non-academic tracks after the second grade of secondary education.

Interestingly, there are divergent findings for Ghent and Antwerp. In Ghent, we find that parents of A-stream pupils prefer schools that only offer non-academic tracks and tend to have a lower preference for schools that only offer academic tracks compared to schools that offer both academic and non-academic tracks. In contrast to Ghent, parents of A-stream pupils in Antwerp have a lower preference for schools that only offer non-academic tracks. For parents of B-stream pupils, no significant differences were observed in Ghent, whereas parents in Antwerp prefer schools that only offer non-academic tracks in the upper secondary grades.

Table 15. Rank-ordered logit regression of school preferences with distance from home to school, school composition and curriculum of the school (Ghent and Antwerp)

	Ghent		Antwerp		Ghent	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)						
<6 km	-0.343*** (0.0638)	0.121 (0.190)	-0.170*** (0.0411)	-0.0790 (0.0823)	-0.347*** (0.0637)	0.146 (0.189)
>6 km	-0.664*** (0.0863)	-0.722* (0.284)	-0.290*** (0.0660)	-0.0182 (0.124)	-0.644*** (0.0862)	-0.644* (0.273)
School composition						
% low SES pupils	-1.093*** (0.234)	-0.811 (0.507)	-0.718*** (0.103)	-0.556* (0.216)		
% Non-Dutch speaking pupils					-0.955*** (0.200)	-0.418 (0.343)
Curriculum of the school (ref. academic and non-academic tracks)						
Only academic tracks	-0.144** (0.0529)		0.0401 (0.0370)		-0.101* (0.0500)	
Only non-academic tracks	0.152 (0.0795)	0.0353 (0.169)	-0.181*** (0.0432)	-0.162* (0.0657)	0.143 (0.0784)	0.00390 (0.167)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . Two middle schools in Ghent and one middle school in Antwerp are excluded from the analyses.

In Table 16 and Table 17 we present the findings for the models with interaction effects. The inclusion of these interaction effects does not change the findings for school proximity and school composition. In Table 16, we observe that preferences for school curriculum do not differ by parents' SES. All interaction terms are relatively small in magnitude and not statistically significant at conventional levels.

Table 16. Rank-ordered logit regression of school preferences with distance from home to school, school composition and curriculum of the school, with interaction effects between curriculum and parents' SES (Ghent and Antwerp)

	Ghent		Antwerp	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)				
<6 km	-0.343*** (0.0639)	0.121 (0.190)	-0.166*** (0.0412)	-0.0815 (0.0823)
>6 km	-0.668*** (0.0864)	-0.745** (0.286)	-0.287*** (0.0660)	-0.0162 (0.124)
School composition				
% low SES pupils	-1.108*** (0.235)	-0.786 (0.507)	-0.719*** (0.104)	-0.554* (0.217)
Curriculum of the school (ref. academic and non-academic tracks)				
Only academic tracks	-0.123* (0.0603)		-0.0133 (0.0544)	
Only non-academic tracks	0.150 (0.0985)	-0.220 (0.321)	-0.152* (0.0685)	-0.331* (0.168)
Only academic tracks * low SES	-0.0827 (0.109)		0.100 (0.0726)	
Only non-academic tracks * low SES	0.00543 (0.148)	0.329 (0.352)	-0.0480 (0.0875)	0.199 (0.181)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . Two middle schools in Ghent and one middle school in Antwerp are excluded from the analyses.

With regard to the interaction effect between home language and curriculum of the school (Table 17), non-Dutch speaking parents of pupils enrolling in the A-stream in Ghent prefer schools with only academic tracks over schools that offer both academic and non-academic tracks. This is consistent with findings in the literature on the more academically oriented educational aspirations of immigrant parents. The interaction terms for pupils in the B-stream are not significant.

