

Contact with people of different economic backgrounds and the associated attitudes towards people of different ethnicities

This study explores how contact with people of different economic backgrounds is associated with attitudes towards people of non-Dutch ethnicities. It highlights the role of income difference in shaping intergroup relations and reducing prejudice, which impacts the secondary transfer effect.

Bachelor thesis Sociology

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Research question: *How is contact with people of different economic backgrounds (richer or poorer) associated with beliefs about people of different races or ethnicities?*

Abstract

This research investigates the relationship between contact with people from different economic backgrounds (richer or poorer) and attitudes towards people of different ethnicities than Dutch. While previous studies have primarily focused on intergroup contact between people of different racial/ethnic backgrounds or on children/adolescents from varying socioeconomic statuses (Burkholder et al., 2021; Elenbaas, 2019; Gönül et al., 2023; Pettigrew & Tropp, 2005), the influence of intergroup contact between adults from different economic groups on the associated attitudes towards other ethnicities has not been extensively researched. This study aims to fill this gap in the literature.

The results show that more contact with poorer people is associated with more positive attitudes towards people of other ethnicities ($b=0.056$; $p=0.042$), supporting **Hypothesis 1** and aligning with the secondary transfer effect. In contrast, more contact with richer people is associated with more negative attitudes ($b= -0.077$; $p=0.009$), which does not support **Hypothesis 2**. This result suggests that contact with richer people can have negative intergroup contact effects, possibly because people perceive a greater threat to their group status when interacting with wealthier individuals (Clark & Senik, 2010; Thora Bjornsdottir et al., 2024) and the threat of the primary outgroup could mediate the association with negative attitudes towards people of different ethnicities (Zingora & Graf, 2019).

The moderating role of income is also investigated. However, the results did not support the hypotheses that higher-income individuals would have more positively associated attitudes towards people of different ethnicities after contact with people of different economic backgrounds (richer and poorer) than lower-income individuals. However, it is found that income moderates the relationship between contact with richer people and attitudes: the higher the income, the more negative the association ($b=-0.028$; $p= 0.043$).

The results emphasize the importance of further research into the nature and quality of intergroup contact. Contact with richer people does not appear to have positive effects, which can be negatively associated with attitudes towards people of different ethnicities.

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1. Introduction

This research investigates the secondary transfer effect (STE), wherein interactions with one outgroup (primary outgroup) influence attitudes toward secondary outgroups not directly involved in the initial contact (Pettigrew, 2009). To measure the STE, individuals first need to have contact with an outgroup member (intergroup contact). Positive interactions among individuals from diverse groups have shown promise in reducing prejudices and distrust, fostering social trust, and cultivating a more favorable view of the primary and secondary outgroups (Pettigrew, 1997; Pettigrew, 2009; Tausch et al., 2010; Ünver-Aba & Çakal, 2024).

Improving attitudes towards ethnic minorities is crucial, as they face various social disadvantages, including health disparities compared to the indigenous population (Uiters, 2007; Van Wersch et al., 1997). Discrimination in housing, healthcare, and employment persists, with studies showing preferential treatment towards individuals of native-Dutch backgrounds (Thijssen et al., 2020). Negative attitudes and racism towards ethnic minorities not only impact individuals directly but also erode social cohesion, with a growing segment of the Dutch population expressing alienation and cultural identity loss (Kros & Hewstone, 2020; SCP, 2019; Smeeker & Mulder, 2016). This can undermine the functionality of society, so it is not only a disadvantage for the people who experience it but also for society. Addressing prejudice and discrimination is crucial for fostering social harmony and inclusivity in today's multicultural society (Smeeker & Mulder, 2016).

Intergroup contact between different social groups is a potential strategy for reducing negative attitudes, especially if positive interactions with one group lead to improved attitudes towards other groups not involved in the contact (Pettigrew, 2009; Tausch et al., 2010). Empirical research has consistently demonstrated the positive effects of intergroup contact and STE across various social groupings (Pettigrew, 2009; van Laar et al., 2005; Tausch et al., 2010; Ünver-Aba & Çakal, 2024). For instance, a significant decrease in prejudice towards homeless and gay individuals is observed following interactions between German

adults and immigrants (Pettigrew, 2009). Similarly, enhanced attitudes toward ethnic minorities are found among individuals who had contact with religious outgroups in Northern Ireland (Tausch et al., 2010).

While research on intergroup contact has predominantly focused on interactions between individuals of different ethnicities (Gönül et al., 2023; Tropp & Pettigrew, 2005), there is a scarcity of studies examining contact between individuals of different (socio-) economic backgrounds and the secondary transfer effects. This study addresses this gap by investigating the intergroup contact of people with different economic backgrounds and the secondary transfer effect. This research contributes not only by filling a gap in the literature but also to society, as individuals categorize and identify themselves based on their income, perceiving those of different economic groups as outgroups (Jetten, 2017). Investigating the secondary transfer effect is crucial because individuals could have this contact often, which could have various consequences that are now unknown.

The following question is answered in this research: *How is contact with people of different economic backgrounds (richer or poorer) associated with beliefs about people of different races or ethnicities?* With these insights, policymakers can create policies that stimulate positive contact between people of different economic backgrounds. This can help diminish prejudice towards individuals of different economic backgrounds and those of diverse ethnicities or races. Furthermore, the focus lies on the quantity of contact rather than the quality of contact because there is little knowledge about this subject. Besides, the focus lies on positive contact. Even though negative contact has been shown to be more influential, positive contact is more common (Graf et al., 2014; Kros & Hewstone, 2020).

