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Ethnic Discrimination and the Effect of Salient Middle Eastern Clothing – A Field Study in the Stockholm Subway

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Abstract

The current migration crisis and terror trends have affected millions of lives across the Middle East, Europe, and Africa. In light of these events, we investigated how perceived ethnicity affects people's everyday choices, in particular, seating in the Stockholm subway, to gain an understanding of discrimination in Sweden going forward. A field study was conducted to establish which groups in society prefer to sit beside a male of perceived Swedish ethnicity and which beside a male of perceived Middle Eastern ethnicity, and, in addition, what effect salient Middle Eastern clothing has on their choices. Our results indicate no discrimination with regard to who chooses to sit beside the Middle Eastern male wearing casual clothing. However, when the Middle Eastern male wears salient Middle Eastern clothing, we find significant evidence that the propensity of the perceived Swedish passengers to sit next to the Middle Eastern male decreases. The results point to statistical discrimination, however more data is required to verify.

Keywords: discrimination, ethnicity, identity economics, group membership
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Table of contents

1. Introduction

Ethnic discrimination toward Middle Eastern groups has been a widespread problem in Swedish society, from discrimination in the workplace (Carlsson and Rooth 2007; Bursell 2014) to the housing market (Ahmed and Hammarstedt 2008; Ahmed 2010; Carlsson and Eriksson 2014) to hate crimes (Swedish National Council for Crime Prevention 2015). However, does this ethnic discrimination against Middle Eastern groups occur only when people make a conscious and well-considered choice, or is it present when individuals make spontaneous, seemingly unconscious choices too? How prevalent is this discrimination in daily life? We conducted a field study in the Stockholm subway system, where people of diverse backgrounds meet, to find out whether there is a preference for sitting next to someone of perceived similar ethnicity and whether salient Middle Eastern clothing decreases the propensity to choose seating next to a perceived Middle Eastern male wearing such attire.

The ongoing turbulence in Syria, Iraq, Afghanistan, and other parts of the Middle East has led to a migration crisis, which in turn has resulted in a significant increase in the number of asylum seekers in Sweden. Approximately 163,000 refugees sought asylum in 2015, a 100% increase over the year before (Swedish Migration Agency 2016). As the majority of the refugees comes from Syria and Afghanistan, the Middle Eastern groups will grow larger. There is evidence both of increased xenophobia due to the influx of refugees—as evidenced by arson of asylum residences—and of increased altruism, with new organizations emerging to help the war refugees. Since much of the Swedish Democratic Party's rhetoric about these groups is negative, does the 126% increase in votes for it in the 2014 election compared to the election 2010 indicate a generalized distaste for Middle Eastern groups in Sweden (Swedish Election Authority 2014a; 2014b)?

Previous research and experiments on discrimination and in-group bias, whether with broader minority groups (Ayres and Siegelman 1995; List 2004; Fisman et al. 2008) or specific ethnic groups (Fershtman and Gneezy 2001; Bertrand and Mullainathan 2004; Alexander and Christia 2011; Shayo and Zussman 2011) have been characterized by high controllability or commitment (or both) to an outcome from at least one individual. Because the participants in the experiments were given a significant amount of time to act, the strategic choices they make, which affect the final result, can be evaluated and reevaluated. Thus, the outcome of a person's behavior and choice may reflect a mixture of preferences, and this makes it hard to distinguish raw preference (i.e., preference from which unconscious or implicit behavior might stem), an area of interest in this thesis.

Implicit discrimination on the other hand, occurs unconsciously and automatically. The result of such discrimination often results in favoring the in-group (Brewer and Brown 1998). Negative stereotypic associations as well as fear and anxiety usually trigger implicit discrimination (Hart et al. 2000; Phelps et al. 2000; Fazio and Olson 2003). What is lacking in the research field are studies into implicit discriminatory behavior in natural environments with focus on ethnicity (Rooth 2016). When the experiment is conducted in a subway, people make their choices within seconds and without giving much consideration to whether their behavior might be discriminatory. If the research in this thesis shows that there appears to be an unconscious discriminatory pattern, it will provide greater insight into how pure, microlevel preferences are manifested in daily life. It will also suggest that the problem of generalized dislike of Middle Eastern groups is deeply rooted in individual preferences, which would raise the question whether this phenomenon is transitory and due only to recent historic events or whether it might be more widespread and therefore is something to which policy makers should devote societal resources so as to reduce prejudice. A possible revealed discrimination or bias towards Middle Eastern groups in this study, that potentially stem from raw preference, could then affect how Middle Easterners are treated in decisions with higher importance and involvement. Discriminatory treatment in high-involvement decisions such as in the labor market, housing market and academic world can then result in lower productivity for the discriminatory firms, and as a re in the aggregate, Sweden as a whole (Becker 1957).

The remainder of this thesis will be organized as follows: Section two gives details the composition of ethnic groups, describes the Stockholm subway system, and presents evidence of discrimination in Sweden toward Middle Easterners. Section three reviews previous literature in discrimination, identity theories and ethnicity. Section four summarizes previous sections and presents the hypotheses. Section five describes the way the experiment was designed and section six the statistical methods used. Section seven presents the results, and section eight evaluates the results and suggests areas for further research. Finally, section nine concludes.

2. Background

2.1 The Case of Sweden and Stockholm

In 2015, 1.5 million people living in Sweden were born abroad, and an additional 700,000 were born in Sweden but have at least one parent who was born outside of Sweden (Statistics Sweden 2016a). Of these, 500,000 (5.3%) were born in the Middle East,[1] and that number has increased by 156% since 2000 (Statistics Sweden 2016a). Given the increase in people with Middle Eastern backgrounds, it is highly relevant to look at the implications of hypothetical discrimination and distaste toward these groups and to discuss how this could affect Sweden.

Ethnic segregation, defined as the physical separation of different ethnicities (National Encyclopedia 2016), has increased substantially in the last twenty years in Sweden and Stockholm. A study by *Dagens Nyheter* and Statistics Sweden (Örstadius 2015) showed that in Stockholm, on average, 46% of the neighbors of immigrants were also immigrants,[2] whereas in 2013, on average, neighbors of Swedes were only 24% immigrants, a segregation difference of 22 percentage points a worsening trend since 1991. Individuals with African and Middle Eastern origin have the most foreign neighbors according to one study (Aldén and Hammarstedt 2016), suggesting that these groups are more exposed to segregation, either by choice or by the choices of others. Housing segregation could be due to different capital requirements for different areas and there is substantial socioeconomic differentiation between ethnic groups (Statistics Sweden 2016a). Given that individuals increasingly live in homogeneous clusters and seem to prefer living with people of similar ethnicity (Örstadius 2015), we ask whether people cluster on the basis of ethnicity in the subway as well.

2.2 The Subway System in Stockholm

Approximately 800,000 people travel by public transportation in Stockholm County every day which is more than half of the urban population, and the number increases every year (Stockholm Public Transport 2014; 2016). This is one of the main reason that public transportation was chosen as the setting for the experiment: the aim is to represent society as a whole in a sample that can be considered a microcosm of Sweden. Also, the fast-choice scenario characterized by public transportation serves as a good environment to distinguish implicit discrimination (Rooth 2016). The most common form of public transportation is the subway,

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[1] The definition of "Middle East" that is used throughout this thesis is the G8 (2004) definition of "Greater Middle East" and includes Afghanistan, Algeria, Bahrain, Cyprus, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, Turkey, Sahrawi Arab Democratic Republic, United Arab Emirates, and Yemen

[2] The study defines "immigrants" as someone born abroad or someone born in Sweden but with two parents who were born abroad

which consists of three lines, which run east-west, northeast to southwest, and southeast to northwest, and pass through the Stockholm city center. The blue lines (10 and 11) travel between Kungträdgården and Hjulsta or Akalla, and at some stations, people with non-Swedish backgrounds are overrepresented, in some cases 90-95% immigrants (Örstadius 2015). The red lines (13 and 14), which run between Norsborg or Fruängen and Ropsten or Mörby Centrum, are segregated, the northern parts having very few passengers from foreign backgrounds and the southern parts resembling the ethnic composition of the blue lines (*Aftonbladet* 2016). The green lines, the most used lines (Stockholm Public Transport 2016), travel between Åkeshov, Alvik or Hässelby Strand and Skarpnäck, Farsta Strand or Hagsätra and have the most mixed ethnic composition and therefore most closely resemble a mini-Sweden (Örstadius 2015). However, there are no sources that has explicit composition of ethnic groups that take the subway.

2.3 Evidence of Ethnic Discrimination in Sweden

In Sweden, ethnic discrimination research and experiments have been done on perceived ethnicity, investigating both names and visible traits. Name-based ethnic discrimination has been researched by Magnus Carlsson and Dan-Olof Rooth (2007), who sent fictitious applications with Swedish- or Arabic-sounding names to more than 1,500 employers in Gothenburg and Stockholm. Applicants with Swedish-sounding names received 50% more callbacks for interviews than those with Arabic-sounding names. Moa Bursell (2014) conducted a similar experiment but with lower-qualification jobs where the Swedish-sounding names had an 80% higher likelihood of getting a callback for an interview. In the housing market, Ali Ahmed and Mats Hammarstedt (2008) conducted a study in which they sent 500 fictitious applications to private-housing landlords who had placed ads in the online marketplace *Blocket*. Male applicants with Swedish-sounding names were chosen for the next step and were permitted to view an apartment twice as often as those with Arabic-sounding names.

In regard to perceived ethnicity based on visible characteristics, which is what this thesis will discuss, data from Statistics Sweden and the Labor Board (Rooth 2002) showed that for adopted children of parents of Swedish origin, it is more difficult to find employment than it is for those born in Sweden with parents of Swedish origin—suggesting that a non-Swedish appearance decreases the likelihood of getting employment. Similarly, a study of students found that those who did not look typically Swedish were perceived to have performed more poorly than university students who look Swedish (Rödin and Özcan 2011). The consensus of discrimination research in Sweden suggests that there is widespread discrimination toward individuals with foreign names and appearance, especially toward those from Middle East.

3. Theoretical background

3.1 Discrimination

A definition of discrimination is "treatment or consideration of, or making a distinction in favor of or against, a person or thing based on the group, class, or category to which that person or thing belongs rather than on individual merit" (Dictionary 2016). In economic research, the action of discrimination is analyzed through models, where the most widely used are taste-based discrimination and statistical discrimination (Autor 2003). In our thesis, discrimination as a term is referred to theories in economics and social psychology and should not be confused with discrimination that is used in the context of law.

3.1.1 Taste-based Discrimination

Gary Becker's (1957) research focuses on taste-based discrimination. In his original model, employers have a "taste for discrimination," meaning that there might be a psychological cost to employing a specific minority group resulting in lower utility. This minority group has to be more productive than other workers receiving a given wage or, if they receive a lower wage, must be as productive as those receiving a higher one. However, not all employers discriminate, that is, if there are enough nondiscriminating employers, the discrimination is eliminated by competition since nondiscriminating firms will have higher productivity. In situations which involves no output, discrimination will not be eliminated by competition and may result in taste-based discrimination according to Becker since there is no incentive to improve and no product affected by lower productivity.

Becker's model has over time been applied to more areas than in a job market, taste-based discrimination regarding gender and minority groups has been a popular area of research. In regard to ethnicity, not everyone has the same taste, thus discrimination should not results in a generalized tendency to discriminate toward a single ethnic group but could express itself in an own-ethnicity preference (Price and Wolfers 2007). John Donohue and Steven Levitt (2001) found that in the US, an increase in the number of police of a certain ethnicity is related to an increase in arrests of people of another ethnicity but not of their own, and Joseph M. Stauffer and Ronald M. Buckley (2005) found that supervisors gave lower-performance ratings to workers of another ethnic group than their own. In a situation such as seating in the subway, which involves no output or product, taste-based discrimination may be present if the result manifests itself in passengers choosing to sit only next to someone of perceived similar ethnicity.

In relation to taste-based discrimination, sociologist Pierre Bourdieu (1984) has developed a theory on how taste is derived from cultural capital, lifestyle, and class. If ethnicities or other traits exist that are perceived as being inferior in value from a social standpoint, this will result in what Bourdieu calls *Distinction*. This is the process when the more highly ranked ethnicities try to set themselves apart. The theory suggests that different ethnicities could have different statuses. Bourdieu's theory could partly explain why Rooth (2002) found that children adopted by Swedish parents have greater difficulty finding jobs. Since the only thing that differs them from Swedish born children with Swedish parents is their skin color, and thus visible ethnicity, employers might view them as inferior in value. In the subway, the process of distinction could mean that passenger entering a subway car chooses *not* to sit next to a particular individual since some characteristics are seemingly lower ranked.

In our experiment, taste-based discrimination will be demonstrated if passengers boarding the subway felt that there was a psychological cost of sitting next to a specific group. Since people have different tastes, the own-ethnicity preference will be demonstrated if passengers of a particular ethnicity choose to sit next to someone of their own perceived ethnic group.

3.1.2 Statistical Discrimination

Statistical discrimination was explored by Edmund Phelps (1972) and Kenneth Arrow (1973). In their studies, firms were given little information about the skills of job applicants. As a result, employers used easily observable characteristics, such as ethnicity, to infer expected productivity of applicants. The employers made hiring decisions by associating observable characteristics (i.e., stereotypes of average typical behavior) with expected productivity. This leads to discrimination, but not on average, since expected productivity equals true productivity on average (Aigner and Cain 1977). But what can cause discrimination on average is if employers are risk averse. In such cases, two groups can have the same expected productivity, but the group with larger variance gets paid less on average because of risk aversion. In statistical discrimination, there will no bias or preference to treat in- or out-group differently, all groups will discriminate the same since they share the same statistical information and stereotypes. Middle Easterners will thus discriminate other Middle Easterners if statistical discrimination is present (Price and Wolfers 2007). Evidence of statistical discrimination was found by John A. List (2004) who found that non-Caucasian was quoted higher prices when acting as buyers in the auction of sports cards. List found that the non-Caucasian's reservation price distributions were more widely dispersed and hence influenced the dealers' perceptions and drove the discriminatory behavior based on statistical available information.