Table 17. Rank-ordered logit regression of school preferences with distance from home to school, school composition and curriculum of the school, with interaction effects between curriculum and home language (Ghent)

	Ghent	
	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)		
<6 km	-0.345*** (0.0638)	0.154 (0.189)
>6 km	-0.629*** (0.0864)	-0.630* (0.274)
School composition		
% Non-Dutch speaking pupils	-0.908*** (0.202)	-0.421 (0.343)
Curriculum of the school (ref. academic and non-academic tracks)		
Only academic tracks	-0.167** (0.0541)	
Only non-academic tracks	0.0941 (0.0882)	-0.108 (0.214)
Only academic tracks * Non-Dutch	0.424** (0.135)	
Only non-academic tracks * Non-Dutch	0.197 (0.176)	0.252 (0.303)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . Two middle schools in Ghent are excluded from the analyses.

## Educational network

In the model with educational network, there are no significant preferences for educational network in Ghent. In Antwerp, the results are different for the A-stream and the B-stream. Parents of pupils enrolling in the B-stream prefer GO! school over OGO schools. For parents of A-stream pupils in Antwerp, the preference of GO! schools over VGO schools is borderline insignificant ( $p=0.061$ ). The inclusion of this parameter in the model also does not alter the effects of distance and school composition. We also test whether the preferences for educational network differ according to parents' SES (Table 19) and home language (Table 20). These interaction effects are not significant.<sup>5</sup>

<sup>5</sup> In Appendix 8, we present the findings for additional analyses on the relation between school size and parents' school preferences.

Table 18. Rank-ordered logit regression of school preferences with distance from home to school, school composition and educational network of the school (Ghent and Antwerp)

	Ghent		Antwerp		Ghent	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)						
<6 km	-0.327*** (0.061)	0.243 (0.186)	-0.169*** (0.041)	-0.092 (0.079)	-0.329*** (0.061)	0.266 (0.185)
>6 km	-0.640*** (0.078)	-0.650* (0.279)	-0.252*** (0.066)	0.032 (0.123)	-0.631*** (0.077)	-0.581* (0.270)
School composition						
% low SES pupils	-0.629*** (0.186)	-0.515 (0.439)	-0.776*** (0.110)	-0.647** (0.222)		
% Non-Dutch speaking pupils					-0.675*** (0.171)	-0.209 (0.302)
Educational networks (ref. GO!)						
VGO	-0.004 (0.049)	0.065 (0.146)	-0.075 (0.040)	-0.167 (0.099)	0.012 (0.048)	0.073 (0.146)
OGO	-0.010 (0.076)	0.269 (0.188)	0.001 (0.051)	-0.200* (0.098)	0.019 (0.077)	0.281 (0.188)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Table 19. Rank-ordered logit regression of school preferences with distance from home to school, school composition and educational network of the school, with interaction effect between educational network and SES status (Ghent and Antwerp)

	Ghent		Antwerp	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)				
<6 km	-0.332*** (0.061)	0.248 (0.188)	-0.173*** (0.041)	-0.094 (0.079)
>6 km	-0.644*** (0.078)	-0.650* (0.279)	-0.258*** (0.066)	0.033 (0.123)
School composition				
% low SES pupils	-0.636*** (0.187)	-0.520 (0.440)	-0.785*** (0.111)	-0.646** (0.222)
Educational networks (ref. GO!)				
VGO	-0.061 (0.058)	-0.024 (0.273)	-0.116* (0.058)	-0.392 (0.269)
OGO	-0.027 (0.092)	0.510 (0.429)	0.051 (0.076)	-0.650* (0.293)
VGO* low SES pupil	0.191 (0.104)	0.120 (0.318)	0.070 (0.081)	0.248 (0.283)
OGO* low SES pupil	0.057 (0.161)	-0.284 (0.475)	-0.072 (0.099)	0.502 (0.308)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .



Table 20. Rank-ordered logit regression of school preferences with distance from home to school, school composition and educational network of the school, with interaction effect between educational network and home language (Ghent)

	Ghent	
	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)		
<6 km	-0.327*** (0.061)	0.261 (0.185)
>6 km	-0.628*** (0.077)	-0.591* (0.271)
School composition		
% Non-Dutch speaking pupils	-0.662*** (0.172)	-0.204 (0.303)
Educational networks (ref. GO!)		
VGO	-0.002 (0.053)	0.190 (0.215)
OGO	-0.043 (0.086)	0.608 (0.317)
VGO* Non-Dutch speaking pupil	0.083 (0.125)	-0.204 (0.282)
OGO* Non-Dutch speaking pupil	0.300 (0.186)	-0.510 (0.392)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

# Conclusion

This paper aimed at getting a better insight in the secondary school preferences of parents in Ghent and Antwerp, two urban areas in Flanders. We first give an overview of the main findings of the analyses. After this, we discuss the limitations and implications of the research findings.

In the analyses, we find **three relations between school characteristics and school preferences** that are **consistent** for (almost) all pupils and remained **robust** throughout the different models. First, all parents prefer schools that are closer to home. This preference for the proximity of a school can be motivated by the lower commuting costs to go to such schools and/or the integration of the school in the local community (Collins & Snell, 2000; Jacobs, 2013; Burgess, Greaves, Vignoles, & Wilson, 2014). Contrary to the findings of a recent study on parents' pre-primary school preferences in Flanders (Havermans, Wouters & Groenez, 2018), the preference for school proximity does not differ according to parents' background.

Second, school composition is significantly linked to parents' school preferences in the different analytical models in this paper. All parents (except for the parents of pupils enrolling in the B-stream in Ghent) prefer schools with fewer pupils of low socioeconomic status or a non-Dutch home language. We find no interaction effects between the preferences for school composition and parents' own socioeconomic status or home language. This is a very interesting finding, as it contradicts the research evidence that preferences for socioeconomic and ethnic school composition are stronger for high-status groups, such as high SES parents or native parents (Bifulco, Ladd, & Ross, 2009; Glenn, 2011; Havermans, Wouters & Groenez, 2018; Saporito, 2003, 2009). A potential explanation for the lack of interaction between parents' preferences for school composition and their own background is that (parents' perception of) school quality is confounded with the school composition. Since we do not have a suitable indicator for school quality available in the data, we are unable to test for this explanation.

Third, the results of the analyses show that non-Dutch speaking parents of A-stream pupils have a preference for schools with only academic tracks over schools that offer both academic and non-academic tracks. Because home language was not available in the Antwerp data, we could not test whether this interaction effect is also found in this urban region. This finding nevertheless appears to be in line with previous studies showing that parents with an immigration background have a stronger preference for academic tracks compared to vocational tracks (Tjaden & Hunkler, 2017; Jackson, Jonsson & Rudolphi, 2012; Heath & Brinbaum, 2007; Kao & Tienda, 1995).

The analyses reveal some **differences** in parents' secondary school preferences **between Ghent and Antwerp**. First, whereas all parents prefer schools at a closer proximity to home, distance seems to have a stronger impact in Ghent than in Antwerp. This could be explained by the stronger clustering of schools in the city's center in Ghent. In Antwerp, parents have more options for schools within their own municipality, and distance is therefore a less important factor in their school preferences.

Second, we find diverging evidence for preferences for curriculum between parents enrolling their child in the A-stream in Ghent and Antwerp. In Ghent, parents prefer non-academic schools over school offering both academic and non-academic tracks and over schools only offering academic tracks. In Antwerp, parents prefer schools with only academic tracks over schools with only non-academic tracks. The interaction effects between the parents' SES and the school curriculum are never statistically significant.

Third, the educational network of the school is only significantly related to parents' school preferences in Antwerp. The results show that parents of A-stream pupils in Antwerp prefer GO! schools over VGO schools, and that parents of B-stream pupils prefer GO! schools over OGO schools. In Ghent, the estimates are insignificant. This finding suggests that preferences for educational networks may be more context-specific than expected. More research is needed to provide explanations for this.