2. Theoretical framework

This chapter explains how the generalization of intergroup contact between people of different economic backgrounds can be associated with attitudes towards people of different ethnicities or races. The focus lies on the majority of people in the Netherlands and applies to most of the native Dutch inhabitants. Therefore, when 'other ethnicities' or 'different ethnicities' are mentioned, there is a reference to ethnicities other than Dutch.

2.1 Categorization

Categorization plays an important role in understanding how individuals in groups see themselves, group members, and non-group members (Gönül et al., 2023). Categorization involves individuals grouping based on similarities or shared traits (Tanjitpiyanond et al., 2022), and the broader social environment significantly influences how individuals' structure and classify themselves and their social surroundings (Turner et al., 1987; Tanjitpiyanond et al., 2022). Individuals often categorize themselves based on income (Jetten et al., 2017). When encountering someone with a similar income, they tend to perceive them as in-group members. People tend to favor in-group members more positively than outgroup members (members who do not belong to the same group) (Tajfel & Turner, 1997; Hewstone et al., 2002). Conversely, individuals with significantly different income levels (richer or poorer) are often seen as out-group members (Jetten et al., 2017).

2.2 Intergroup contact theory

Intergroup contact effects

Three mechanisms are examined to determine how intergroup contact can diminish prejudices against outgroup members (Pettigrew, 1998; Pettigrew & Tropp, 2008). Firstly, interactions among outgroup members could facilitate mutual learning about each other's backgrounds and experiences (Pettigrew, 1998; Pettigrew & Tropp, 2008; Tausch et al., 2010).

This knowledge exchange can increase awareness of similarities and commonalities among diverse groups. As individuals recognize shared traits, prejudices may diminish, fostering greater acceptance and tolerance of individuals from other groups (Pettigrew, 1998; Pettigrew & Tropp, 2008). Secondly, intergroup contact can potentially foster empathy and understanding among individuals from diverse backgrounds (Pettigrew, 1998; Pettigrew & Tropp, 2008). Exposure to different perspectives and life experiences can create a sense of empathy, leading individuals to prioritize the well-being of others. This empathetic connection may extend beyond individual interactions to encompass the welfare of entire groups (Pettigrew, 1998). Consequently, this emphasis on collective welfare may contribute to a more positive perception of people from outgroups and reduce prejudices (Pettigrew, 1998; Pettigrew & Tropp, 2008). Additionally, research by Grütter et al. (2022) found that students from higher socioeconomic backgrounds who attended diverse schools demonstrated greater inclusivity toward peers from lower-SES backgrounds compared to those from more homogenous schools.

Lastly, intergroup contact can potentially mitigate tensions and fears between different social groups (Pettigrew, 1998; Pettigrew & Tropp, 2008). When interacting with members of an out-group, individuals may experience insecurity or fear of rejection due to not belonging to that specific group (Tajfel & Turner, 1997). More contact with outgroup members can lead to increased understanding and overcome this fear of rejection (Pettigrew, 1998; Pettigrew & Tropp, 2008). However, when individuals interact with richer people, the emphasis of the contact might be on the differences in status, which can evoke negative feelings like status anxiety (Clark and Senik, 2010; Thora Bjornsdottir et al., 2024). For instance, individuals who frequently engage with people of richer backgrounds may perceive a greater threat to their group's status, leading to more negative attitudes towards richer individuals compared to those who interact more with individuals of lower economic backgrounds.

Types of contact

While positive contact can lead to less prejudice and more positive attitudes (Pettigrew, 1998; Pettigrew & Tropp, 2008), negative contact can also have negative effects (Kenfack et al., 2024; Pettigrew, 1998; Pettigrew & Tropp, 2008). Negative contact can arise when interactions are accompanied by feelings of intergroup anxiety and perceived threats (Kenfack et al., 2024; Pettigrew & Tropp, 2008).

Research has shown that negative contact experiences can influence intergroup attitudes more significantly than positive ones (Kenfack et al., 2024; Paolini et al., 2010). In contexts where negative views of an outgroup are prevalent, negative contact has a greater effect on social categorization, such as perceiving an outgroup member as representative of their entire group, than positive contact. Consequently, negative contact has a more pronounced impact on generalized changes in outgroup evaluations following interaction (Kenfack et al., 2024; Paolini et al., 2010).

Despite this, negative contact experiences are generally less common than positive ones (Barlow et al., 2012). Recent studies have corroborated this trend, indicating that in the United States and Germany, the local population often reports more positive interactions with immigrants than negative ones (Graf et al., 2014; Kros & Hewstone, 2020; Kenfack et al., 2024; Kotzur et al., 2018).

Besides, when individuals have contact with members of an outgroup, the nature of the relationship varies. Pettigrew (1997) emphasized the significance of forming emotional bonds, particularly through friendships across diverse groups, as they contribute to more positive perceptions of entire outgroups. Although friendships can be influential in stimulating anti-prejudice and anti-discrimination attitudes (Pettigrew, 1997), this study will primarily focus on the frequency of contact rather than friendships. This is because contact with individuals from different economic backgrounds remains relatively unresearched, and this study is exploratory in nature.

2.3 Secondary transfer effect

Two elements can influence the generalization process from attitudes toward the encountered outgroup to the second outgroup not involved in the contact. Firstly, attitudes towards one outgroup can serve as a foundation for developing attitudes toward other outgroups (Brown & Hewstone, 2005; Tausch et al., 2010), aligning with Allport's theory (1954) that views toward specific outgroups contribute to a generalized outgroup attitude (Tausch et al., 2010). This implies that contact with the primary outgroup directly influences one's attitude towards that group, and this change in attitude subsequently transfers to attitudes towards the secondary outgroup (Tausch et al., 2010). Given that attitudes toward the encountered outgroup can indirectly impact the secondary transfer effect (Brown & Hewstone, 2005; Tausch et al., 2010), this research expects that individuals who have more contact with individuals from poorer backgrounds will have more positive attitudes toward people of other ethnicities (i.e., the second outgroup not directly involved in the contact) compared to those who have more contact with people of richer backgrounds. This brings me to Hypotheses 1 and 2.