In our field study, this would mean that a passenger coming on board either knows or believes that individuals of a specific ethnic group on average are more likely to be, for example, dangerous, rude, or smell bad. In such cases, the passenger might believe that there is a higher likelihood of being robbed, insulted, or suffering another unpleasant experience if he or she sits beside someone of that ethnic group. The passenger is fully aware that this particular individual, possibly wearing salient Middle Eastern clothing, might not be dangerous, but thinks that the probability is higher due to recent terror acts and turbulence in the Middle East, than for other passengers and therefore chooses to sit somewhere else.

3.1.3 Explicit and Implicit Discrimination

Social psychology distinguish between explicit- and implicit discrimination. Explicit discrimination stems from explicit attitudes and is the kind of act someone deliberately thinks about and report, such as hiring a Caucasian female over a non-Caucasian female even though the latter have better qualifications, or telling people that you do not like those from the Middle East (Project Implicit 2016). Implicit discrimination stems from implicit attitudes and occurs when individuals make unconscious and negative evaluations of others outside of its control (Project Implicit 2016). Individual’s millisecond reactions to another individual can include primitive fear and anxiety responses in the brain, negative stereotypic associations, and discriminatory behavioral impulses. These are usually measured by an implicit association test (IAT) where an individual's associations are tested (Rooth 2016). Both implicit discrimination and explicit discrimination is believed to be expressed from an underlying taste-based or statistical discrimination (Rooth 2016).

In our field study, explicit discrimination occur if a passenger chooses to sit next to the Swedish male because he or she is explicitly thinking that he or she does not like men from Middle East or believe they might be more dangerous. If the discrimination is implicit, the passenger have a negative initial associations to men with darker skin, traditional ethnic clothing and or beards because of media coverage, previous experience or stereotypes, and as a result chooses to sit beside someone who looks Swedish.

3.1.4 Connecting Taste-Based and Statistical Discrimination with Explicit and Implicit Discrimination

The act of discrimination is multifaceted, and separating discriminatory behavior into taste-based versus statistical as well as implicit versus explicit has proven to be difficult as they neither are mutually exclusive nor collectively exhaustive. Monetary games (Fershtman and Gneezy 2001), field experiments (Price and Wolfers 2010) and IAT tests (Bargh et al. 1996) have been innovative ways to separate different types of discrimination. Figure 1 show the multifaceted nature of discrimination, that plenty different combinations of discrimination exist and that they still do not cover the entire scope of discrimination.

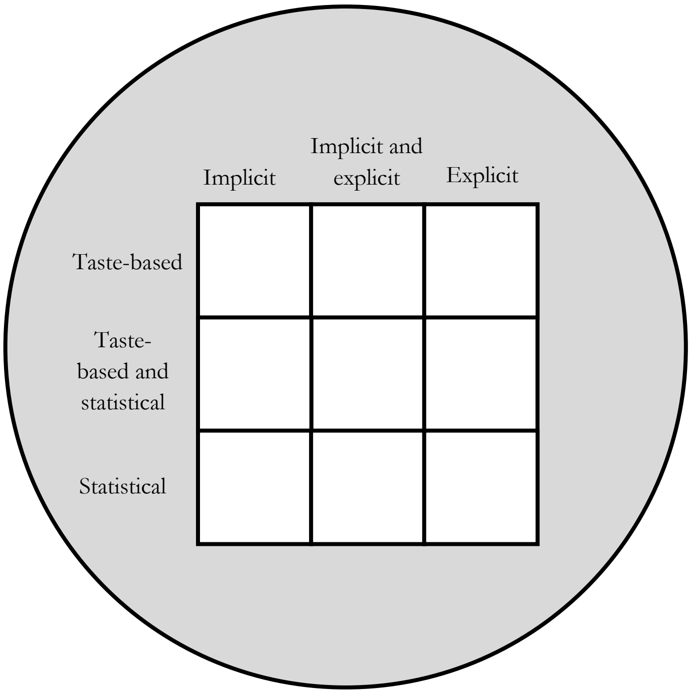

Figure 1. Discriminatory matrix of how taste-based and statistical discrimination interconnects with implicit and explicit discrimination. The shaded area of the circle represents other theories of discrimination not covered in this thesis (authors' own).

3.2 Identity Theories and In-group Bias

3.2.1 Identity Economics

Many theories are based on the notion that individuals act in a completely rational way in order to satisfy their own self-interest. However, this approach has been criticized, and in recent years attention has been drawn toward expanding the notion of utility maximization to allow for other preferences, such as identity. In Becker's model of discrimination, individuals try to maximize expected utility when a function of taste is incorporated. George A. Akerlof and Rachel E. Kranton's (2000) identity economics theory provides a framework for analyzing economic outcomes by establishing individual identities. They suggest that following the behavior prescription for one's own identity affirms and strengthens one's self-image and increases utility. Violating the same prescription causes anxiety and discomfort and thus lowers utility. They also argue that choice of identity may be the most important economic decision individuals make and therefore that individuals may choose what group they want to belong to in the mid- to long run. In the short run, people choose their actions based on the identity they already have.

3.2.2 Group Membership

Gary Charness, Luca Rigotti, and Aldo Rustichini (2007) found that group membership has to be salient to be important. Salient group membership has shown to affect the behavior of the out-group in a more aggressive way, even if it has no effect on payoff. When the field study is conducted with salient Middle Eastern clothing, the theory then suggests, individuals who identify with this group are drawn to sharing common spaces, that is, to sitting next to each other. Another effect could also be present: as Middle Eastern clothing signals group membership, those who do not identify with a particular group might seek other groups or individuals in the subway with whom they identify more closely.

Social psychologist Moses Shayo (2009) finds that people tend to identify with a group with more similarities to their own and may in addition prefer a high-status group over a low-status group. Shayo also find that poor people tend to identify more strongly with their nationality than do richer groups. In the subway seating situation, this could mean that some individuals see ethnicity as an important part of their identity and therefore choose to sit next to someone with an ethnicity perceived to be similar to their own or similar to their desired ethnicity. On the other hand, ethnicity might not even matter, social class could be a stronger preference of belonging and hence, no bias based on ethnicity would be shown.

3.2.3 In-group Bias

In social psychology, in-group bias is the pattern of favoring members of the same group over out-group members in the process of evaluating others (Sumner 1906). In s*ocial identity theory*, the underlying drive is to improve self-esteem, partly by favoring in-group members, hence, a classification of "us and them" is enough to create conflicts and bias (Tajfel et al. 1971). The other side of the behavior is the process of out-group negativity, which is the act of punishing the out-group (Tajfel and Turner 1979). The *congruence theory* discuss how the degree of perceived dissimilarities between the in-group and the out-group increase negative feelings (Struch and Schwartz 1989). Since perceived dissimilarities matter more than actual similarities, this will often result in statistical discrimination given that individuals draw conclusions about another person's expected dissimilarities or variance on the basis of available information such as statistics or stereotypes. For example, naturally occurring data from Israeli small claims courts found in-group bias of Jewish and Arabic judges (Shayo and Zussman 2011). A claim was more likely to be accepted if a judge is of the same ethnicity as the plaintiff.

3.3 Ethnic Groups and Boundaries

As mentioned above, there is a vast amount of literature on how identity affects group membership. Shayo (2009) speaks of identifying with groups with greater similarity. One such similarity is ethnicity. Early definitions of ethnicity made culture and ethnicity interchangeable and held that individual ethnicity and culture cannot be changed. Fredrik Barth (1969) was one of the earliest anthropologists to challenge fundamental conceptions of ethnicity. One of them being that ethnic identification can be changed by external ascriptions ('how others see me') and self-identification ('how I see me'). Since both conditions needs to be satisfied, a person might identify him- or herself as Swedish, but if no one else would do so, that person would, in a situation where ethnicity is important, not be identified as Swedish. In the context of the subway, where passengers choose seating, it is the onboarding passengers' self-identification of ethnicity and how they ascribe the ethnicity of other seated passengers that affects the process of identifying group membership on the basis of ethnicity.

Although Barth's theory has stood the test of time, there has been criticism of it. Barth does not acknowledge that an individual may have multiple ethnic identities. Bhabha (1998) mentions a lack of "in-betweenness" in many theoretical frameworks and asserts that ethnic definitions should not be "either-or." Culture and ethnicity can jointly stimulate social identity and actions. In a society such as Sweden, where multiple and mixed ethnicities exist, self-identification and external ascription of ethnicities are likely to be fluid and non-discrete, especially for individuals of non-Swedish heritage. As "Swedishness" is an undefined term and is interpreted differently depending on where in Sweden one is, the concept of an ethnic Swedish group would be broad and hard to disentangle. This might suggest that unless there is a sufficiently prevalent ethnic signal, such as salient Middle Eastern clothing that would clearly be interpreted as non-Swedish, choosing seating in a subway based on ethnicity is less likely due to its fluid nature.

4. Summary of Previous Research and Presentation of Hypotheses

Given the ethnic discrimination toward Middle Eastern group revealed in Swedish research and given the ethnic composition of Swedish society (Carlsson and Rooth 2007; Ahmed and Hammarstedt 2008; Ahmed and Hammarstedt 2008; Ahmed 2010; Rödin and Özcan 2011; Bursell 2014; Carlsson and Eriksson 2014), it is logical to examine whether discrimination occurs toward this ethnic group in a setting characterized by fast and seemingly unconscious choices. Little research has been done to observe discrimination and bias in naturally occurring events in daily life in Sweden. The great majority of research and experimentation that has been conducted proves that ethnic discrimination exists in society, in some cases explicit—in the form of taste-based and or statistical discrimination—in others, more implicit and unconscious. The basis of discrimination can be explained largely by statistical and taste-based discrimination if identity and group membership are included in the utility function.

Shayo (2009) suggests that people tend to identify more strongly with groups having greater similarity to their own, or similarity to the identity they wish to have (Akerlof and Kranton 2000). If the most important similarities are considered to be ethnicity this would in many cases result in an own-ethnicity preference. If these preferences are incorporated into the utility function, this should result in a taste-based discrimination. This tendency may manifest itself, explicit or not, in an everyday event such as taking the subway as it is one of the few places where individuals from all background interact on the same basis. Thus, Middle Eastern passenger would be predicted to sit beside other Middle Easterners and Swedish passengers would be predicted to sit beside other Swedes. Our first hypothesis is formulated as follows.

HYPOTHESIS I: *There is a tendency to choose seating beside someone with perceived similar ethnicity*

Given the theory on how salient group membership affect payoff (Charness et al. 2007) in conjunction with the media coverage of the ongoing terror trend mainly in the Middle East (Institute for Economics & Peace 2015), salient Middle Eastern clothing is expected to lead to statistical discrimination, in other words discrimination by all groups, since their expected variance of safety is higher. Taste-based discrimination can still be prevalent as the salient group membership results in a stronger in-group bias. Our second hypothesis is formulated as:

HYPOTHESIS II: *The propensity to choose seating beside a perceived Middle Eastern male will decrease when he wears salient Middle Eastern clothing*

Figure 2 shows how the hypotheses link to the earlier 3x3 discriminatory matrix. Hypothesis I test whether taste-based discrimination result in a same-ethnicity choice of seating, and Hypothesis II mainly test statistical discrimination, but taste-based discrimination may still be a present due to the saliency of the Middle Eastern clothing resulting in in-group bias.

Overall, we do not believe that explicit discrimination can alone explain the behavior in the subway. This would imply that passengers deliberately choose *not* to sit next to someone, and that choice would be unaffected by any kind of association or unconscious feeling towards the seated individuals. Unconscious associations are very likely to be present in a fast-choice environment like in the subway, thus resulting in implicit discrimination (Rooth 2016) —or both.

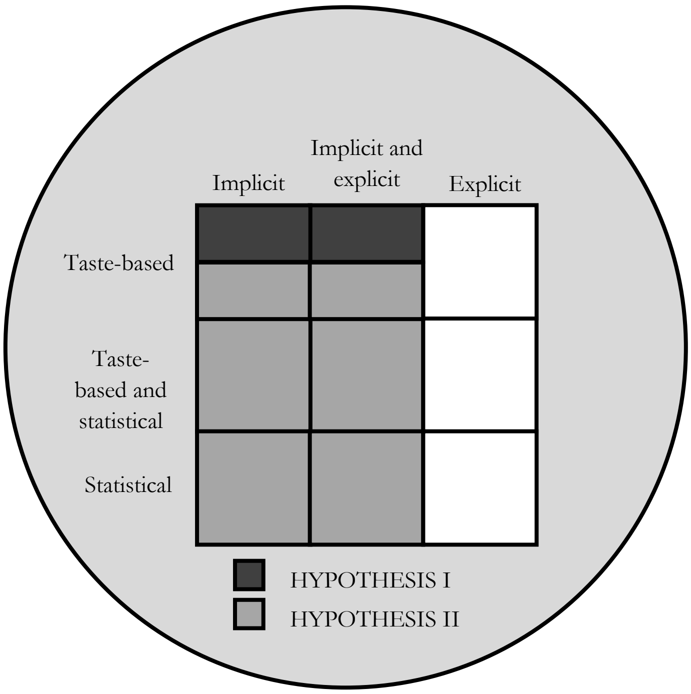

Figure 2. Discriminatory matrix of how taste-based and statistical discrimination interconnects with implicit and explicit discrimination. The shaded area of the circle represents other theories of discrimination not covered in this thesis. Hypothesis I predicts implicit *and* explicit or implicit taste-based discrimination. Hypothesis II predicts six possible discrimination scenarios (authors' own).