Finally, we find some **differences** in preferences **between** parents of **A-stream pupils and B-stream pupils**. Overall, the models showed very few significant findings for B-stream pupils compared to A-stream pupils. Because the number of B-stream pupils in the data was smaller and B-stream pupils are more likely to only register one school preference in the central admission registers, the lack of significant findings for B-stream pupils is probably mostly caused by such methodological issues and not by a lower intensity of preferences for school characteristics. Nevertheless, this should be further explored by future research.

There are several **limitations** to the results that are presented in this paper. A first limitation refers to the small sample size of B-stream pupils, as mentioned in the previous paragraph. Second, the relatively small number of schools in the Ghent and Antwerp data did not allow to include educational network and curriculum in the upper secondary grades in one model. Third, the data for Antwerp and Ghent do not include information on whether parents also applied to schools in municipalities outside of these cities. Parents who deliberately choose to send their children to schools outside of Antwerp or Ghent, or parents who wish to 'play it safe' and also apply outside of Antwerp or Ghent, may confound the results as their preference ranking in the central admission register possibly does not reflect their true preferences. Fourth, the analysis was constrained by the availability of variables and indicators in the dataset. As such, it was not possible to assess (perception of) school quality in the analyses which is supposed to be one of the main factors driving parents' school preferences. We did not have access to pupils' home address and were consequently restricted to working with a proxy measure. Finally, the home language of pupils was not available in the Antwerp data. We could therefore not investigate whether preferences of families with a non-Dutch home language differ from Dutch-speaking families in a similar way in Antwerp and Ghent.

We strongly support **future research endeavors** that aim to replicate the current study on other central admission register datasets in Flanders. This can allow to test the robustness of the findings of this study on a larger dataset and to investigate contextual factors more in depth. Also, other research methods could be applied to get a better insight in some of the research findings. For instance, parents could be asked in a survey or an interview which school characteristics they find important and how they perceive the schools on their preference list regarding school quality,

school composition and school philosophy. This information can be used to complement the findings of the analyses on the enrollment system data.

The findings of this study also have some **policy implications**. First of all, the results show that school segregation stems at least partially from residential segregation given that all parents have a positive preference for proximity of a school. This finding is also supported by a study on the evolution of school segregation in Flanders which reported that school and residential segregation levels are very similar for secondary school pupils in Flanders (Havermans, Wouters & Groenez, 2018). Policy-makers should therefore in the first place give sufficient attention to decreasing residential segregation, as this is one of the main mechanisms driving school segregation.

Other school characteristics do however also play a role in influencing parents' school preferences. The finding that all parents have a preference for schools with more high SES and/or Dutch-speaking pupils contradicts theories that all parents have the tendency to self-segregate, as low SES parents also prefer schools with more high SES pupils, and non-Dutch speaking parents also prefer schools with more Dutch-speaking parents. Despite the fact that more research is necessary to investigate the role of school quality in this particular finding, the results for school composition preferences suggest that they do not lead to increases in school segregation in the same way as they do in pre-primary school preferences in Flanders. A recent study on pre-primary school preferences in Flanders found that parents have a preference for pre-primary schools with a strong presence of their own social group (Havermans, Wouters & Groenez, 2019).

School segregation levels are considerably higher in secondary schools than in primary schools in Flanders (Havermans, Wouters & Groenez, 2018). The higher levels of school segregation can at least partially be contributed to tracking in schools (Wouters & Groenez, 2013, p. 58). In the Ghent and Antwerp data, we can clearly observe that the pupils enrolling in the B-stream are more likely to be from a low socio-economic status or from a family where another language than Dutch is spoken than pupils enrolling in the A-stream. Because not all schools offer a B-stream, this may already lead to school segregation in the first two grades of secondary school.

Finally, our results show that some of parents' school preferences are context-specific as they differ between the urban regions of Ghent and Antwerp. We think it is necessary to investigate this more in-depth and also include other research contexts. The research findings support the important role that municipalities and local consultation platforms (LOP's) play in the enrollment policies, because this allows municipalities to adjust these policies to their own specific context.