Hypothesis 1: The more contact one has with poorer people, the more positively associated attitudes one has towards people of different ethnicities and races.

Hypothesis 2: The more contact one has with richer people, the more positively associated attitudes one has towards people of different ethnicities and races.

Second, the intensity of secondary transfer effects may hinge on the perceived similarity between different outgroups or the level of stigma they face (Pettigrew, 2009).

Consequently, the stronger the perceived similarities and the extent of stigma shared by the outgroups, the more likely individuals are to link the two outgroups mentally (Pettigrew, 2009). As a result, the STE becomes stronger, and attitudes toward the first outgroup are generalized toward the second outgroup (Allport, 1945; Pettigrew, 2009).

People could perceive that poorer individuals may share more similarities with people of different ethnicities than richer individuals. For instance, there are higher unemployment rates among ethnic minorities in the Netherlands compared to ethnic Dutch individuals. For instance, Moroccans and Turks faced unemployment rates of 19.6% and 15.3%, respectively, compared to 5.7% among ethnic Dutch (Uijtdewillegen, 2016). Additionally, employed ethnic minorities are disproportionately represented in low-wage positions (Houtzager & Rodrigues, 2002). Consequently, ethnic minorities may be more closely associated with individuals from lower economic backgrounds. As a result, contact with poorer people may have stronger secondary transfer effects, leading to more positive attitudes towards people of different ethnicities.

On the contrary, the similarities between individuals from richer economic backgrounds and those from other ethnicities could be perceived as less pronounced than those between individuals from poorer economic backgrounds and other ethnicities. Consequently, the mental association between people of richer economic backgrounds and people of different ethnicities may be weaker. As a result, contact with individuals from richer economic backgrounds may have a smaller impact on the secondary transfer effects, resulting in less positive attitudes toward people of different ethnicities compared to contact with individuals from poorer economic backgrounds. This brings me to the following hypothesis.

Hypothesis 3: Having contact with richer people is less positively associated with attitudes towards people of different ethnicities than having contact with poorer people.

2.4 Influence of income

Categorization is important in understanding how individuals in groups see themselves, group members, and non-group members (Gönül et al., 2023). As people categorize themselves based on income, it could be that income influences the relationship between increased contact with people of different economic backgrounds and attitudes toward individuals of different ethnicities. For instance, people with higher incomes might

experience intergroup contact differently than those with lower incomes. Potentially due to factors like status anxiety (Goffman, 1963) when interacting with richer people. Additionally, other researchers have suggested that the positive effects of interactions, such as improved intergroup attitudes and reduced prejudices, can be more pronounced among higher-status groups (Elenbaas, 2019; Gönül et al., 2023). While there is limited literature on income as a moderator, some theories and findings suggest how different (socioeconomic) statuses can influence intergroup contact effects, such as improved intergroup attitudes and reduced prejudices. Therefore, these insights are used to explain the effect of income, first focusing on the influence of income on contact with richer people.

Sidanius and Pratto (1999) propose that individual status differences can manifest in different interaction experiences (Tropp & Pettigrew, 2005). Individuals with higher incomes are less likely to be conscious of their status (Tropp & Pettigrew, 2005), while lower-income individuals are more likely to be aware of their status, often due to status anxiety (Goffman, 1963). This perspective aligns with previous research indicating that the intergroup attitudes of lower-status individuals are often shaped by their expectation of prejudice from the dominant group, while those of majority individuals are more influenced by their own value systems and beliefs (Monteith & Spicer, 2000; Tropp & Pettigrew, 2005). Tropp and Pettigrew (2005) after contact between higher and lower-status groups, the prejudice for both groups decreased. However, the effect tended to be less strong for lower-status group members. Although they used a sample of people with different ethnicities who hold different statuses, their results suggest that income differences could affect how someone perceives intergroup contact.

In this research, the expectation is that when someone has a higher income and interacts more with others of richer backgrounds, they may base the interactions on their beliefs and values instead of their status (Monteith & Spicer, 2000; Tropp & Pettigrew, 2005). This could create space for learning about the other person and fostering empathy, leading to more positive attitudes towards people with richer economic backgrounds. Conversely, when someone has a lower income and interacts more with others of richer backgrounds, they may experience more status anxiety (Tropp & Pettigrew, 2005), hindering their ability to learn about and empathize with the other person, and potentially leading to less positive

attitudes than people with higher incomes (Tropp & Pettigrew, 2005). This implies that individuals with higher incomes may harbor more positive attitudes toward others of a richer economic background than those with lower incomes. Furthermore, these positive attitudes may generalize toward people of different ethnicities, suggesting that individuals with higher incomes could exhibit more positive attitudes toward individuals from diverse ethnic backgrounds compared to those with lower incomes. This brings me to the next hypothesis.

Hypothesis 4: The positive effect of contact with richer people on the associated attitudes towards others of different ethnicities is stronger for individuals with higher incomes.

Second, the influence of income on more contact with poorer individuals and the associated attitudes towards others of different ethnicities is discussed. The prediction in this research is that Individuals with lower incomes are less likely to feel status anxiety because they interact with poorer people, making them the ones higher in the hierarchy. Therefore, the expectation is that status anxiety does not play a role when lower individuals have contact with poorer people. This allows lower-income individuals to learn more about the other person and develop greater empathy, potentially leading to more positive attitudes toward people from poorer economic backgrounds than interactions with richer individuals (Pettigrew, 1998; Pettigrew & Tropp, 2008).