5. Experimental Design

The experiment was designed to test the two hypotheses described above. Since little research has been conducted on discriminatory behavior in a fast-choice environment, the following experimental design is self-designed. The experiment was conducted at the end of March and during April 2016, for total of 14 days. A pilot experiment was carried out a few weeks in advance to improve the design of the experiment and the quality of the data. The experiment is restricted to only looking at effects of perceived ethnicity and salient ethnic clothing for sitting *males,* and not women, mostly due to lack of experimenters. The subway is chosen as the setting for the natural field study is partly due to its fast-choice nature which is thought reveal implicit discrimination (Rooth 2016).

5.1 The Experimenters

The experiment had a *Seated Middle Eastern Male* (*SMEM*), and an *Observer.* The Middle Eastern male of Iranian origin was 183 cm tall, 22 years old, had brown eyes, a normal body type, short dark brown hair, and a short, dark beard. His clothing was aimed to be perceived as casual, black suede shoes, blue or gray jeans and closed dark blue wind jacket. None of the clothing had any visible brand label.

5.2 Procedure

The *SMEM* entered the subway train and searched for an already seated perceived Swedish-looking male[3] (not aware of the experiment and hereinafter called *Seated Swedish Male,* or *SSM*). The *SSM* had to sit alone in a four-chair group (leaving three seats available), and the four-chair group on the opposite side of the aisle had to be empty. The *SMEM* then chose to sit down in the unoccupied four-chair group, on opposite side of the aisle to the *SSM*. When the *SMEM* was seated, the *SSM* had three available seats in his four-chair group, as did the *SMEM*. Whenever someone entered the train and chose to sit beside the *SMEM* or the *SSM*, the person's attributes were noted by the *Observer* (see Figure 3). The person entering the train and choosing a seat is called "the passenger". The list of attributes noted by the observer is presented in Table 1 (section 6.2). When the passenger was seated next to either the *SMEM* or *SSM* the number of people in each four-chair group was unequal (two people where the passenger sat down, and one in the other), and thus, the passenger's visible characteristics could affect the choice of the next passenger entering the car. Each passenger sitting down next to the *SMEM* or *SSM* counts as one observation. When the observation was completed, the *SMEM* would then leave his seat and

[3] A perceived Swedish-looking person was a Caucasian individual with stereotypical Nordic traits

find another empty four-chair group with an *SSM* sitting alone on the other side of the aisle and repeat the procedure to get another observation. If there were no empty four-chair groups left in the car that fulfilled the requirement mentioned above, the experimenters exited and entered the next train. The procedure presented above is called Stage One.

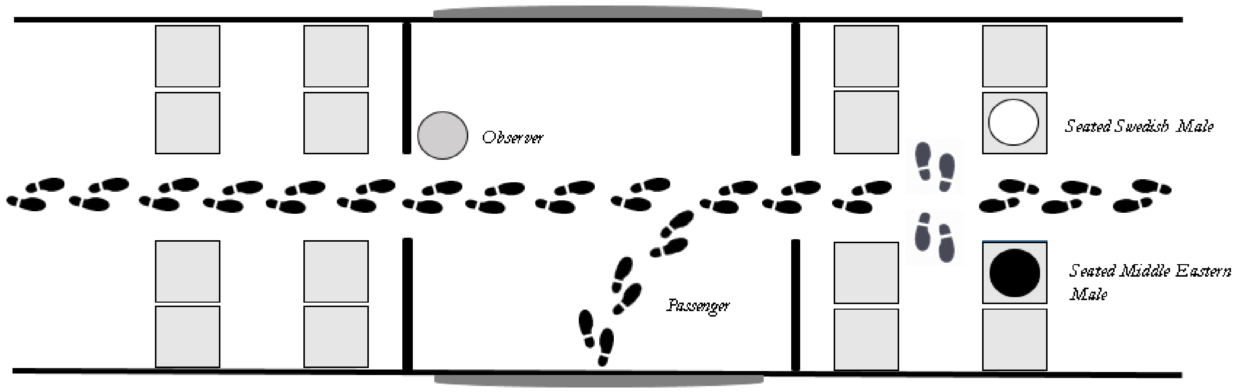

Figure 3. Experimental procedure in the subway. The *Seated Middle Eastern Male* chooses a seat of an unoccupied four-chair group, opposite of a *Seated Swedish Male*. The *Observer* notes characteristics of the passenger entering and the choice they make, either next to the *Seated Middle Eastern Male* or *Seated Swedish Male* (authors' own).

In Stage Two, the visible attributes of the *SMEM* were changed. Salient Middle Eastern clothing (hereinafter interchangeably called Treatment) —a *thobe* (similar to a robe) and a *taqiyah* (headwear) —was worn by the *SMEM* in order to signal clearly a specific ethnic group and decrease similarities with the *SSM*. The procedure outlined above was repeated, the only difference from Stage One being the changed clothing.

5.3 Setting

The experiment was conducted on two stations on the green line in the Stockholm subway system, from Skarpnäck (end station) to Bagarmossen (only in that direction) stations during high-peak, weekday hours (7:00–9:30 a.m.). "High-peak hours" is defined as hours when there are almost no empty four-chair groups when the train leaves the end station.

5.4 Choice of Subway Stations

The choice of subway stations is a vital part of the method. As different areas in Stockholm are characterized by highly different socioeconomic levels and composition (Swedes and non-Swedes), this fact is likely to affect the kind of individuals entering the subway. For example, the area around one end of the blue line has a large non-Swedish population, so that the selection of people there would be majority non-Swedish. Our aim was to choose subway stations at which representative cross sections of the population in Sweden can be found and that reflect its socioeconomic and ethnic composition well. We overlaid the ethnic and socioeconomic map created by *Dagens Nyheter* and Statistics Sweden (Örstadius 2015) with a map of the subway stations in Stockholm, and the results showed that the Skarpnäck and Bagarmossen stations represent the Swedish population relatively well. We therefore chose them as the stations relevant for the experiment. Also, only two stations were used so as not to diminish statistical power, since we use dummy variables for each station.

5.5 Choice of Time of Day

In order to increase ecological validity and reflect real-life interactions among everyday people, high-peak hours were chosen. During these hours, individuals who work normal office hours take the subway and thus are representative of the majority of Swedish citizens (Statistics Sweden 2016). During mid-peak hours (9:30 a.m.–4:00 p.m.), older individuals, probably retirees, are overrepresented. In addition, data collection was more effective during high-peak hours because the stream of people was steady. The combination of high-peak hours and starting from an end station allowed us to complete several observations per subway ride because the trains stand still for some time. For example, when observations were being made in Skarpnäck, the *SMEM* usually had enough time to choose a seat next to another *SSM* before the train departed the station.

5.6 Factors Controlling Decisions on Where to Sit

Since the aim of the experiment was to test how ethnicity affects choice of seating, the *SSM* was made to resemble the *SMEM* as closely as possible so that ethnicity would be the most-significant differentiation marker, and all other factors would be equal. We therefore strove for similar clothing, age, and level of attractiveness since these attributes can affect the choice of seating. Also, the distance had to be similar so that walking distance to the *SMEM* or *SSM* was equal. Thus, the seat that the *SMEM* chose mirrored that of the *SSM* in the other four-chair group. In addition, both choices of seating had to be as equally visible as possible. Since the subway station in Stockholm is left-traffic, passengers enter on the right side (relative to the train's direction). This makes the opposite side (*SSM*'s side in Figure 3.) slightly more visible. In order to minimize this effect, *SMEM* made sure to choose different sides as frequently as possible, and a dummy variable for the most visible side of the train is included in the model to control for this factor. Furthermore, the *SMEM* also mimicked the body language and the posture of the *SSM*.

5.7 Drawbacks with Experimental Design

The experiment had an obvious drawback: the variation in the characteristics of the *SSM*s (there was a unique *SSM* for each observation). If an *SSM* had had sloppier clothing than the *SMEM*, that might have affected choice of seating. The trade-off here is being able to make more observations versus having a constant *SSM* by having another experimenter. To compensate for inconsistency in the appearance of the *SSM*, dummy variables for the perceived age and dress of the *SSM* were included in the model.

Since we do not ask individuals what ethnic group they belong to nor how old they are, the observations suffer from subjectivity and generalization. A Swedish-looking woman could be Lebanese but in the data be referred to as Swedish. The same logic applies to age. What was essentially done was to guess the country of origin and use it as a proxy for ethnicity. However, Barth (1969) also challenged the notion that an ethnic border is not a political-territorial, like a country's border, but a social boundary, shaped through interaction with "others". The four, broad, ethnic classifications (see Table 1) are oversimplified and lack accuracy, however, due to the nature of the experiment, narrower ascriptions would be as inaccurate as the ones we used. In an attempt to reduce inaccuracy in describing a passenger's characteristics, the *Observer* and the *SMEM* consulted about the ethnic classification and age group into which each passenger should be placed.

The aim was to create a microcosm of Sweden with the chosen subway stations, but the composition of Sweden will not be represented entirely since only 49% of people in the Stockholm municipality use the subway instead of the car. There is no information on the ethnic composition of people who use the subway in Sweden, which means that people taking the subway are not necessarily representative of the Swedish population. Gender composition in public transportation is 57% women and 43% men (Storstockholms Lokaltrafik 2014), which is not in line with Sweden in general, where 50% of the population is women and 50% men (Statistics Sweden 2016b). Age composition on the subway is also at odds with mini-Sweden assumptions since, at 28%, passengers between the ages of 25 and 39 are overrepresented as are those between the ages of 40 and 59 (29%) (Storstockholms Lokaltrafik 2014). In Sweden generally, those two age groups represent only 19% and 13%, respectively (Statistics Sweden 2016b).

6. Statistical Methods

Since choosing to sit either with the *Seated Middle Eastern Male*, *SMEM,* or the *Seated Swedish Male*, *SSM,* is a binary outcome, the econometric model will have to take this into account. A linear probability model (LPM) is simple to interpret and use, and will therefore be the main model for analyzing the data. The LPM is an ordinary least squares (OLS) model in which the dependent variable takes values between 0 and 1. In this experiment the dependent variable is either 0 (choosing to sit next to the *SSM*) or 1 (choosing to sit next to the *SMEM*). Hypothesis one is tested by regression one and hypothesis two is tested by regression two.

6.1 Regressions and Proportion Tests

The models are:

$$Prob\ (Choosing\ to\ sit\ beside\ SMEM_i) = \beta_0 + \beta_1 Perceived\ Middle\ Eastern\ passeger_i + \beta_{k+1} X_i + \epsilon_i \quad (1)$$

HYPOTHESIS I: $\beta_1 > 0$

$$Prob\ (Choosing\ to\ sit\ beside\ SMEM_i) = \delta_0 + \delta_1 Treatment_j + \delta_{k+1} X_i + \epsilon_i \quad (2)$$

HYPOTHESIS II: $\delta_1 < 0$

The vector X_i is defined as case-specific controls that may affect the choice of whom to sit next to and can be divided into three groups: characteristics of the passenger, characteristics of the *SSM,* and other factors. Characteristics of the passenger include perceived age and ethnicity and gender. Characteristics of the *SSM* include perceived age, presence or absence of a beard and how well dressed the *SSM* is. Other factors include a dummy variable for the station Bagarmossen (Skarpnäck being the base case) and who sits closest to the door when passengers enter the train (control variable if *SMEM* or *SSM* is most visible to passenger). The variable Treatment effect is a dummy variable for the times when the *SMEM* j wore salient Middle Eastern clothing. Table 1 includes the variables that were noted by the *Observer*. Regressions that uses control variables will have the following as base case: a perceived Swedish male, aged 16 to 30, where the *SSM* is casually dressed, without a beard, and does not sit closest to the door of the car. Lastly, ϵ_i is the individual specific error term for passenger i, which could be a person's preference of always sitting on the right side of the train's direction or having a general distaste for particular ethnicity.

Regression one tests whether perceived Middle Eastern passengers are more keen than other ethnic groups to sit beside the *SMEM* and regression two tests whether salient Middle Eastern clothing has an effect of their choice of seating for all passengers. Along with these two main regressions, we tested whether the proportion of choice of seating for groups is statistically different from 50%. If the regressions yield no significant results, it is still of analytical interest to investigate whether the choice of seating is random or not. Hypothetically, if there are no factors to explain a person's choice of seating, the probability of choosing to sit beside the *SMEM* is 50%. However, if we can reject that null hypothesis, that indicates that factors do come into play (ethnicity might be one of these factors). Thus, the hypothesis test for randomness is defined as:

$$H_0: P(Choosing\ to\ sit\ beside\ SMEM_i|G) = 0.5$$
$$H_1: P(Choosing\ to\ sit\ beside\ SMEM_i|G) \neq 0.5$$

Where G is a specific group of analytical interest, such as perceived Middle Eastern passengers or females. A test for difference in proportion in observations when the *SMEM* wore casual or salient Middle Eastern clothing for a specific group will also be performed in order distinguish whether there is a statistical difference of proportion within groups that depends on the *SMEM*'s clothing. The salient Middle Eastern clothing might have no effect on one group but yet have an effect on others. The hypotheses for these tests are:

$$H_0: P\left(Choosing\ to\ sit\ beside\ SMEM_{wearing\ casual\ clothing,i}\middle|G\right) =$$
$$P\left(Choosing\ to\ sit\ beside\ SMEM_{wearing\ salient\ Middle\ Eastern\ clothing,i}\middle|G\right)$$
$$H_1: P\left(Choosing\ to\ sit\ beside\ SMEM_{wearing\ casual\ clothing,i}\middle|G\right) \neq$$
$$P\left(Choosing\ to\ sit\ beside\ SMEM_{wearing\ salient\ Middle\ Eastern\ clothing,i}\middle|G\right)$$

For groups where observations are below 40 (a criterion for the proportion test), chi-squared test for difference in proportion was conducted.