# Appendix

## Appendix 1. Descriptive values for the original school enrollment data

	Ghent	Antwerp
Total number of enrolling students	4490	6334
Total number of available places in schools	5459	6403
Difference between available places and enrolling students	969	69
% low SES pupils	31.0% <sup>1</sup>	66.2%
% A-track	88.5%	80.6%
% priority pupils	25.3%	24.0%

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Notes: <sup>1</sup> <1% of enrolling students in Ghent has a missing value for the variable 'indicator student'.

## Appendix 2. Descriptive values for socioeconomic and ethnic school composition by stream

	Mean	SD	Min	Max
<b>Ghent: A-stream</b>				
Socioeconomic composition (% low SES pupils)	26.94	18.73	3.83	68.83
Ethnic composition (% pupils with non-Dutch home language)	24.54	21.53	2.10	82.41
<b>Ghent: B-stream</b>				
Socioeconomic composition (% low SES pupils)	39.74	19.57	10.21	68.83
Ethnic composition (% pupils with non-Dutch home language)	35.18	26.78	3.76	82.41
<b>Antwerp: A-stream</b>				
Socioeconomic composition (% low SES pupils)	41.74	20.53	8.26	84.44
Ethnic composition (% pupils with non-Dutch home language)	40.64	24.19	8.24	97.46
<b>Antwerp: B-stream</b>				
Socioeconomic composition (% low SES pupils)	50.65	18.90	13.79	84.44
Ethnic composition (% pupils with non-Dutch home language)	44.36	20.65	8.71	81.49

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

## Appendix 3. Distribution of educational network by stream

	Ghent		Antwerp	
	A-stream (%)	B-stream (%)	A-stream (%)	B-stream (%)
GO	24.3	27.8	18.5	12.1
VGO	64.9	55.5	55.6	51.5
OGO	10.8	16.7	25.9	36.4

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

## Appendix 4. Distribution of curriculum in upper secondary grades by stream

	Ghent		Antwerp	
	A-stream (%)	B-stream (%)	A-stream (%)	B-stream (%)
% Academic tracks only	31.6%	5.6%	24.1%	1.9%
% Middle school	5.3%	5.6%	1.9%	1.9%
% No academic tracks	34.2%	66.7%	29.6%	24.1%
% Combination academic and other tracks	28.9%	22.2%	44.4%	33.3%

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

## Appendix 5. Descriptive values for school size

	Mean	SD	Min	Max
<b>Ghent</b>				
A-stream	517.77	292.22	90.00	1246.00
B-stream	484.31	227.60	177.00	1149.00
Total	513.59	289.40	90.00	1246.00
<b>Antwerp</b>				
A-stream	526.81	310.96	53.00	1519.00
B-stream	579.03	330.42	138.00	1519.00
Total	523.69	308.94	53.00	1519.00

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

## Appendix 6. School composition by curriculum in upper secondary grades, and by educational network

	Ghent	Ghent	Antwerp	Antwerp
	Mean % low SES students	Mean % non-Dutch home language	Mean % low SES students	Mean % non-Dutch home language
Academic tracks only	12.5%	12.9%	31.5%	40.4%
Middle school	37.2%	37.4%	84.4%	75.6%
No academic tracks	43.6%	40.5%	43.8%	39.1%
Combination academic and other tracks	24.6%	19.9%	45.3%	41.4%
GO!	30.7	26.1	41.8	35.6
VGO	24.7	23.2	38.6	41.4
OGO	41.5	40.1	50.1	44.4

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

## Appendix 7. Educational network by curriculum in upper secondary grades

	Ghent			Antwerp		
	GO!	VGO	OGO	GO!	VGO	OGO
Academic tracks only	2	9	1	4	8	1
Middle school	1	0	1	0	0	1
No academic tracks	2	9	2	3	6	7
Combination academic and other tracks	4	7	0	3	16	6

Source: LOP Antwerpen, 2019; LOP Gent, 2019.

## Appendix 8. Rank-ordered logit regression of school preferences with distance from home to school, school composition and school size of the school

For school size, the estimates show that there is a very small preference for larger schools among parents of A-stream pupils in Ghent, and that this preference does not differ between high and low SES parents or the home language.