Additionally, research by Gönül, et al. (2023) found that the socioeconomic status (SES) of adolescents affects how acceptable adolescents with more contact with low-SES adolescents find the exclusion of lower-SES adolescents in school. Adolescents with a higher SES found educational exclusion less acceptable when interacting with more low SES adolescents than adolescents with a lower SES (Gönül et al., 2023). Although this research focused on SES and adolescents aged 14 to 16 in Turkey, it provides insights into the dynamics of contact with people from different economic backgrounds. Income and SES are similar because they reflect different statuses within societal hierarchies (Thora Bjornsdottir et al., 2024). Given that the contact effects are more pronounced among higher-status groups (Elenbaas, 2019; Gönül et al., 2023), the expectation in this research is that higher-income individuals experience more positive contact effects, such as improved intergroup attitudes and reduced prejudices, than lower-income individuals when they have more contact with poorer people.

Therefore, the positive effects of intergroup contact will be more strongly associated with positive attitudes toward people of different ethnicities for those with higher incomes than for those with lower incomes. This brings me to the last hypothesis.

Hypothesis 5: The positive effect of contact with poorer people on the associated attitudes towards others of different ethnicities is stronger for individuals with higher incomes.

2.5 Control variables

The relationship between more contact with people of different economic backgrounds and one's attitude toward people of different ethnicities is tested under the control of five variables. The first one is gender. According to the theory of gendered prejudice, men are more prejudiced than women, due to their larger stature, position of power in society, and gender roles that permit more masculine behavior, ultimately allowing them to express more negative attitudes than women (Dozo, 2015). Hence, it is possible that women benefit more from intergroup contact, as they may exhibit fewer negative attitudes during such interactions compared to men. This could lead to a more positive experience for both parties when engaging with a woman rather than a man. This could lead to women experiencing more positive intergroup contact effects and the STEs than men.

The second control variable is education. Education plays a significant role in teaching societal norms and values (Weil, 1985; Velásquez & Eger, 2022). This literature contends that in democratic societies (such as the Netherlands), where liberal values of tolerance and freedom are commonly upheld as key ingredients, those with more education should be more aware of these 'official values' and view prejudicial attitudes as anti-intellectual and anti-democratic. Another reason why educated people tend to be less prejudiced against different ethnicities is that education encourages critical thinking (Ohlander et al., 2005). This perspective suggests that as people become more educated, they become more aware that it is inconsistent to believe in democratic principles while also having negative attitudes towards groups different from their own (Hyman & Wright, 1979; Velásquez & Eger, 2022).

In this study, it could mean that people with a higher education experience more positive effects of intergroup. This could mean that people with higher education could already have a more positive attitude towards people of different economic backgrounds and ethnicities than people with lower education.

The third control variable is age. It is common for older individuals to exhibit more racial prejudice compared to younger generations (Danigelis & Cutler, 1991; Gonsalkorale et al., 2009). This trend may stem from a "generation gap," where attitudes towards racial groups are shaped by the historical context in which individuals came of age (Danigelis & Cutler, 1991; Gonsalkorale et al., 2009). For instance, because Black individuals were often depicted more negatively in earlier eras compared to recent times, older adults may hold stronger racially biased associations than their younger counterparts (McDonald et al., 2011). This could imply that older individuals might hold more negative views towards those of non-Dutch ethnicity, possibly influenced by negative portrayals from decades ago (McDonald et al., 2011). Consequently, older people may derive less benefit from intergroup contact and the STE.

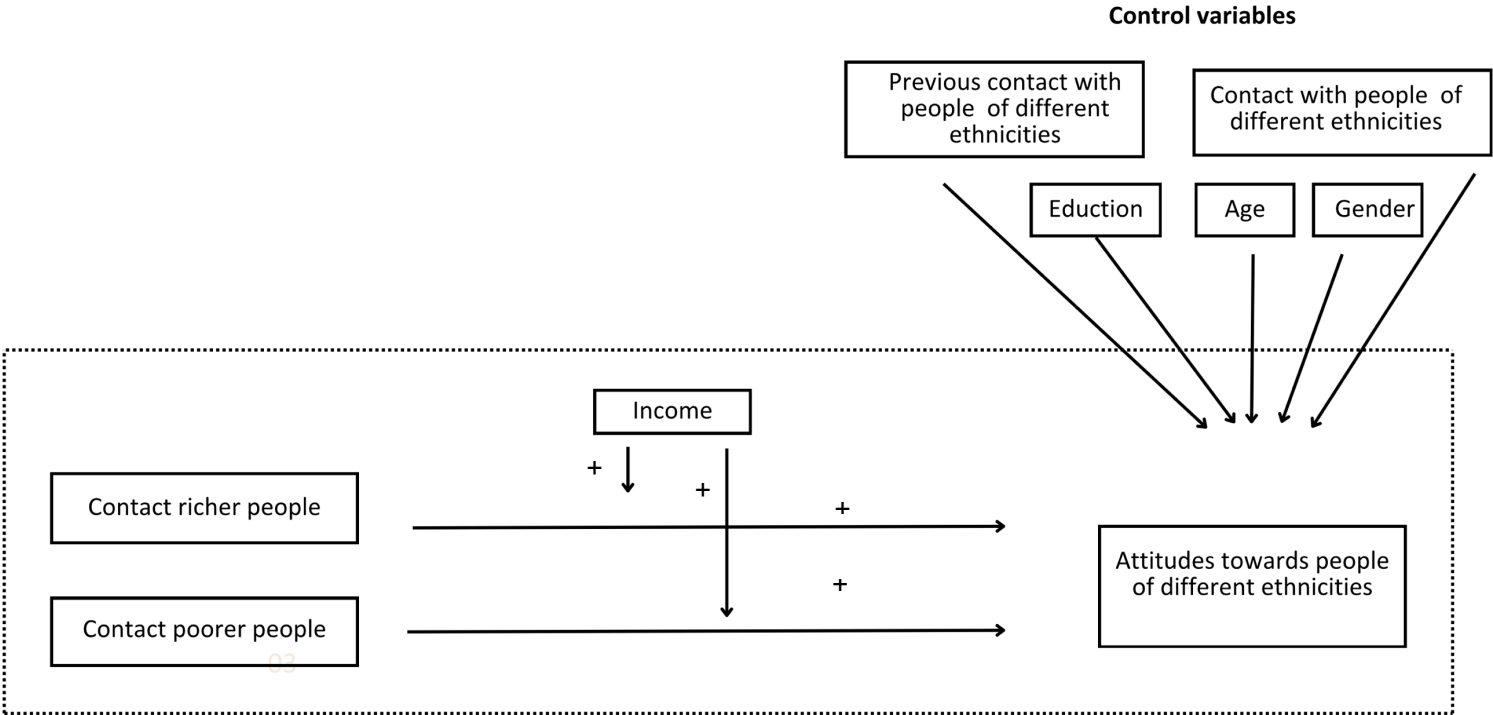
The next control variable measures whether a person has had previous contact with individuals from other ethnicities. This variable is crucial because it can influence one's beliefs about people of different ethnicities. Positive past interactions with outgroup members increase the likelihood of seeking similar interactions in the future (Tausch et al., 2010). Consequently, these individuals may hold more positive views of people from different ethnicities compared to ethnic Dutch individuals.