Table 1. Description of variables observed in the field study in the Stockholm subway system in order to analyze whether ethnicity and salient Middle Eastern clothing affect choice of seating.

VARIABLE NAMES	Description
Perceived Swedish Eastern passenger	Dummy variable that takes the value of 1 if the passenger is perceived to have Swedish ethnicity or 0 otherwise
Perceived Middle Eastern passenger	Dummy variable that takes the value of 1 if the passenger is perceived to have Middle Eastern ethnicity or 0 otherwise
Perceived Asian passenger	Dummy variable that takes the value of 1 if the passenger is perceived to have Asian ethnicity or 0 otherwise
Perceived African passenger	Dummy variable that takes the value of 1 if the passenger is perceived to have African ethnicity or 0 otherwise
Perceived Hispanic passenger	Dummy variable that takes the value of 1 if the passenger is perceived to have Hispanic ethnicity or 0 otherwise
Male	Dummy variable that takes the value of 1 if the passenger is a male and 0 otherwise
Female	Dummy variable that takes the value of 1 if the passenger is a female and 0otherwise
Passenger age 0-15	Dummy variable that takes the value of 1 if the passenger is between 0 and 15 years old and 0 otherwise
Passenger age 16-30	Dummy variable that takes the value of 1 if the passenger is between 16 and 30 years old and 0 otherwise
Passenger age 31-45	Dummy variable that takes the value of 1 if the passenger is between 31 and 45 years old and 0 otherwise
Passenger age 46+	Dummy variable that takes the value of 1 if the passenger is between 46 and 60 years old and 0 otherwise
Treatment	Dummy variable that takes the value of 1 if the *Seated Middle Eastern Male* wears salient Middle Eastern clothing and 0 otherwise
Casual clothing	Dummy variable that takes the value of 1 if the *Seated Middle Eastern Male* wears causal clothing and 0 otherwise
Onboarding at Skarpnäck	Dummy variables that takes the value of 1 if the passenger enters the subway train at Skarpnäck and 0 otherwise
Onboarding at Bagarmossen	Dummy variables that takes the value of 1 if the passenger enters the subway train at Bagarmossen and 0 otherwise
Seated Swedish Male age 0-15	Dummy variable that takes the value of 1 if the *Seated Swedish Male* is between the age of 0 to 15 years old and 0 otherwise
Seated Swedish Male age 16-30	Dummy variable that takes the value of 1 if the *Seated Swedish Male* is between the age of 16 to 30 years old and 0 otherwise
Seated Swedish Male age 31-45	Dummy variable that takes the value of 1 if the *Seated Swedish Male* is between the age of 31 to 45 years old and 0 otherwise
Seated Swedish Male age 46+	Dummy variable that takes the value of 1 if the *Seated Swedish Male* is between the age of 46 to 60 years old and 0 otherwise
Seated Swedish Male dressed casual	Dummy variable that takes the value of 1 if the *Seated Swedish Male* is dressed casual and 0 otherwise
Seated Swedish Male dressed business	Dummy variable that takes the value of 1 if the Seated Swedish Male is dressed business and 0 otherwise
Seated Swedish Male with beard	Dummy variable that takes the value of 1 if the *Seated Swedish Male* has a beard and 0 otherwise
Seated Middle Eastern Male seated closest to door	Dummy variable that takes the value of 1 if the *Seated Middle Eastern Male* is seated closest to the door and 0 otherwise

6.2 Alternative Statistical Method

The drawback of an LPM model is that it can have estimated values below zero and above one. Therefore, in many cases, a binary response model is more appropriate. Probit and logit models are the models most commonly used in economics, the probit model being more popular. The probit model assumes normal distribution of standard errors, and that gives it analytical advantages over the logit model (Wooldrige 2013). Interpretation of these models differs from the LPM, however, the probit model will also be used in order to verify or reject results from the LPMs. Another reason that LPM is more suitable for analysis is that in the robustness check, interaction terms will be used. Interpreting interaction in a probit model is far more difficult. The interaction effect cannot be understood solely by looking at statistical significance, sign and magnitude. Cross derivatives, or cross differences need to be computed (Ai et. al. 2003). Using LPM models for interaction-effect regressions and a probit model for non-interaction effect regression would be inconsistent and could lead to confusion, so LPM is used throughout (see Appendix 1 for the statistical properties of the probit model).

6.3 Measurement Errors

It is the *Observer*'s job—in consultation with the *SMEM*—to classify passengers' ages and ethnicities and the age of the *SSM* as accurate as possible. It would be wrong to assume that all classifications are correct, thus, there are measurement errors in the some of the independent variables, which reduces the reliability of the data. We assume no measurement error in the dependent variable because it is easy to see whether the passenger chooses to sit next to the *SMEM* or *SSM*. We believe that most of the measurement errors come from the fact that some non-Swedes are classified as Swedes in the data, which in turn implies that too few are classified as other ethnicities.

The Classical Errors in Variables (CEV) assumption in unlikely to hold because we believe that we systematically categorize non-Swedes as Swedish, even if the whole population would be categorized. Since the ethnic groups used in our field study are not collectively exhaustive (one can be non-Swedish/Middle Eastern/Hispanic/African/Asian) there will be a correlation between the measurement error and *both* the true value of the independent variable (what ethnic group, age group a passenger or *SSM* truly belong to) and the observed independent variable. Unfortunately, this implies that all the estimators are biased and inconsistent, diminishing the reliability of the coefficients.

7. Results

The data consists of 200 observations, 150 of which the *Seated Middle Eastern Male*, *SMEM*, wore casual clothing. Table 2 gives the descriptive statistics for the ethnic groups, age groups, etc. across the observations.

Table 2. Descriptive statistics from observations collected in the Stockholm subway system of total sample, sample when the *Seated Middle Eastern Male, SMEM,* wore casual clothing and, treatment of salient Middle Eastern clothing

	Total			With casual clothing			With salient Middle Eastern clothing		
Variable	Obs	Freq	Perc (%)	Obs	Freq	Perc (%)	Obs	Freq	Perc (%)
Choosing to sit beside the *SMEM*	200	110	55.0	150	96	64.0	50	14	28.0
Onboarding at Bagarmossen	200	105	52.5	150	82	54.7	50	23	46
Female	200	103	51.5	150	78	52.0	50	25	50.0
Passenger age 0-15	200	15	7.5	150	10	6.7	50	5	10.0
Passenger age 16-30	200	70	35.0	150	51	34.0	50	19	38.9
Passenger age 31-45	200	70	35.0	150	58	38.7	50	12	24.0
Passenger age 46+[4]	200	45	22.5	150	31	20.7	50	13	26.0
Perceived Swedish passenger	200	155	77.5	150	114	76.0	50	41	82.0
Perceived Middle Eastern passenger	200	19	9.5	150	15	10.0	50	4	8.0
Perceived Hispanic passenger	200	10	5.0	150	8	5.3	50	2	4.0
Perceived African passenger	200	9	4.5	150	6	4.0	50	3	6.0
Perceived Asian passenger	200	7	3.5	150	7	4.7	50	-	-
Seated Swedish male age 0-15	200	10	5.0	150	10	6.7	50	-	-
Seated Swedish male age 16-30	200	76	38.0	150	48	32.0	50	28	56.0
Seated Swedish male age 31-45	200	59	29.5	150	47	31.3	50	12	24.0
Seated Swedish male age 46+	200	55	27.5	150	44	30.0	50	10	20.0
Seated Swedish male dressed business	200	14	7.0	150	13	8.7	50	1	2.0
Seated Swedish male with beard	200	39	19.5	150	34	22.7	50	5	10.0
Middle Eastern sitting person seated closest to door	200	103	51.5	150	80	53.3	50	23	46.0

Worth noting in Table 2 is the difference between the number of passengers who chose to sit next to the *SMEM* when he wore salient Middle Eastern clothing and the number of passenger who sat next to him when he did not. When the *SMEM* wore casual clothing, 64% of passengers chose to sit next to him, whereas only 28% sat next to him when he wore salient Middle Eastern clothing. The difference is quite large considering that only one attribute had been changed. Very

[4] Five of the passengers in variable Passenger age 46+ (without salient Middle Eastern clothing), were perceived to be 61 years old or over, and because of the low number of observations in this age group, they do not have a dummy variable. Having a dummy variable for this group would give the regressions less statistical power and could give misleading results since an observation favoring the *Seated Swedish Male* or *SMEM* would affect the coefficient significantly

few observations were made of Middle Eastern and other ethnic groups thus, conclusions about these groups should be drawn with caution. Section 7.1 will discuss whether ethnicity had a tendency to affect choice of seating when the *SMEM* wore casual clothing. Section 7.2 will discuss whether salient Middle Eastern clothing had a tendency to affect choice of seating. Finally, Section 7.3 presents robustness checks.

7.1 Effect of Ethnicity of the Seated Middle Eastern Male and the Seated Swedish Male

HYPOTHESIS I: *There is a tendency to choose seating beside someone with perceived similar ethnicity*

Regression one will test Hypothesis I, that is, whether a perceived Middle Eastern passenger exhibits stronger than average tendency to sit next to the *SMEM* than the average. Before running the regression, we present an overview of the main results and test it for possible randomness. Since the treatment of salient Middle Eastern clothing is analyzed in section 7.2, the observations in which the *SMEM* wore such attire are excluded from this section. As a result, only 150 observations are analyzed.

Hypothesis I predicts that a larger proportion of perceived Swedish passengers will sit next to the *SSM*, and a larger portion of perceived Middle Eastern passengers will sit next to the *SMEM*. Figure 4 show that across all 150 observations, passengers tend to choose to sit next to the *SMEM*. This is true for both perceived Swedish and Middle Eastern passengers. Since the perceived Swedish passengers were more keen to sit next to the *SMEM* than average, Hypothesis I is rejected for perceived Swedish passengers and no regression had to be conducted for this group. However, there is a need for further investigation of the effect for perceived Middle Eastern passengers. Testing to determine whether the proportion of passengers choosing to sit next to the *SMEM* deviates statistically from 50% will indicate whether choosing a seat is random and whether ethnicity or other characteristics have an impact on where one chooses to sit. Table 3 indicate that the choice of whom to sit next to is non-random generally for all 150 observations jointly, but also for the group perceived Swedish passengers. The null hypothesis cannot be rejected for perceived Middle Eastern passengers since the proportion of Middle Eastern passengers sitting beside the *SMEM* is not statistically different from 50%.

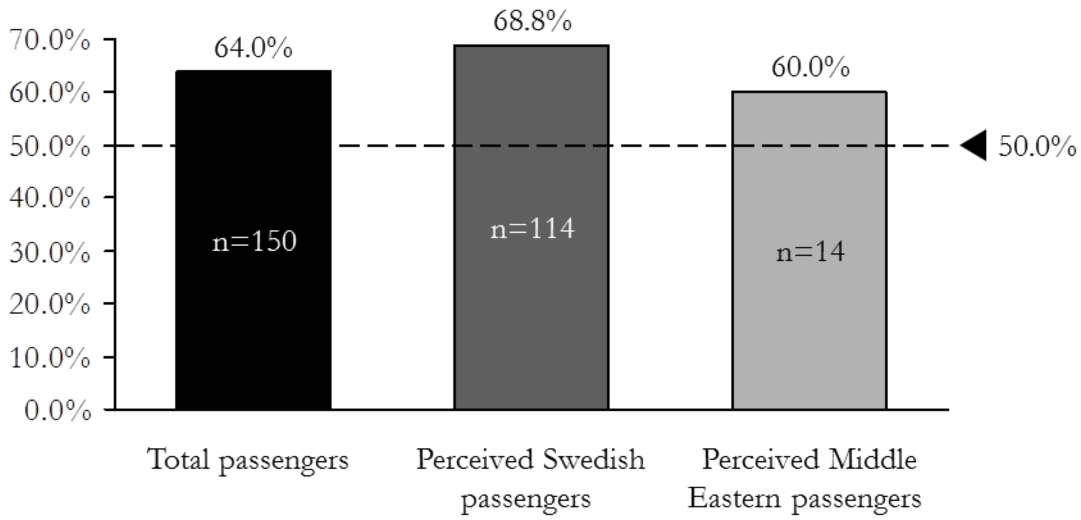

Figure 4. Histogram of proportion choosing to sit beside the *Seated Middle Eastern Male* wearing casual clothing

Table 3. Test for proportion and chi-square test of randomness in the choice to beside the *Seated Middle Eastern Male, SMEM,* wearing casual clothing. $H_0: p = 0.5$, $H_1: p \neq 0.5$

Probability of sitting beside *SMEM* with casual clothing	n	Mean proportion	Chi-square test[T]	Std.error	p-value	Randomness of choice of seating
Total passengers	150	0.640	No	0.0392	0.0006	Non-random
Perceived Swedish passengers	114	0.658	No	0.0444	0.0007	Non-random
Perceived Middle Eastern passengers	15	0.600	Yes	-	0.4386	Keep H_0

[T] Proportion test when a chi-square test was not conducted

Table 4 shows the regression result from regression one with and without control variables (the full regression is shown in Appendix 2). The results show that the probability of choosing to sit next to the *SMEM* is 4.44 percentage points *lower* than average probability when the passenger is perceived Middle Eastern without control variables. It is 6.67 percentage points lower with control variables. The probit model show a marginal effect of -7.70 percentage points (see Appendix 2). However, the results are not significant on conventional levels. Also, the explanatory power of the dummy variable perceived Middle Eastern passenger is very weak, the adjusted R-squared is -0.6%. This suggests that the Middle Eastern ethnicity of the passenger gives no explanatory insight into choice of seating.