Appendix 8.1. Rank-ordered logit regression of school preferences with distance from home to school, school composition and school size of the school (Ghent and Antwerp)

	Ghent		Antwerp		Ghent	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)						
<6 km	-0.333*** (0.061)	0.208 (0.182)	-0.165*** (0.041)	-0.081 (0.079)	-0.333*** (0.061)	0.230 (0.182)
>6 km	-0.627*** (0.077)	-0.646* (0.274)	-0.263*** (0.066)	0.024 (0.121)	-0.620*** (0.077)	-0.571* (0.267)
School composition						
% low SES pupils	-0.613*** (0.176)	-0.526 (0.449)	-0.715*** (0.101)	-0.561** (0.205)		
% Non-Dutch speaking pupils					-0.608*** (0.165)	-0.185 (0.303)
School size						
Number of pupils	0.000** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000* (0.000)	0.000 (0.000)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Appendix 8.2. Rank-ordered logit regression of school preferences with distance from home to school, school composition and school size of the school, with interaction effect between school size and parents' SES (Ghent and Antwerp)

	Ghent		Antwerp	
	A-stream b (se)	B-stream b (se)	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)				
<6 km	-0.336*** (0.061)	0.211 (0.183)	-0.164*** (0.041)	-0.081 (0.079)
>6 km	-0.632*** (0.078)	-0.641* (0.275)	-0.262*** (0.066)	0.025 (0.121)
School composition				
% low SES pupils	-0.594*** (0.177)	-0.522 (0.449)	-0.716*** (0.101)	-0.561** (0.205)
School size				
Number of pupils	0.000* (0.000)	0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)
Number of pupils * low SES	0.000 (0.000)	-0.000 (0.001)	0.000 (0.000)	0.000 (0.000)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Appendix 8.3. Rank-ordered logit regression of school preferences with distance from home to school, school composition and school size of the school, with interaction effect between school size and home language (Ghent)

	Ghent	
	A-stream b (se)	B-stream b (se)
Distance to school (ref. school in same municipality)		
<6 km	-0.334*** (0.061)	0.172 (0.185)
>6 km	-0.621*** (0.077)	-0.641* (0.272)
School composition		
% Non-Dutch speaking pupils	-0.603*** (0.166)	-0.185 (0.303)
School size		
Number of pupils	0.000* (0.000)	-0.000 (0.000)
Number of pupils * non-Dutch	0.000 (0.000)	0.001 (0.001)

Source: LOP Antwerpen, 2019; LOP Gent, 2019. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$



## References

- Abdulkadiroğlu, A., & Sönmez, T. (2003). School choice: A mechanism design approach. *American economic review*, 93(3), 729-747.
- Abdulkadiroğlu, A., Pathak, P. A., Schellenberg, J., Walters, C. R., Agarwal, N., Angrist, J., ... Zimmerman, S. (2017). *Do Parents Value School Effectiveness?* NBER WORKING PAPER SERIES. Retrieved from <http://www.nber.org/papers/w23912>
- Agarwal, N., & Somaini, P. (2018). Demand Analysis Using Strategic Reports: An Application to a School Choice Mechanism. *Econometrica*, 86(2), 391-444.
- Ball, S. J., Vincent, C., & Ball, S. J. (1998). "I heard it on the grapevine": "hot" knowledge and school choice. *British Journal of Sociology of Education*, 19(3), 377-400.
- Beggs, S., Cardell, S., & Hausman, J. (1981). Assessing the potential demand for electric cars. *Journal of Econometrics*, 17(1), 1-19.
- Bifulco, R., & Ladd, H. (2006). School choice, racial segregation, and test-score gaps: Evidence from North Carolina's Charter School Program. *Journal of Policy Analysis and Management*, 26(1), 31-56.
- Bifulco, R., Ladd, H., & Ross, S. (2009). Public school choice and integration evidence from Durham, North Carolina. *Social Science Research*, 38(1), 71-85.
- Black, S., & Machin, S. (2011). Housing Valuations of School Performance. In E. Hanushek, S. Machin, & L. Woessmann (Eds.), *Handbook of the Economics of Education* (pp. 485-519). Cambridge: Elsevier.
- Blumer, H. (1958). Race prejudice as a sense of group position. *The Pacific Sociological Review*, 1(1), 3-7.
- Booker, K., Zimmer, R., & Buddin, R. (2005). The Effect of charter schools on charter students and public schools (RAND Education No. WR-306-EDU). RAND Education.
- Bosetti, L. (2004). Determinants of school choice: Understanding how parents choose elementary schools in Alberta. *Journal of Education Policy*, 19(4), 387-405.
- Bourdieu, P. (1986). The forms of capital. In J. C. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). Westport, CT: Greenwood Press.
- Bourdieu, P., & Passeron, J. (1970). *La reproduction*. Paris: Les Editions de Minuit.
- Burgess, S., Greaves, E., Vignoles, A., & Wilson, D. (2014). What parents want: School preferences and school choice. *Economic Journal*, 125(587), 1262-1289.
- Carlson, D. (2014). School choice and educational equality. *Policy Studies Journal*, 42(2), 1-15.