The last variable assesses whether individuals have contact with people of different ethnicities in the present. As mentioned earlier, intergroup contact has been shown to reduce prejudice (Pettigrew, 1997, 1998; Tausch et al., 2010). By including this control variable, this research aims to ensure that any effects observed in intergroup contact

between people of different ethnicities are accurately measured. Excluding this control variable could confound intergroup contact's effects, hindering the ability to assess the secondary transfer effect. Furthermore, it's crucial to note that contact with people of different economic backgrounds may also positively correlate with contact with people of other ethnicities.

2.6 Research model

Figure 1
Graphical presentation of the research model



Note: The hypothesized relationships between contact with people of different economic backgrounds (richer and poorer), income as a potential moderator, and attitudes towards people of other ethnicities. The control variables are also included in the model.

3 Method

This chapter details the methodology employed in this study. The data is derived from the Longitudinal Internet Studies for Social Sciences (LISS) panel. First, the data collection is discussed. Second, the sampling procedure and participant recruitment are outlined. Third, the operationalization of the variables is outlined. Finally, the chapter outlines the analysis plan, specifying the use of hierarchical linear regression to examine the relationships between the variables and test the hypotheses.

3.1 Data

In 2007, the LISS panel collaborated with Statistics Netherlands (Centraal Bureau Statistiek, CBS) to create a representative sample of households from the population registries. Self-registering is not allowed; participation is limited to those who are invited (LISS Panel, 2024). Individuals without access to laptops were provided with them, and the same was done for internet access to ensure the representativeness of the sample (LISS Panel, 2024). The database includes 7,500 individuals aged 16 and above from 5,000 households.

Additionally, three different datasets are used. The first is from wave 13 and is named Politics And Values. The questionnaires were divided into three parts. They were all conducted using different data and had different non-response rates. In this study, a question from part 3 of the questionnaire is used. The questions in this part focused on gathering respondents' opinions towards people of foreign origin. The data was collected from December 2020 until March 2021. Part 3 of the survey was provided to 6,678 panel participants, and it was completed by 5,988 respondents, resulting in a response rate of 89.7%.

The second dataset I used was Social Inequality in the Netherlands: Perceptions, Attitudes and Explanations. This survey investigates perceptions, attitudes, and explanations regarding social inequality in the Netherlands. A random sample was taken of respondents who participated in the questionnaire 'Political and Social Attitudes in the Netherlands' and

'Implicit Association Test (IAT 2020). The data was collected in September 2020. From the 1839 selected household members, 1645 people responded. This gives a response rate of 89,5%. 1636 respondents. Causes of non-response included individuals being unreachable or simply unwilling to complete the questionnaires (Scherpenzeel, 2009).

The last dataset that is used gives information about the respondent's background. It involves information about background characteristics at the household and individual levels. To ensure the overall characteristics of LISS panel households are mainly up to date, they are assessed monthly using a different questionnaire called a "household box,". Before the household can complete any surveys, they must finish the household box when they join the panel (LISS Panel, 2024). In this survey, respondents provide information about their age, income, gender, origin, household position, and other related details. The household head is the person who bought the house or whose name is on the rent contract. When more names are involved, the person with the highest income counts.

Only household heads are included in this selection, as individuals within the same household may provide more similar responses. The similarity could be influenced by their relationships, which is a factor that cannot be directly measured and may potentially impact the data. Only ethnically Dutch people are in this sample because they are the majority of the population, and there could be theoretical differences when it comes to minorities. So, with the variable origin, the respondents who answered having a 'Dutch background' were chosen and the respondents with another origin were dropped.

3.2 Procedure and Design

The households in the sample were first approached with a letter inviting the households to join the panel, which was then sent (LISS Panel, 2024). Consequently, they were called via phone and/or got a home visit. As encouragement for panel participation, the letter included an initial payment of 10 euros (Scherpenzeel, 2009). Subsequently, individuals were compensated for each completed questionnaire (Scherpenzeel, 2009). The researchers regularly called individuals with phone numbers, while households without phones received home visits. During these interactions, participants were asked to engage in a brief interview

covering demographic information, household computers, and internet access (Scherpenzeel, 2009). After the interview, participants were invited to join the panel.