Table 4. Linear probability model. Choice of sitting beside the *Seated Middle Eastern Male, SMEM,* in casual clothing

VARIABLES	(1) Probability of sitting beside *SMEM*	(2) Probability of sitting beside *SMEM*
Perceived Middle Eastern passenger	-0.0444	-0.0667
	(0.134)	(0.141)
Constant	0.644***	0.661***
	(0.0415)	(0.131)
Control variables	No	Yes
Observations	150	150
Adjusted R-squared	-0.006	-0.015

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Outcomes of above results are that Hypothesis I is rejected. There was no tendency to choose seating beside someone of perceived similar ethnicity when the *SMEM* wore casual clothing.

7.2 Effect of Salient Middle Eastern Clothing

HYPOTHESIS II: *The propensity to choose seating beside a perceived Middle Eastern male will decrease when he wears salient Middle Eastern clothing*

Next we turn to analyzing whether salient Middle Eastern clothing affects the choice of seating. The data is divided into two groups: in one group, the *SMEM* wore casual clothing, in the other, salient Middle Eastern clothing. We do this in order to test the randomness of the data as well as the differential effect between the two groups. Regression two will test whether the impact of salient Middle Eastern clothing is statistically significant for the full sample, with and without control variables.

Figure 5 shows a large difference between the choices of whom to sit next to, as a function of the the *SMEM's* clothing, and the results seem to support Hypothesis II, however, further testing is required. The results therefore indicate that salient Middle Eastern clothing is an important explanatory variable for choice of seating in the subway. Table 5 shows the proportion test for the two groups in Figure 5, where the null hypothesis is that the probability of choosing a particular seat is random, that is, 50%. The results show that both proportion deviate statistically from 50%, indicating that the choice of seating is non-random after controlling for the clothing of the *SMEM*. Table 5 also shows that the difference in proportion between the groups deviates statistically from zero.

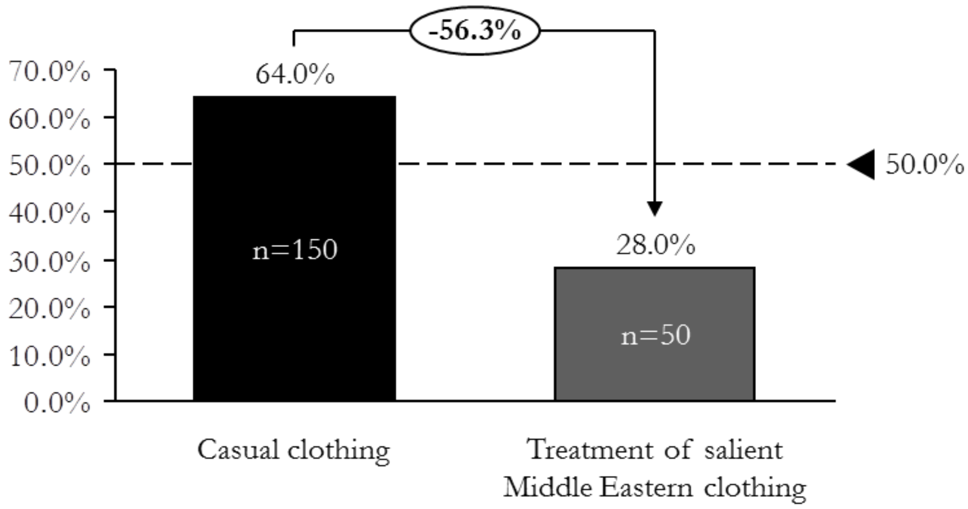

Figure 5. Histogram of the treatment effect and proportion of passengers choosing to sit beside the *Seated Middle Eastern Male* with casual clothing

Table 5. Test of proportion for randomness and difference in proportion of choosing to sit down beside the *Seated Middle Eastern Male, SMEM,* with and without the treatment effect. $H_0: p = 0.5,\ H_1: p \neq 0.5$ and $H_0: p_x = p_y\ , H_1: p_x \neq p_y$

	n	Mean proportion	Chi square test [T]	Std.error	p-value	Randomness of choice of seating
Probability of sitting beside *SMEM* with casual clothing	150	0.640	No	0.0392	0.0006	Non-random
Probability of sitting beside *SMEM* with salient Middle Eastern clothing	50	0.280	No	0.0635	0.0019	Non-random
		Difference in proportion	Chi square test [T]	Std.error	p-value	Statistical difference in proportion
Differential probability of sitting beside *SMEM* depending on clothing		-0.36	No	0.074619	0.0000	Yes

[T] Proportion test when a chi-square test was not conducted

Regression two will test the estimated effect of salient Middle Eastern clothing on the choice of seating. We tested with and without control variables in order to examine the strength of the coefficient. The regression results in Table 6 show that salient Middle Eastern clothing has a strongly significant negative estimated impact on the choice of whom to next to. A 36 (36.5 with control variables) percentage point difference can be considered as large when comparing to the average probability of 64% (62.1% with control variables), when the *SMEM* wore casual clothing, of sitting next to the *SMEM*. The percentage change from the average person is more than 50%. The probit model confirms the significant results, with somewhat difference in magnitude (37.6 percentage point difference with control variables). Because there are 15 control variables, and because the coefficient for the variable Treatment decreased by only 0.5 percentage points, the variable can be considered robust and only slightly correlated with the control variables. Testing the correlation between the independent variables show no sign of high correlation between variables (see Appendix 3). Also, the adjusted R-squared for the variable Treatment is 9.4% (without any control variable) which indicate that the salient Middle Eastern explain almost one tenth of the variation in choice of seating in our dataset.

Table 6. Linear probability model showing how much the treatment, salient Middle Eastern clothing, affects the probability of sitting down beside the *Seated Middle Eastern Male, SMEM*

VARIABLES	(1) Probability of sitting beside *SMEM*	(2) Probability of sitting beside *SMEM*
Treatment	-0.360***	-0.365***
	(0.0750)	(0.0827)
Constant	0.640***	0.621***
	(0.0394)	(0.115)
Control variables	No	Yes
Observations	200	200
Adjusted R-squared	0.094	0.090

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The outcome of the above regression results and proportion test is that Hypothesis II cannot be rejected, the data support the assumption that salient Middle Eastern clothing has an estimated impact on choice of seating.

7.3 Robustness Check

The results in section 7.1 indicate that there is no above-average tendency to choose seating next to someone with perceived similar ethnicity, and section 7.2 show that salient Middle Eastern clothing has an estimated negative impact on choice of seating in the subway. In this subsection we discuss further whether the preference for sitting next to the *SMEM* is prevalent across all ethnicities and genders and whether there was a difference in proportion within these groups when the *SMEM* wore salient Middle Eastern clothing. We also analyze the interaction effect of perceived ethnicity on the passengers and their gender in an attempt to determine whether the presence of salient Middle Eastern clothing has an added effect on a specific ethnic group or gender, since the focus of previous research used in this thesis has been on ethnic groups and only partially on gender, we decided to analyze these groups further. Hypothesis I was rejected in section 7.1, however, Hypothesis I might be supported if tests are done on the full sample, that is, if salient Middle Eastern clothing observations are included. Three perceived ethnic groups will be examined, perceived Swedish passengers, perceived Middle Eastern passengers, and passengers of other perceived ethnic groups (Hispanic, African, and Asian). The reason for grouping perceived Hispanic, African, and Asian observations into one group, (called "Passengers of perceived other ethnic groups") is to test whether they jointly give insight into choice of seating. Another reason is that there are few observations for each of these ethnic groups individually, so, to increase the statistical power of the regression, they are grouped. In sections 7.1 and 7.2, perceived other ethnic groups were used as control variables, they are now of analytical interest.

Figures 6 and 7 confirm the direction of the results from previous sections: all ethnic groups and both genders were less likely to sit next to the *SMEM* when he wore salient Middle Eastern clothing. When we compare males and females, we find that males tend to react more strongly to salient Middle Eastern clothing, that is, their probability of sitting beside the *SMEM* with salient Middle Eastern clothing drops more, both in percentage points (45.4 for males and 27 for females) and percent (65% for males and 46% for females).

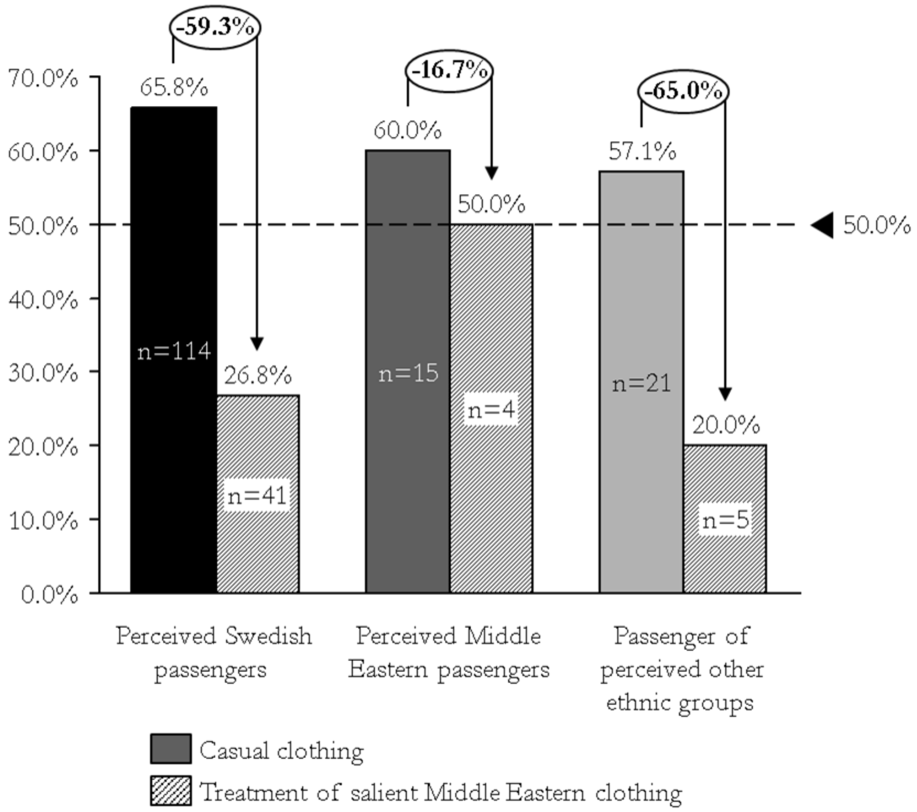

Figure 6. Histogram of treatment effect and proportion choosing to sit beside the *Seated Middle Eastern Male* with casual clothing across ethnic groups

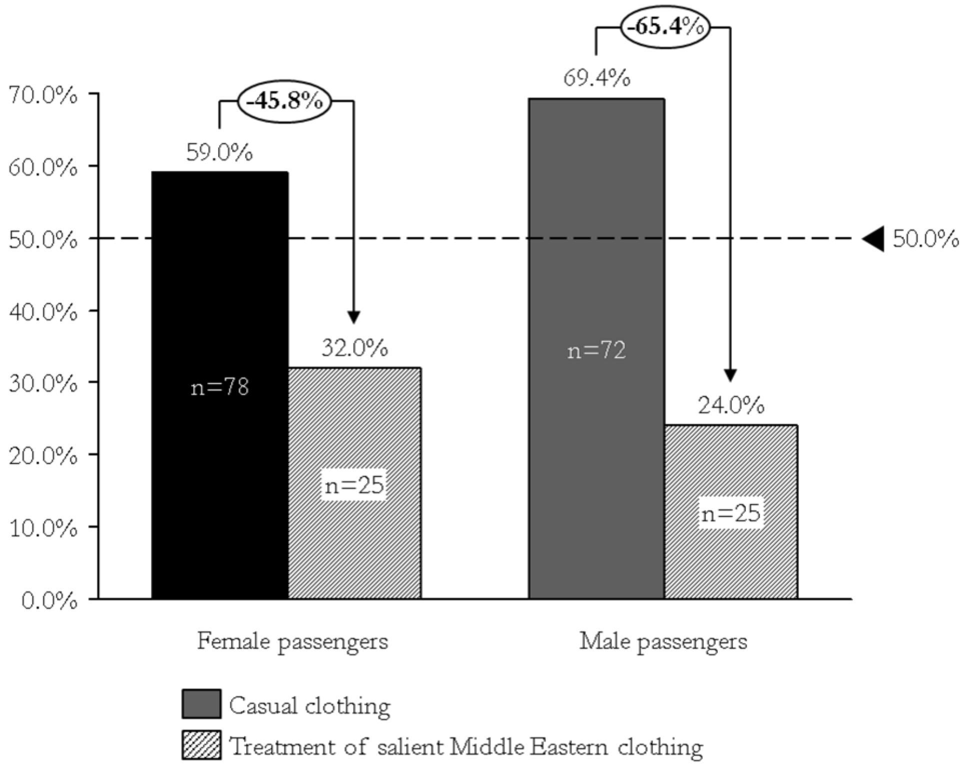

Figure 7. Histogram of treatment effect and proportion choosing to sit beside the *Seated Middle Eastern Male* with casual clothing across gender

Table 7 and 8 show that for the perceived Middle Eastern passengers as well as for passengers of other ethnic groups, the randomness of choice of seating and difference in proportion is not statistically significant, hence, the data does not support the hypothesis that the clothing or ethnicity of the *SMEM* had any effect on choice of seating for these groups. For perceived Swedish passengers and male passengers, the results show that their choices were non-random and varied significantly in proportion when the *SMEM* was wearing salient Middle Eastern clothing. Although the difference in proportion is significant for females, the choice to sit next to the *SMEM* was not statistically different from 50% when he was wearing casual clothing, but non-random with ethnic clothing on a 10% significance level.