- Collins, A., & Snell, M. C. (2000). Parental preferences and choice of school. *Applied Economics*, 32(7), 803–813.
- De Haan, M., Gautier, P., Oosterbeek, H., & van der Klaauw, B. (2015). The Performance of School Assignment Mechanisms in Practice, IZA Discussion Papers No 9118. Bonn: Institute of Labor Economics (IZA).
- Denessen, E., Driessena, G., & Slegers, P. (2005). Segregation by choice? A study of group-specific reasons for school choice. *Journal of Education Policy*, 20(3), 347–368.
- Dur, U., Hammond, R. G., & Morrill, T. (2018). Identifying the harm of manipulable school-choice mechanisms. *American Economic Journal: Economic Policy*, 10(1), 187-213.
- Fiel, J. 2015. "Closing Ranks: Closure, Status Competition, and School Segregation." *American Journal of Sociology* 121(1):126–70.
- Glenn, W. J. (2011). A quantitative analysis of the increase in public school segregation in Delaware: 1989-2006. *Urban Education*, 46(4), 719–740.
- Harris, R. (2010). Segregation by choice? The debate so far. CMPO Working Paper. Bristol. Retrieved from <http://www.bris.ac.uk/cmppo/publications/papers/2010/wp251.pdf>
- Hastings, J. and Weinstein, J. (2008). 'Information, school choice, and academic achievement: evidence from two experiments', *Quarterly Journal of Economics*, vol. 123(4), pp. 1373–414.
- Hastings, J. S., & Weinstein, J. M. (2008). Information, school choice, and academic achievement: Evidence from two experiments. *The Quarterly journal of economics*, 123(4), 1373-1414.
- Hastings, J. S., Kane, T. J., & Staiger, D. O. (2009). Heterogeneous preferences and the efficacy of public school choice. NBER Working Paper, 2145(May), 1–46.
- Havermans, N., Wouters, T., & Groenez, S. (2018). Evaluatie van dubbele contingentering: Impact op schoolsamenstelling en schoolse segregatie bij instappers in het kleuteronderwijs. Steunpunt Onderwijsonderzoek, Gent.
- He, Y. (2017). *Gaming the Boston School Choice Mechanism in Beijing*. Toulouse School of Economics (TSE) Working Paper No. 15-551.
- Heath, A., & Brinbaum, Y. (2007). Guest editorial: Explaining ethnic inequalities in educational attainment. *Ethnicities*, 7(3), 291–304. <https://doi.org/10.1177/1468796807080230>
- Jackson, M., Jonsson, J. O., & Rudolphi, F. (2012). Ethnic inequality in choice-driven education systems: A longitudinal study of performance and choice in England and Sweden. *Sociology of education*, 85(2), 158-178.
- Jacob, B. A. and L. Lefgren (2007): "What do parents value in education? An empirical investigation of parents' revealed preferences for teachers," *Quarterly Journal of Economics*, 122, 1603–1637.
- Jacobs, N. (2013). Understanding school choice: Location as a determinant of charter school racial, economic, and linguistic segregation. *Education and Urban Society*, 45(4), 459–482.