3.3 Operationalization

Attitudes toward people of other ethnicities

The dependent variable *attitude towards people of different ethnicities* is measured by asking respondents their opinion on the following statement: There are too many people of foreign origin or descent in the Netherlands. The respondents could answer on a 5-point scale by which 1= fully disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, and 5= fully agree.

The variable is recorded to 1 = I fully agree and 5 = I fully disagree. In this way, a higher score indicates that people have less negative attitudes about people of different ethnicities. The new scores are now 1 = I fully agree and 5 = I fully disagree.

Contact with people of different economic backgrounds

As mentioned earlier in the theory, people categorize themselves into groups based on their income. For this reason, this analysis has two independent variables: contact richer people and contact poorer people. The first one measured if the respondent has *contact with people who are richer than them*. Respondents could rate how much they agree or disagree with the following statement: I often have contact with people who are a lot richer than me, for instance, in the street, in public transport, in shops, in the neighborhood, or at work. The respondents could answer on a 7-point scale which 1= Strongly disagree, 2= Disagree, 3= somewhat disagree, 4= Neither agree nor disagree, 5= Somewhat agree, 6= Agree, and 7= Strongly agree.

The second independent variable measures how much *contact respondents have with people who are poorer than they are*. Respondents could rate how much they agree or disagree with the following statement: I often have contact with people who are a lot poorer than me, for instance, in the street, in public transport, in shops, in the neighborhood or at work. The respondents could answer on a 7-point scale : 1= Strongly disagree, 2= Disagree, 3= somewhat disagree, 4= Neither agree nor disagree, 5= Somewhat agree, 6= Agree, and 7= Strongly agree.

Income as moderator

The moderator *income* might influence the effect of contact with richer people on attitudes towards people of different ethnicities. Income is measured by the personal net monthly income in categories. Beginning with 1= EUR 500 or less; 2= EUR 501 to EUR 1000; 3= EUR 1001 to EUR 1500; 4= EUR 1501 to EUR 2000; 5= EUR 2001 to EUR 2500; 6= EUR 2501 to EUR 3000; 7 = EUR 3001 to EUR 3500; 8= EUR 3501 to EUR 4000; 9 = EUR 4001 to EUR 4500; 10 = EUR 4501 to EUR 5000; with 11= EUR 5001 to EUR 7500; 12= More than EUR 7500, 13= I don't know, 14= I prefer not to say

Control variables

The first control variable measures the amount of *previous contact respondents have had with people of different ethnicities*. This variable is measured using three items. Respondents were asked to indicate their level of agreement or disagreement with the following statements about their youth when they were 15 years old: "Most of my friends had the same ethnic background as mine," "Most of the pupils in school had the same ethnic background as mine," and "Most of the children in my neighborhood had the same ethnic background as mine." Responses were given on a 7-point scale: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree, 5 = Somewhat agree, 6 = Agree, and 7 = Strongly agree.

By ethnic background, the researchers meant the population group to which one's parents and/or grandparents.

The three items are recoded so that a higher score indicates more contact with people of different ethnicities in the past. The new scales are as follows: 1 = Strongly agree, and 7 = Strongly disagree. I analyzed the Cronbach's alpha (0.902) and inter-item correlations between the variables; for more details, see Appendix 1. Finally, I summed the three variables and divided the total by 3 to create the composite variable *previous contact ethnicities*.

The second control variable, *contact ethnicities*, is about the respondent's current contact with people of different ethnicities. This variable is measured with a statement on which they could agree or disagree. The statement was: Most of my friends have the same ethnic background as mine. The respondents could answer on a 7-point scale : 1= Strongly disagree, 2= Disagree, 3= somewhat disagree, 4= Neither agree nor disagree, 5= Somewhat agree, 6= Agree, and 7= Strongly agree.

The variable is recorded to 1 = Strongly agree, and 7 = Strongly disagree. In this way, a higher score indicates more contact with people of different ethnicities.

The third control variable is education, measured with the level of education in CBS (Statistics Netherlands) categories. The respondents could choose between the categories: 1 primary school; 2 vmbo (intermediate secondary education, US: junior high school); 3 havo/vwo (higher secondary education/preparatory university education, US: senior high school); 4 mbo (intermediate vocational education, US: junior college); 5 hbo (higher vocational education, US: college); 6 wo (university).

With the fourth control variable *gender*, respondents could fill in their gender. They could choose between the options 1=male, 2=female, or 3=other.

The variable is recoded into 0=male and 1=female for an easier interpretation.

The last control variable used in this analysis is *age*. Respondents were asked for the age of the person who owns the house (the household head). Using the age of household heads is appropriate for my analysis because I am focusing exclusively on household heads.

3.4 analyses

To answer the research question, a multiple linear regression analysis is used. The regression is built hierarchically. In Model 1, the dependent variable, attitudes towards people of different ethnicities, will be predicted using five control variables: previous contact with ethnicities, contact with ethnicities, education, gender, and age. This is to see how well the control variables can explain the attitudes towards people of different ethnicities. The variables previous contact with ethnicities, contact with ethnicities, and age are centered before they are added to the model.

In Model 2, the independent variables "How much contact respondents have with people who are richer than they are" (Contact richer people) and "How much contact respondents have with people who are poorer than they are" (Contact poorer people) are added to the control variables.

In model 3, the centered moderator income is added to the model, besides the independent and contact variables. This is to see how income affects attitudes towards people of different ethnicities.

For model 4, two interaction variables were made, using (the centered variables) income, 'contact richer people' and 'contact with poorer people.' The first interaction variable is made between the variables 'contact richer people' and income

(incomeXcontact_richer_people). The second is between the variables 'contact poorer people' and income (incomeXcontact_poorer_people). Subsequently, these interaction variables were added to the control and independent variables to see the model's progression. Lastly, the assumptions of the linear regression model will be checked on the complete model.