Table 7. Test of proportion and chi-square test for randomness in the choice to sit beside the *Seated Middle Eastern Male, SMEM,* across perceived ethnicity and gender. $H_0: p = 0.5$, $H_1: p \neq 0$

Probability of sitting beside *SMEM* with casual clothing	n	Mean proportion	Chi square test [T]	Std.error	p-value	Randomness of choice of seating
Total passengers	150	0.640	No	0.0392	0.0006	Non-random
Perceived Swedish passengers	114	0.658	No	0.0444	0.0007	Non-random
Perceived Middle Eastern passengers	15	0.600	Yes	-	0.4386	Keep H_0
Passengers of perceived other ethnic groups	21	0.571	Yes	-	0.5127	Keep H_0
Female passenger	78	0.590	No	0.0557	0.1129	Keep H_0
Male passengers	72	0.694	No	0.0543	0.0010	Non-random
Probability of sitting beside *SMEM* with salient Middle Eastern clothing						
Total passengers	50	0.280	No	0.0635	0.0019	Non-random
Perceived Swedish passengers	41	0.268	No	0.0692	0.0030	Non-random
Perceived Middle Eastern passengers	4	0.500	Yes	-	1.0000	Keep H_0
Passengers of perceived other ethnic groups	5	0.200	Yes	-	0.1797	Keep H_0
Female passenger	25	0.320	Yes	-	0.0719	Non-random**
Male passengers	25	0.240	Yes	-	0.0093	Non-random

** Keep H_0 on a 5% significance level

[T] Proportion test when a chi-square test was not conducted

Table 8. Test for difference in proportion and chi-square test of passengers choosing to sit beside the *Seated Middle Eastern Male, SMEM,* with and without the treatment effect across perceived ethnicity and gender. $H_0: p_x = p_y$, $H_1: p_x \neq p_y$

Differential probability of sitting beside *SMEM* depending on clothing	Difference in proportion	Chi square test [T]	Std.error	p-value	Statistical difference in proportion
Total passengers	-0.360	No	0.0746	0.0000	Yes
Perceived Swedish passengers	-0.390	No	0.0822	0.0000	Yes
Perceived Middle Eastern passengers	-0.100	Yes	-	0.7819	Keep H_0
Passengers of perceived other ethnic groups	-0.371	Yes	-	0.345	Keep H_0
Female passenger	-0.270	Yes	-	0.0188	Yes
Male passengers	-0.454	Yes	-	0.009	Yes

[T] Proportion test when a chi-square test was not conducted

To test whether ethnicity and gender have an interaction effect when salient Middle Eastern clothing is worn, we used the following regressions:

$$Prob\ (Choosing\ to\ sit\ beside\ SMEM_i) = \gamma_0 + \gamma_1 Treatment_j * Perceived\ Middle\ Eastern\ passeger_i + \gamma_{k+1} X_i + \epsilon_i \tag{3}$$

$$Prob\ (Choosing\ to\ sit\ beside\ SMEM_i) = \alpha_0 + \alpha_1 Treatment_j * Passengers\ of\ perceived\ other\ ethnic\ groups + \alpha_{k+1} X_i + \epsilon_i \tag{4}$$

$$Prob\ (Choosing\ to\ sit\ beside\ SMEM_i) = \tau_0 + \tau_1 Treatment_j * Female_i + \tau_{k+1} X_i + \epsilon_i \tag{5}$$

The difference between the regressions presented here and regression two is the interaction effect. The regression result from Table 9 confirms the proportion tests: there is no statistical evidence that perceived Middle Eastern and other ethnic group passengers are more or less likely to sit with the *SMEM*, regardless of salient Middle Eastern clothing. We see that that the coefficient for the treatment effect is still significant, even when interaction terms are included, with or without control variables, indicating that it is the perceived Swedish passengers who are influenced by the treatment. Table 9 also yields the insight that, when controlling for gender, the interaction effect of females, and Middle Eastern clothing, the coefficient for treatment increases by 9.4 percentage points over the percentage shown in Table 6. This result verifies the outcome from Figure 7, which shows that males tend to react more strongly to the treatment.

Table 9. Linear probability model showing the extent to which interaction affects the probability of sitting down next to the *Seated Middle Eastern Male, SMEM*

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*
Treatment	-0.384***	-0.392***	-0.362***	-0.359***	-0.454***	-0.468***
	(0.102)	(0.112)	(0.0775)	(0.0849)	(0.0803)	(0.0856)
Perceived Middle Eastern passenger	-0.0444	-0.0633				
	(0.134)	(0.139)				
Perceived Middle Eastern passenger*Treatment	0.284	0.333				
	(0.293)	(0.314)				
Passenger of perceived other ethnic groups			-0.0797	-0.0851		
			(0.117)	(0.131)		
Passenger of perceived other ethnic groups*Treatment			-0.00915	0.0111		
			(0.226)	(0.234)		
Female					-0.105	-0.131
					(0.0786)	(0.0820)
Female*Treatment					0.185	0.200
					(0.150)	(0.154)
Constant	0.694***	0.650***	0.644***	0.628***	0.651***	0.627***
	(0.0548)	(0.118)	(0.0416)	(0.115)	(0.0424)	(0.112)
	0.094	0.093	0.089	0.092	0.088	0.089
Control variables	No	Yes	No	Yes	No	Yes
Observations	200	200	200	200	200	200
Adjusted R-squared	0.089	0.096	0.088	0.089	0.094	0.093

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

When we conduct the robustness check, we find that perceived Swedish passengers and males react more harshly to salient Middle Eastern clothing, whereas perceived Middle Eastern passengers and passengers of other ethnic groups do not. Females do react to the treatment effect, but not as strongly as males.

8. Discussion

The aim of this thesis is to determine whether ethnicity and salient Middle Eastern clothing affect the choice of seating in the Stockholm subway system. Of our two hypotheses, one is supported by the results and one is not. Our findings from testing the first hypothesis indicate no tendency to choose seating next to someone with perceived similar ethnicity, rather, it shows the opposite, with the *Seated Middle Eastern Male, SMEM,* being the most popular choice for all ethnicities. These findings deviate from previous experiments done in Sweden on discrimination toward Middle Easterners (Rooth 2002; Carlsson and Eriksson 2014). Hypothesis II is retained since we found significant evidence that salient Middle Eastern clothing on a *Seated Middle Eastern Male* decreases the propensity to choose seating next to him in the subway.

8.1 Possible Explanation for the Findings

HYPOTHESIS I: *There is a tendency to choose seating beside someone with perceived similar ethnicity*

Previous research indicates that individuals are attracted to other individuals who are similar to themselves (Akerlof and Kranton 2007; Charness et al. 2007; Shayo 2009). However, ethnicity may not be the similarity that ranks highest in this particular choice. For example, people might identify more strongly with a socioeconomic group using clothing as a proxy. The clothes *SMEM* wore could be described as trendy Swedish, and the black suede shoes he wore might be seen as business casual, thus signaling a higher socioeconomic status. Also, both Akerlof and Kranton and Shayo argue further that sometimes the individual identify with the group to which they wish belonged or with a group of higher status. The finding that it is more popular to sit next to the *Seated Middle Eastern Male* could thus indicate that he has a higher status or is someone others aspires to be like since he might be considered to be well integrated into society and on his way to university or a proper job. It is also worth noting that in general people who are more attractive are considered to have a higher status (Hamermesh 2011). Individual characteristics of the *SMEM* such as attractiveness, a friendly demeanor or business-casual clothing may outweigh the importance of his ethnicity and might conceal the same-ethnicity bias that could show up if the experiment were to be conducted with multiple *SMEM*s. It is therefore not entirely clear whether it is the individual characteristics of the *SMEM* that leads to a rejection of Hypothesis I or whether people in general do not have a same-ethnicity bias.

Shayo (2009) further argues that poor people identify more strongly with their own nationality than do those who are wealthier. Nationality and ethnicity are not interchangeable, but they are closely related in situations such as choosing seating in the subway, where neither nationality nor ethnicity are known but only perceived. The stations that were used in our experiment—Skarpnäck and Bagarmossen—have a mixed socioeconomic population that approximates that of Sweden as a whole, but the time of day (rush hour) might mean that the participants in our study consisted mainly of individuals working nine-to-five jobs and thus might represent a higher-than-average socioeconomic status. If the individuals taking the subway have above-average income, thus identifying less with their nationality—a proxy for ethnicity—then ethnicity as a similarity factor will be less important, according to Shayo. The process of identification based on similarity and status will be more focused on other factors.

In Akerlof and Kranton's (2000) model of the effects of identity on utility, the individual is expected to make choices that increase utility. If the subway seating choice is not important to identity, it could be a case of what Bourdieu (1984) suggests: passengers have a preference for whom *not* sit next to. They can achieve only lower utility by choosing to sit beside someone who disturbs by sounds, smells, taking up a lot of space, or having an intimidating appearance. One could argue that this looks like a case of taste-based discrimination against unobservable attributes the *Seated Swedish Male* has (but the *SMEM* does not) since the passenger opts out of sitting next to the *SSM*. Since we cannot possibly have every classification of groups that people can identify with, taste-based discrimination cannot be supported by our data since we cannot detect if there is a differential discriminating effect between some of the possible identification groups that has not been observed by the experimenters. It could also be the case of statistical discrimination towards Swedish-looking males since data show that all passengers tend to not sit beside the *SSM*. Passengers might also have a preference of wanting to integrate, and hence, chose not to sit beside the *SSM*.

Furthermore, it can be argued that a *SMEM* in casual clothing does not signal salient Middle Eastern group membership sufficient to attract others of the same ethnicity, which would be in line with the theory of Charness et al. (2007) and Tajfel et al. (1971), who propose that a classification of "us and them" is needed. For example, the *SMEM* might be perceived as Italian, Greek, or Spanish and thus as European, which indicate other group memberships. Since our study relies on others' ascription of identity, same-ethnicity bias might still be present but we were unable to classify them correctly. This could be related to Bhabha's (1998) critique of

Barth's lack of fluid definition, or "in-betweenness", of ethnic groups. People do not always identify themselves as either one ethnicity or another, mixed ethnicities are widely existing in Sweden. An individual with dual citizenship might identify with different ethnicities in different situations.

In the robustness check we could not reject the null hypothesis that choice of seating was non-random for females, whereas the choice is non-random for males. These finding could be explained by many factors. One explanation could be that males, more often than females, view success as an important similarity when comparing themselves to other men. Clothing could be a proxy for successfulness. As previously discussed, the *SMEM* was wearing some items which could be seen as business casual, and, because of this, male passengers might be more likely to sit next to the *SMEM* since he might portray something they want to achieve themselves. The variable for the *SSM* wearing business clothing has a negative sign, which supports this claim but give insignificant results. Since it included only 13 observations, more data might show it to be significant.

We also found that perceived Swedish passengers chose to sit beside the *SMEM* non-randomly. An explanation for this finding could be that ethnic groups have different utility functions. A Swede might prefer to sit next to an individual who appears well integrated into society and is properly dressed. It is also possible that with more data, choice could be shown to be non-random for non-Swedish passengers. The low number of observations results in higher standard deviations and thus a higher chance of insignificant results.

Given that no ethnic discrimination was found toward the *SMEM,* we cannot infer any explicit or implicit ethnic discrimination in this case.

HYPOTHESIS II: *The propensity to choose seating beside a perceived Middle Eastern male will decrease when he wears salient Middle Eastern clothing*

Since no significant results were found for Hypothesis I, why do we see such a substantial difference in proportion of people choosing to sit beside the perceived *SMEM* when he is wearing salient Middle Eastern clothing?

In this part of the experiment, group membership (as discussed by Charness et al. (2007) was very salient and, according to the theory, this ought to induce more aggressive behavior by all out-groups. Since the propensity to sit next to the *SMEM* decreased by 36 percentage points, it could be argued that this is indeed more aggressive behavior. Congruence theory supports this hypothesis: as the salient Middle Eastern clothing increases the dissimilarities between groups, negative feelings toward the out-group, Middle Easterners increases (Struch and Schwartz 1989). Since judgement is based on perceived dissimilarities (in the minds of passengers), the case for statistical discrimination is strengthened, passengers might make the choice on the basis of stereotypes and statistics. Given that the *SMEM* wore casual clothing in the first part of the experiment, and given that the propensity to sit next to the *SMEM* decreased substantially after he changed, we can reject the argument that individual characteristics (excluding clothing) brought about the low proportion of people seated next to him in the second part of the experiment. Thus, we can argue that salient Middle Eastern clothing provokes different feelings or thoughts in passengers. If these thoughts are that men wearing this kind of attire pose a higher-than-average threat due to recent terrorist acts of Islamic fundamentalist groups, or have other repelling characteristics, and if, because of these thoughts, they choose to not sit beside the *SMEM*, this proves the case for statistical discrimination. Statistical discrimination is further supported by the fact that even perceived Middle Easterners had a lower propensity to sit beside the *SMEM* (not, however, on significantly levels). Still, lack of data limits the possibility to draw any solid conclusions regarding this group.

It can be argued that people in Sweden do not know how to distinguish traditional Middle Eastern clothing from Muslim clothing, since such attire is often used interchangeably. If salient Middle Eastern clothing signals membership in the Muslim group to them, then passengers might have made their choices on the basis of religion. Since we could not classify passengers religions, it would be hard to determine whether the negative bias toward Islam is based on distaste for that religion or statistical and based on the perceived higher variance of safety because of the emergence of Daesh and terrorist attacks in the name of Islam—or both. On the other hand, passenger might have chosen not to sit beside the *SMEM* only due to the fact that the clothing was so different from what other passengers were wearing. During the length of the field study, we saw no other men wearing such attire as the *SMEM* did, so arguably, the results shown could stem only from a repelling association of an attire that is unusual, no matter what they signal. Same results might have been found if the *SMEM* wore Buddhist clothing or a Halloween costume. However, even though different attires might give similar results, what actually causes the behavior can never be for certain unless further testing (IAT test, monetary games etc.) is conducted. The salient Middle Eastern clothing could evoke negative associations and therefore lead to implicit statistical discrimination, while a Halloween costume might not evoke negative associations leading to implicit statistical discrimination.