- Jenkins, S. P., Micklewright, J., & Schnepf, S. V. (2008). Social segregation in secondary schools: how does England compare with other countries? *Oxford Review of Education*, 34(1), 21–37.
- Kane, T. J. and D. O. Staiger (2002): “The promise and pitfalls of using imprecise school accountability measures,” *Journal of Economic Perspectives*, 16, 91–114.
- Kao, G., & Tienda, M. (1995). Optimism and achievement: The educational performance of immigrant youth. *Social science quarterly*, 1-19.
- Kristen, C. (2008). Primary school choice and ethnic school segregation in German elementary schools. *European Sociological Review*, 24(4), 495–510.
- Kruse, H. (2019). Between-School Ability Tracking and Ethnic Segregation in Secondary Schooling. *Social Forces*, 98(1), 119-145.
- Lankford, H., & Wyckoff, J. (1992). Primary and secondary school choice among public and religious alternatives. *Economics of Education Review*, 11(4), 317–337.
- O’Shaughnessy, T. (2007). Parental choice and school quality when peer and scale effects matter. *Economics of Education Review*, 26(4), 501–515.
- Pathak, P. A., & Sönmez, T. (2008). Leveling the Playing Field: Sincere and Sophisticated Players in the Boston Mechanism. *The American Economic Review*, 98(4), 1636-1652.
- Pathak, P., & Sönmez, T. (2013). School Admissions Reform in Chicago and England: Comparing Mechanisms by their Vulnerability to Manipulation. *American Economic Review*, 103(1), 80-106.
- Saporito, S. (2003). Private choices, public consequences: Magnet school choice and segregation by race and poverty. *Social Problems*, 50(2), 181–203.
- Saporito, S. (2009). School choice in black and white: Private school enrollment among racial groups, 1990–2000. *Peabody Journal of Education*, 84(2), 172–190.
- Schneider, K., Schuchart, C., Weishaupt, H., & Riedel, A. (2012). The effect of free primary school choice on ethnic groups - Evidence from a policy reform. *European Journal of Political Economy*, 28(4), 430–444.
- Sikkink, D., & Emerson, M. O. (2008). School choice and racial segregation in US schools: The role of parents’ education. *Ethnic and Racial Studies*, 31(2), 267–293.
- Tedin, K. L., & Weiher, G. R. (2004). Racial/ethnic diversity and academic quality as components of school choice. *Journal of Politics*, 66(4), 1109–1133.
- Teske, P., & Schneider, M. (2001). Policymakers about school choice. *Journal of Policy Analysis and Management*, 20(4), 609–631.
- Tjaden, J. D., & Hunkler, C. (2017). The optimism trap: Migrants’ educational choices in stratified education systems. *Social Science Research*, 67, 213-228.

Train, K. E. (2000). *Discrete choice methods with simulation*. Cambridge: Cambridge University Press.

Van de Werfhorst, Herman, and Jonathan J. Mijs. 2010. "Achievement inequality and the institutional structure of educational systems: A comparative perspective." *Annual Review of Sociology* 36: 407-428.

Weiher, G. R., & Tedin, K. L. (2002). Does choice lead to racially distinctive schools? Charter schools and household preferences. *Journal of Policy Analysis and Management*, 21(1), 79–92.

Wouters, T. & Groenez, S. (2013). *De evolutie van schoolse segregatie in Vlaanderen. Een analyse voor de schooljaren 2001-2002 tot 2011-2012*. Leuven: Steunpunt SSL, rapport nr. SSL/2013.08/2.2.1.

Yang Hansen, K., & Gustafsson, J. E. (2016). Causes of educational segregation in Sweden – school choice or residential segregation. *Educational Research and Evaluation*, 22(1–2), 23–44. <https://doi.org/10.1080/13803611.2016.1178589>