To test Hypothesis 1, Model 2 examines whether the coefficient for contact with poorer people is positive and statistically significant. For hypothesis 2, the coefficient of contact with richer people is analyzed to see whether it is positive and statistically significant. For Hypothesis 2, I will compare the coefficients of contact with richer people and contact with poorer people. If the coefficient of contact with poorer people is larger than that of contact with richer people, it would support Hypothesis 3.

Model 3 examines the effect income has on one's attitude towards people of different ethnicities. If the coefficient is positive and significant, income is a significant predictor.

Model 4 is used to examine the potential influence of income on the main relationship. Hypothesis 4 is supported when the moderator variable, income, significantly increases the positivity of the coefficient of contact with richer people. This is evaluated by examining the influence of the interaction term of income and 'contact richer people.' Hypothesis 5 is supported if the moderator variable, income, significantly increases the positivity of the coefficient of contact with poorer people. This is evaluated by examining the influence of the interaction term of income and 'contact poorer people.'

4. Results

In this chapter, the findings of this study are presented. Starting with the univariate statistics, which show the distribution of the variables. Second, the bivariate statistics are presented, which show the relationships between variables in this analysis. Thirdly, the model evaluation is described in detail. Last, the results of the hierarchical regression are discussed, and, most importantly, the results of the hypothesis testing.

4.1 Descriptive statistics

Univariate statistics

Univariate statistics have been generated for all variables analyzed in the study. Measures like the minimum and maximum, average, and standard deviation offer insight into the distribution of the variables. The dataset is considered with and without missing values of the participants. The participants without any missing values will be utilized for further analysis, such as regression and hypothesis testing. See Table 1 for the univariate statistics without missing values. For details on the univariate statistics with the missing values, see Appendix 1.

Table 1

Descriptive statistics of the variables included in the analysis: mean (standard deviation), minimum, maximum, and the number of respondents (N=794).

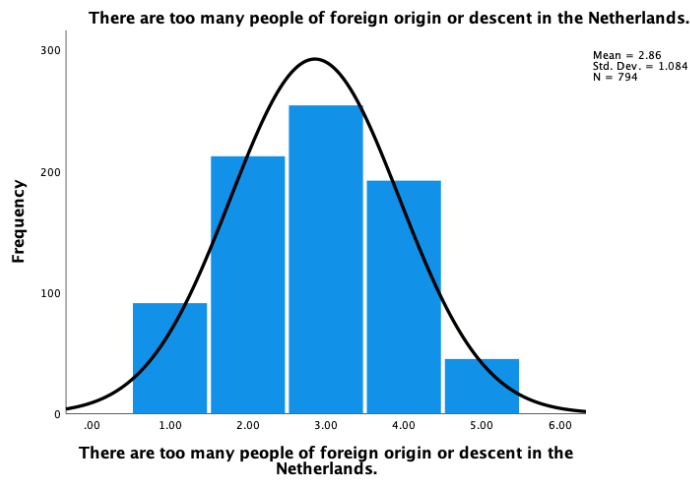
| <i>Variable</i> | <i>Mean* (Standard deviation)</i> | <i>Minimum</i> | <i>Maximum</i> |
|---------------------------------|---------------------------------------|----------------|----------------|
| Contact richer people | 3.90 (1.41) | 1 | 7 |
| Contact poorer people | 3.81 (1.50) | 1 | 7 |
| Income | 4.79 (1.97) | 0 | 12 |
| Attitudes ethnicities | 2.86 (1.10) | 1.00 | 5.00 |
| Previous contact Ethnicities | 2.11 (0.99) | 1.00 | 7.00 |
| contact ethnicities | 2.45 (1.27) | 1.00 | 7.00 |
| Age | 61.35(15.20) | 19 | 92 |
| Education | | | |
| Primary school | 4.3% | | |
| Vmbo | 20.5% | | |
| Havo/Vwo | 8.6% | | |
| MBO | 24.9% | | |
| HBO | 28.8% | | |
| WO | 12.8% | | |
| Gender | | | |
| Man | 64.4% | | |
| Vrouw | 35.6% | | |

Note. *For categorical variables, the percentage for each category is presented

The mean of the dependent variable that measures the attitudes towards people of different ethnicities is 2.86, with a standard deviation of 1.10. On a scale ranging from 1 to 5, where higher scores indicate a more positive attitude towards individuals of different ethnic backgrounds than Dutch, the average score suggests a slightly negative attitude among respondents. Option three, indicating a neutral stance, was the most frequently selected response in Figure 2. This indicates a lack of extreme opinions, with respondents leaning towards neither agreement nor disagreement with the statement. Additionally, the distribution appears to be asymmetric.

Figure 2

Frequency of the attitudes towards people of different ethnicities. N=794



In Figure 3, the distribution of the independent variable "contact with richer people" is illustrated. The distribution appears somewhat asymmetric, with more data clustered on the right side. A higher score on this variable indicates more contact with richer people. The mean score is 3.90, ranging from 1 to 7, suggesting that, on average, respondents frequently engage with richer individuals. The standard deviation, at 1.39, is moderate, indicating a reasonable degree of variability in responses. The variable 'contact poorer people' distribution shows big similarities to the distribution of 'contact richer people'. The average is 3.81 (with a range from 1 to 7), and the standard deviation is 1.50. To see how contact with people of different economic backgrounds varies across income categories, see (the end of) Appendix 1.