In the robustness test, we find that the choice is non-random for both men and women, however for women at a 10% significance level. The drop in the proportion of passengers choosing to sit next to the *SMEM* is significant for both genders. Males seem to react more strongly to the treatment of salient Middle Eastern clothing, which corresponds to the result that more men than women vote more for the Swedish Democratic Party, which often portrays people from the Middle East as a threat to society and democracy (Radio Sweden 2013). However, the seemingly stronger reaction of men is not statistically different from that of women, as the difference-in-difference tested with interaction effect in Table 9 show no sign of it.

Differences in proportion for the treatment effect are significant for the perceived Swedish group but not for perceived Middle Easterners and perceived other ethnicities. The explanation for this could be that Swedish individuals feel threatened by or are more uncomfortable around salient Middle Eastern clothing and have more negative feelings about people of Middle Eastern origin or about Islam than do other ethnic groups. Again, lack of data probably explains why the other ethnic groups are not significant on conventional levels.

Given the 36 percentage point difference in proportion of passengers sitting beside the *SMEM,* it is doubtful that the significant drop in a fast-choice environment is only due to explicit discrimination, because this would imply that no negative associations or feelings toward the *SMEM* would be prevalent when passengers were choosing seats and the *SMEM* wore the salient Middle Eastern clothing. Since no IAT test was conducted, it is impossible to know whether the discrimination was only implicit, or implicit *and* explicit. Now the question remains whether the discrimination stem from taste-based, statistical, or both. The data points towards a statistical discrimination as all ethnic group tend to decrease in propensity to choose to sit beside the *SMEM* with salient Middle Eastern clothing. However, since no statistically significant result can verify this trend, due to lack of data, we cannot with certainty say that statistical discrimination exist, even though it is the most likely case. Our data does not support taste-based discrimination either, when the *SMEM* wore ethnic clothing. What could have been the taste-based discrimination in our case would be taste-based discrimination toward religion. If the passengers choosing not so sit with the *SMEM* were non-Muslims or atheists, and the passengers choosing to beside the *SMEM* were Muslims, it would give a strong case of in-group bias or out-group negativity resulting in taste-based discrimination. Figure 8 summarizes the results of our rejected and kept hypothesis.

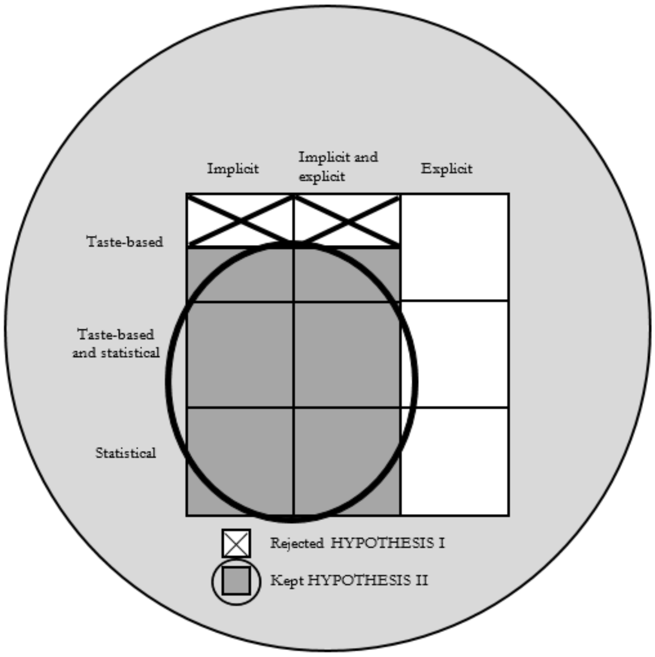

Figure 8. Discriminatory matrix of how taste-based and statistical discrimination interconnects with implicit and explicit discrimination. The shaded area of the circle represents other theories of discrimination not covered in this thesis. Hypothesis I is rejected and Hypothesis II is kept (authors' own)

8.2 Validity of the Study

The overall purpose of this study was to examine the relationship between ethnicity, seating in the subway, and salient Middle Eastern clothing. As already stated, we expected that our results would, among other things, contribute to increased understanding of discrimination or bias toward individuals from the Middle East. The section on the validity of the study will therefore be divided into two parts: an evaluation of the method itself as a tool for testing our hypotheses, and an assessment of the possibility of generalizing our results to Sweden as a whole.

8.2.1. Evaluation of Method

Throughout this study, an effort was made to keep the internal validity as high as possible, given our limited resources of number of experimenters, and to limit systematic biases that could affect the results or their interpretation. Since all participants were unaware that they were part of a study, there was no selection bias. Passengers who were exposed to the *SMEM* wearing salient Middle Eastern clothing were randomly involved, but the treatment salient Middle Eastern clothing could have been compromised during the last three days because passengers entering the subway car may have begun to recognize the *SMEM*. If they did, a selection bias could have introduced certain non-representative behavior into the experiment that affected our results.

A flaw in the internal validity is that there have been terror attacks by Daesh recently, making fear of Islam and Muslims more prevalent in everyday life, especially in settings such as a subway, which was the object of a terrorist attack. Thus, the treatment was correlated with historic events that could make the causality effect of salient Middle Eastern clothing hard to interpret. This implies that the results obtained serve as a momentary sample of current attitudes toward Middle Easterners or Muslims.

The method of having a different *Seated Swedish Males* as the opposing choice also raises a few concerns. The aim of the study was to create a *ceteris paribus* effect, with Middle Eastern ethnicity being the only difference when boarding participants were making their choices. However, limited resources made it hard to use the same perceived *Seated Swedish Male* as the alternative choice since the experiment took place over fourteen days. This resulted in several flaws. First, the perceived Swedish passengers varied widely in age and characteristics. However, our belief is that the effect averages out, since some were older, some younger, and since dummy variables were included to control for each age group and were all statistically insignificant. The second flaw involved in having different *SSM* was that their attractiveness levels were different. Since no dummy variable for attractiveness was included because of its subjective nature, we believe this affected the result, but by how much is uncertain.

The choice of conducting a field study in an environment like a subway also raises a concern regarding visible choice. The choice a passenger make is highly visible to others, and this may factor into their choice of seating. One may want to be seen as an open-minded person, and thus, chooses to sit next to *SMEM* in order to signal that they want to integrate or signal that they are non-discriminatory. This would then result in a systematic bias and skew the results, and could explain the result in Stage One of the field study. However, in Stage Two, we do not see this possible effect as all groups tend to not sit beside the *SMEM* when he wears salient Middle Eastern clothing.

8.2.2. Generalizability to Ethnic Discrimination in Sweden

To what extent our results are generalizable to ethnic discrimination in Sweden in general depends on the ecological- and external validity of the study (Brewer 2000; Mitchell and Jolley 2001). We did not orchestrate any part of the experiment, except placing a Middle Eastern male opposite side of the aisle to a Swedish-looking male. The experiment thus only influence the available choices to the onboarding passengers and since nothing was done to interfere with the actual choice the onboarding passengers did, the ecological validity is expected to be high.

Consideration regarding external validity concerns for example the sample size. In total, 200 observations were collected, but only 50 of these were made with salient ethnic clothing because a different statistical method was planned and later changed. Since we controlled for many dummy variables, the power of the analysis suffers. It was hard to find any significant variables—particularly among different ethnic groups—when, for example, only four observations were made in the perceived Middle Eastern group that received the treatment.

Another consideration concerns the sample and how well it mirrors the Swedish population. Skarpnäck and Bagarmossen were chosen for their resemblance to Sweden's average socioeconomic status and for the size of the non-Swedish population. Our sample has a proportion of almost 10% from Middle Eastern groups, which is in line with the proportion in Sweden in general if we include individuals who were born in Sweden and have at least one parent who was born in the Middle East (Statistics Sweden 2016). Inevitably, differences exist between the populations in Skarpnäck and Bagarmossen and the population in Sweden as a whole. First, our sample is drawn from Stockholm, a city more integrated and open toward different ethnicities (Ahmadi et al. 2014). In our sample area, the portion of the electorate that voted for the Swedish Democratic Party, which we view as a proxy for these attitudes, is underrepresented (Swedish Election Authority 2014b; 2014c). The effect of the salient Middle Eastern clothing could then be greater outside of our sample area.

The experiment was conducted using males, and the results therefore reflect attitudes toward and preferences for perceived Swedish and Middle Eastern males, not women. Drawing conclusions about discrimination toward Middle Eastern groups in Swedish society for both males and females would be incorrect. To determine attitudes toward perceived Middle Eastern women, the experiment would have to be done using a Swedish-looking woman and a Middle Eastern woman wearing a *hijab*. However, the association would then be directly linked to religion, whereas traditional male attire can be worn by men who are not necessarily Muslim. The results might also differ because a *hijab* is an article of clothing worn more commonly than a *thobe* and *taqiyah*. The dissimilarities might then not be as prevalent as they are for males. Another aspect that might give different results for women would be that males evoke more fear or sense of threat than women do.

Finally, the adjusted R square of 9.4% for the salient Middle Eastern clothing likewise indicates that clothing helps explain the variation in of choice of seating. Unavoidably, choosing a seat on the subway is quite different from choice of a school or a job, which are viewed as high-involvement decisions. However, since something as simple as clothing results in such a magnitude of difference in an everyday setting like that, it can be argued that this points to the presence of an initial association that skews the decision-making process toward discrimination in other areas of life.

8.3 Theoretical and Practical Implications

Although our study cannot pinpoint exactly the kind of discrimination that salient Middle Eastern clothing triggers, it does contribute to the relatively limited research in the field of salient ethnic clothing and visible ethnicity in everyday choices in Sweden. In contrast to previous research on this subject, our findings indicate no discrimination towards Middle Eastern males when they do not wear salient Middle Eastern clothing, but it does support the hypothesis that discrimination exists when such clothing is worn.

Our results may have important practical implications: they support the supposition that traditional Middle Eastern clothing affects people’s everyday choices, whether this is because of the saliency of their ethnicity or because of an association with religion, or both. When people are discriminated in an everyday situation like shopping for groceries, standing in line or taking the bus, it is possible that they are dismissed as isolated events, and not seen as a larger structural societal problem. We give insight that there is a broad repelling attitude toward Middle Eastern or Muslim traits in simple situations as the subway, thus, discriminatory actions are not secluded to single individuals. Is it then surprising that people, in a situation which is considered as a high-involvement choices such as housing, choose to live in homogenous areas?

The possible in-group bias or outgroup negativity based on associations and raw preference will most likely be manifested in other areas of society as well. The European, African and Middle Eastern migration crisis have, and will continue to change the ethnic composition of Sweden. If people wearing salient Middle Eastern clothing are treated differently in the subway, who says that these perceived negative implicit associations or explicit thoughts will not be demonstrated in areas such as hiring, wage setting, teamwork and promotion in the labor market, teacher's evaluation of students in the school system, judges’ and juries' verdicts in trial, or political preferences regarding redistributive policies?

8.4 Future Research

Ethnicity and discrimination both are well-researched subjects in Sweden, but not in situations that might trigger implicit discrimination and not when it comes to salient ethnic clothing. We therefore encourage more research in this field in settings other than the subway, with women as the Middle Eastern sitting person, wearing salient Middle Eastern clothing and wearing ethnic salient clothing other than that from the Middle East as well. We also encourage specific implicit-discrimination research in conjunction with our experiment with a follow-up IAT test to determine whether implicit discrimination actually is involved.

9. Conclusion

By conducting a field study in the Stockholm subway system, we investigated whether there is a preference for sitting next to someone of perceived similar ethnicity and whether salient Middle Eastern clothing decreases the propensity to choose seating next to a perceived Middle Eastern male wearing such attire. We found no evidence that people of perceived similar ethnicities are drawn to sitting beside each other. It could still be the case that passengers prefer to sit beside someone of perceived similar ethnicity, but since we used the same *Seated Middle Eastern Male* throughout the experiment, the individual characteristics of the *SMEM* (business-casual clothing, friendly demeanor, attractiveness) could have attracted more passengers to sit next to him than would have done so if we had used many different *SMEM*s. What we did find was that salient Middle Eastern clothing significantly decreased the propensity to take a seat next to him. Statistical discrimination based on higher-than-expected variance of safety stemming from negative associations and stereotypes of Middle Easterners and Muslims in light of recent terror trends provides the best explanation for this phenomenon.

Our thesis contributes to the limited research on how saliency of ethnic traits affects people's choices in a daily setting. It gives insight into the way in which raw preferences are manifested in seemingly unconscious choices, and it poses a question for other researchers: is there a link between the results of our research and other, more high-engagement choices in life such as employment, school, health care, justice systems, and politics?

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Appendix

Appendix 1. Probit model

The statistical properties of the probit model are as follows:

$$P(Y = 1|\boldsymbol{x}) = \Phi(\beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k)$$

where $\Phi(z)$ is defined as the standard normal cumulative distribution function (cdf). Using cdf, the value of P ($Y = 1$|x) will fall between zero and one for all values of the model parameter, a clear advantage over the LPM. The cdf is in turn expressed as an integral:

$$\Phi(z) = \int_{-\infty}^{z} \phi(v) dv$$

where $\phi(z)$ is the standard normal density with the form:

$$\phi(z) = 2(\pi)^{-\frac{1}{2}} \exp(-\frac{z^2}{2})$$

Furthermore, probit models can be derived from an underlying latent variable model:

$$y *= \beta_0 + x\beta + \epsilon$$

where $y*$ is the latent (unobserved) variable which determines the value of y so that y=0 if $y*$<0 and y=1 when $y*$>=0 (binary outcome). In this model, it is assumed that the error term ε is independent from x and follow a standard normal distribution, symmetrically distributed around zero. The actual estimation is done by calculating the beta values that maximize the product of the log-likelihoods for all observations. The method is called maximum likelihood estimation (MLE) and by using MLE, heteroskedasticity in the variance of y is automatically accounted for—an advantage of the probit model.

Appendix 2. OLS and Probit Regressions

A2-1a. OLS regression – Probability of sitting beside Middle Eastern sitting person

VARIABLES	(1) Probability of sitting beside *SMEM*	(2) Probability of sitting beside *SMEM*
Perceived Middle Eastern passenger	-0.0444	-0.0667
	(0.134)	(0.141)
Female		-0.124
		(0.0828)
Onboarding at Bagarmossen		0.0284
		(0.0888)
Passenger age 0-15		-0.0607
		(0.163)
Passenger age 31-45		0.0260
		(0.0974)
Passenger age 46+		-0.0535
		(0.120)
Seated Swedish male age 0-15		-0.324
		(0.204)
Seated Swedish male age 31-45		0.0490
		(0.100)
Seated Swedish male age 46+		0.0198
		(0.105)
Perceived African passenger		0.104
		(0.160)
Perceived Asian passenger		-0.250
		(0.233)
Perceived Hispanic passenger		-0.0935
		(0.223)
Middle Eastern sitting person seated closest to door		0.0878
		(0.0823)
Seated Swedish male dressed business		-0.0607
		(0.153)
Swedish male person with beard		0.0462
		(0.0994)
Constant	0.644***	0.661***
	(0.0415)	(0.131)
Observations	150	150
Adjusted R-squared	-0.006	-0.015

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A2-1b. Probit Model - Probability of sitting beside Middle Eastern sitting person

VARIABLES	Probability of sitting beside *SMEM*	Robust standard error	z	P>|z|
Perceived Middle Eastern passenger	-0.202	0.368	-0.55	0.582
Female	-0.364	0.226	-1.61	0.107
Onboarding at Bagarmossen	0.0960	0.237	0.41	0.685
Passenger age 0-15	-0.166	0.442	-0.38	0.707
Passenger age 31-45	0.0806	0.266	0.30	0.762
Passenger age 46+	-0.145	(0.311	-0.47	0.640
Seated Swedish male age 0-15	-0.854	(0.534	-1.60	0.110
Seated Swedish male age 31-45	0.128	0.276	0.46	0.644
Seated Swedish male age 46+	0.0466	0.280	0.17	0.868
Perceived African passenger	0.399	0.605	0.66	0.510
Perceived Asian passenger	-0.655	0.554	-1.18	0.237
Perceived Hispanic passenger	-0.247	0.535	-0.46	0.644
Middle Eastern sitting person seated closest to door	0.260	0.222	1.17	0.242
Seated Swedish male dressed business	-0.177	0.398	-0.45	0.656
Swedish male person with beard	0.125	0.271	0.46	0.643
Constant	0.431	0.345	1.25	0.212
Observations	150			
Wald chi2(15)	12.76			
Prob > chi2	0.6209			
Pseudo R2	0.0686			
Log pseudolikelihood	-91.29305			

A2-1c. Marginal Effect

VARIABLES	dy/dx	Robust standard error	z	P>|z|
Perceived Middle Eastern passenger	-0.077	0.14299	-0.54	0.590
Female	-0.134	0.08224	-1.63	0.104
Onboarding at Bagarmossen	0.036	0.08796	0.40	0.686
Passenger age 0-15	-0.063	0.17081	-0.37	0.713
Passenger age 31-45	0.030	0.09789	0.30	0.761
Passenger age 46+	-0.055	0.11844	-0.46	0.645
Seated Swedish male age 0-15	-0.331	0.19547	-1.69	0.091
Seated Swedish male age 31-45	0.047	0.10014	0.47	0.640
Seated Swedish male age 46+	0.017	0.10308	0.17	0.868
Perceived African passenger	0.135	0.18135	0.74	0.458
Perceived Asian passenger	-0.256	0.21428	-1.19	0.233
Perceived Hispanic passenger	-0.095	0. 21026	-0.45	0.652
Middle Eastern sitting person seated closest to door	0.096	0.0825	1.17	0.243
Seated Swedish male dressed business	-0.067	0.15429	-0.44	0.663
Swedish male person with beard	0.046	0.09742	0.47	0.638

***p<0.01, ** p<0.05, * p<0.1

A2-2a. OLS regression - Probability of sitting beside Middle Eastern sitting person (with salient Middle Eastern clothing)

VARIABLES	(1) Probability of sitting beside *SMEM*	(2) Probability of sitting beside *SMEM*
Treatment	-0.360***	-0.365***
	(0.0750)	(0.0827)
Perceived Middle Eastern passenger		0.00389
		(0.127)
Female		-0.0803
		(0.0698)
Onboarding at Bagarmossen		-0.0384
		(0.0740)
Passenger age 0-15		-0.0653
		(0.130)
Passenger age 31-45		0.0293
		(0.0844)
Passenger age 46+		-0.0204
		(0.0966)
Seated Swedish male age 0-15		-0.309
		(0.192)
Seated Swedish male age 31-45		0.115
		(0.0873)
Seated Swedish male age 46+		0.0781
		(0.0883)
Perceived African passenger		-0.00151
		(0.135)
Perceived Asian passenger		-0.250
		(0.224)
Perceived Hispanic passenger		-0.0391
		(0.202)
Middle Eastern sitting person seated closest to door		0.0905
		(0.0687)
Seated Swedish male dressed business		-0.0495
		(0.134)
Swedish male person with beard		0.0426
		(0.0908)
Constant	0.640***	0.621***
	(0.0394)	(0.115)
Observations	200	200
Adjusted R-squared	0.094	0.090

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A2-2b. Probit model - Probability of sitting beside Middle Eastern sitting person (with salient Middle Eastern clothing)

VARIABLES	Probability of sitting beside *SMEM*	Robust standard error	z	P>|z|
Treatment	-0.987***	0.231	-4.27	0.000
Female	-0.233	0.195	-1.19	0.232
Onboarding at Bagarmossen	-0.108	0.204	-0.53	0.596
Passenger age 0-15	-0.191	0.371	-0.51	0.607
Passenger age 31-45	0.0883	0.233	0.38	0.705
Passenger age 46+	-0.0541	0.262	-0.21	0.836
Seated Swedish male age 0-15	-0.800	0.515	-1.55	0.120
Seated Swedish male age 31-45	0.326	0.241	1.35	0.177
Seated Swedish male age 46+	0.221	0.240	0.92	0.356
Perceived African passenger	-0.0100	0.424	-0.02	0.981
Perceived Asian passenger	-0.661	0.548	-1.21	0.228
Perceived Hispanic passenger	-0.104	0.491	-0.21	0.832
Perceived Middle Eastern passenger	0.00985	0.353	0.03	0.978
Middle Eastern sitting person seated closest to door	0.259	0.191	1.36	0.175
Seated Swedish male dressed business	-0.137	0.371	-0.37	0.713
Swedish male person with beard	0.118	0.249	0.48	0.635
Constant	0.317	0.306	1.04	0.301
Observations	200			
Wald chi2(16)	32.55			
Prob > chi2	0.0085			
Pseudo R2	0.1239			
Log pseudolikelihood	-120.57413			

*** p<0.01, ** p<0.05, * p<0.1

A2-2c. Probit model - Marginal Effect (with salient Middle Eastern clothing)

VARIABLES	dy/dx	Robust standard error	z	P>|z|
Treatment	-0.376	0.07894	-4.76	0.000
Perceived Middle Eastern passenger	0. 00389	.13943	0.03	0.978
Female	-0.0919	0.07662	-1.20	0.230
Onboarding at Bagarmossen	-0.0428	0.08047	-0.53	0.595
Passenger age 0-15	-0.0759	0.14771	-0.51	0.608
Passenger age 31-45	0.0348	0.09185	0.38	0.705
Passenger age 46+	-0.0214	0.10375	-0.21	0.836
Seated Swedish male age 0-15	-0.303	0 .17039	-1.78	0.075
Seated Swedish male age 31-45	0.127	0 .09194	1.38	0.168
Seated Swedish male age 46+	0.0866	0 .09265	0.93	0.350
Perceived African passenger	-0.00396	0 .16779	-0.02	0.981
Perceived Asian passenger	-0.2552	0 19341	-1.32	0.187
Perceived Hispanic passenger	-0.04129	0 .19579	-0.21	0.833
Middle Eastern sitting person seated closest to door	0.1020	0 .07485	1.36	0.173
Seated Swedish male dressed business	-0.0543	0 .14792	-0.37	0.713
Swedish male person with beard	0.0465	0 .09718	0.48	0.632

A2-3a. OLS regression - Probability of sitting beside Middle Eastern sitting person (with interaction effect)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*	Probability of sitting beside *SMEM*
Treatment	-0.384***	-0.385***	-0.362***	-0.359***	-0.454***	-0.459***
	(0.0775)	(0.0840)	(0.0803)	(0.0856)	(0.102)	(0.111)
Perceived Middle Eastern passenger	-0.0444	-0.0618		0.00319		-0.00418
	(0.134)	(0.138)		(0.126)		(0.123)
Perceived Middle Eastern passenger*Treatment	0.284	0.322				
	(0.293)	(0.311)				
Passengers of perceived other ethnic groups		-0.0849	-0.0797	-0.0851		-0.0735
		(0.112)	(0.117)	(0.131)		(0.113)
Passengers of perceived other ethnic groups*Treatment			-0.00915	0.0111		
			(0.226)	(0.234)		
Female		-0.0916		-0.0854	-0.105	-0.136*
		(0.0687)		(0.0688)	(0.0786)	(0.0816)
Female*Treatment					0.185	0.196
					(0.150)	(0.154)
Onboarding at Bagarmossen		-0.0391		-0.0401		-0.0413
		(0.0732)		(0.0733)		(0.0738)
Passenger age 0-15		-0.0664		-0.0570		-0.0479
		(0.124)		(0.129)		(0.127)
Passenger age 31-45		0.0211		0.0294		0.0250
		(0.0857)		(0.0852)		(0.0850)
Passenger age 46+		-0.0192		-0.0215		-0.0200
		(0.0949)		(0.0959)		(0.0952)
Seated Swedish male age 0-15		-0.297		-0.305		-0.319
		(0.195)		(0.196)		(0.200)
Seated Swedish male age 31-45		0.124		0.115		0.113
		(0.0857)		(0.0865)		(0.0852)
Seated Swedish male age 46+		0.0844		0.0743		0.0826
		(0.0883)		(0.0878)		(0.0883)
Middle Eastern sitting person seated closest to door		0.0849		0.0873		0.0825
		(0.0684)		(0.0686)		(0.0685)
Seated Swedish male dressed business		-0.0750		-0.0752		-0.0959
		(0.132)		(0.131)		(0.134)
Seated Swedish male with beard		0.0414		0.0439		0.0476
		(0.0891)		(0.0908)		(0.0890)
Constant	0.644***	0.635***	0.651***	0.627***	0.694***	0.656***
	(0.0416)	(0.112)	(0.0424)	(0.112)	(0.0548)	(0.115)
Control variables	No	Yes	No	Yes	No	Yes
Observations	200	200	200	200	200	200
Adjusted R-squared	0.089	0.096	0.088	0.089	0.094	0.093

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 3. Testing for pairwise correlation

A3-1. Correlation table for the independent variables

	Treat-ment	Perceived Middle Eastern passenger	Perceived Hispanic passenger	Perceived African passenger	Perceived Asian passenger	Female	Onboarding at Bagarmossen	Passenger age 0-15	Passen ger age 31-45	Passenger age 46+	Seated Swedish male age 0-15	Seated Swedish male age 31-45	Seated Swedish male age 46+	Seated Swedish male dressed business	Middle Eastern sitting person seated closest to door	Swedish male person with beard
Treatment	1.000															
Perceived Middle Eastern passenger	-0.0295	1.000														
Perceived Hispanic passenger	-0.0265	-0.0743	1.000													
Perceived African passenger	0.0418	-0.0703	-0.0498	1.000												
Perceived Asian passenger	-0.11	-0.0617	-0.0437	-0.0413	1.000											
Female	-0.0173	0.0415	0.039	-0.1272	0.0215	1.000										
Onboarding at Bagarmossen	-0.0751	-0.0674	0.0345	-0.0833	0.0177	0.1387	1.000									
Passenger age 0-15	0.0548	0.102	0.0218	0.0298	-0.0542	-0.0275	0.0048	1.000								
Passenger age 31-45	-0.1332	0.0125	-0.024	0.043	0.0314	-0.022	-0.2047	-0.2089	1.000							
Passenger age 46+	0.076	-0.0929	0.0412	-0.117	-0.0375	0.0677	0.1049	-0.1534	-0.3954	1.000						
Seated Swedish male age 0-15	-0.1325	0.0039	0.1579	-0.0498	-0.0437	-0.0987	-0.1493	0.196	0.0721	-0.0137	1.000					
Seated Swedish male age 31-45	-0.0696	-0.0974	0.0528	-0.0346	-0.0039	0.1012	0.1103	-0.0177	0.054	-0.1122	-0.1484	1.000				
Seated Swedish male age 46+	-0.097	-0.0086	0.0128	-0.0257	0.0655	0.0151	0.0028	-0.0478	0.0176	0.0436	-0.1413	-0.3984	1.000			
Seated Swedish male dressed business	-0.1131	-0.0221	-0.0629	-0.0596	0.161	-0.0867	0.0255	0.0707	-0.037	-0.054	-0.0629	-0.0486	0.0505	1.000		
Middle Eastern sitting person seated closest to door	-0.0635	0.1097	0.039	-0.0789	0.0215	-0.0009	-0.1017	-0.0275	0.0829	-0.0761	-0.0528	0.1012	-0.1193	-0.0082	1.000	
Swedish male person with beard	0.1384	0.0988	-0.055	0.0149	0.0436	0.0989	-0.0373	-0.0443	-0.0701	0.0068	-0.1129	0.0414	0.0643	0.1617	0.0231	1.000