Figure 3

The frequency of the contact with richer people. N=794

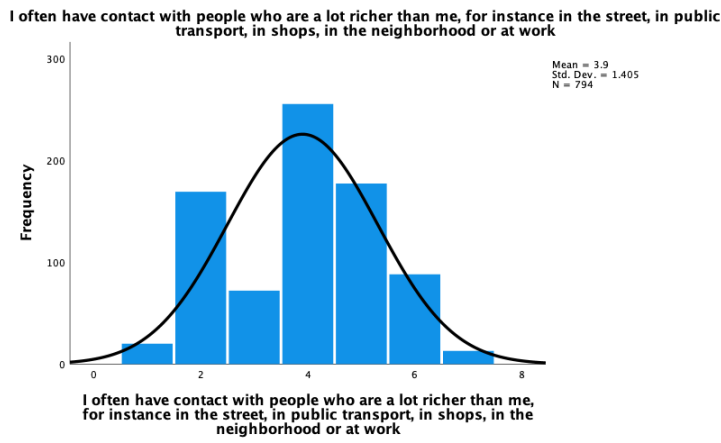
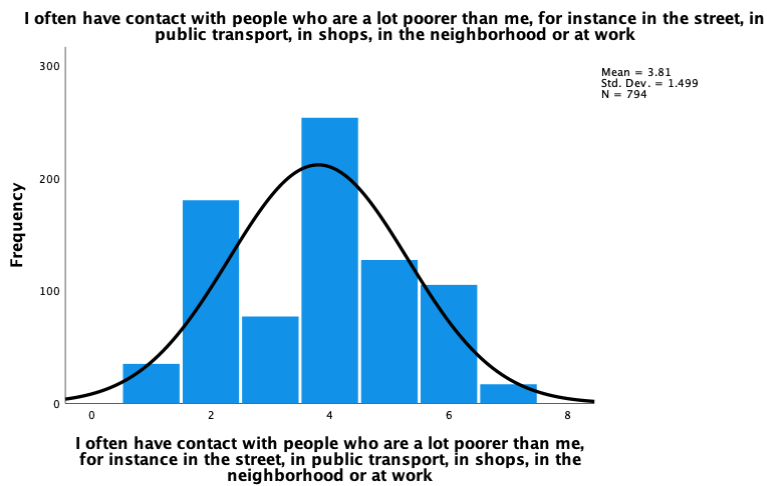


Figure 4

The frequency of the contact with poorer people. N=794

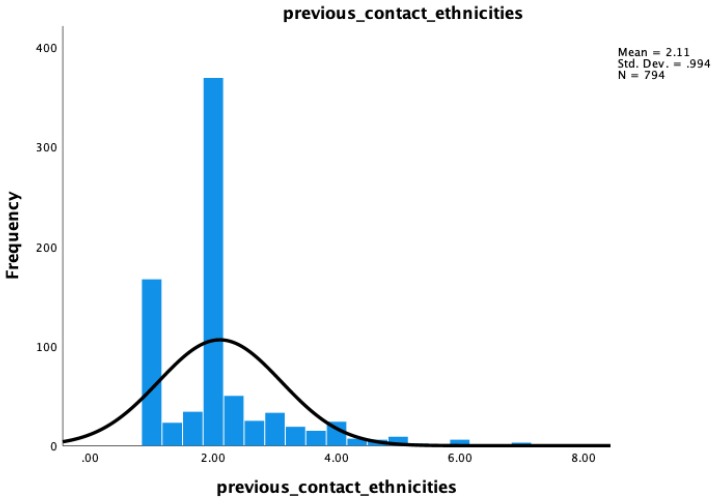


The highest score on education is 29%. Most of the respondents have an HBO degree, and 25.2 % have an MBO degree. Also, 64 % of the respondents are men, and 36% are women. An explanation could be that I only use household heads. If you look at traditional gender roles, it is more likely that a man is the household head than a woman.

The distributions of the control variables that measure the previous contact with people of different ethnicities and the contact one now has with people of different ethnicities are both right-skewed. Most respondents answered that they have had little contact with people of other ethnicities than Dutch in the past and now in the present (see Figures 3 and 4 on the right). The average for previous contact with people of different ethnicities is 2.10 (1.14), and the average of contact ethnicities is 2.45 (1.27). These variables have seven categories. A higher score means more (past) contact with people of other ethnicities.

Figure 5

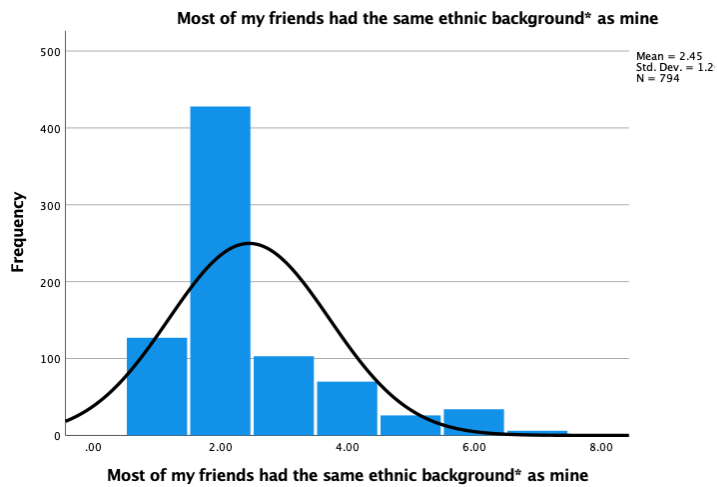
The frequency of the previous contact with people of different ethnicities.
N=794



Note: The average score on respondents' answers about their youth when they were 15 years old was, on the following questions: "Most of my friends had the same ethnic background as mine," "Most of the pupils in school had the same ethnic background as mine," and "Most of the children in my neighborhood had the same ethnic background as mine."

Figure 6

The frequency of contact with people of different ethnicities.
N=794



Bivariate statistics

This subsection presents the relationships between the variables used in this analysis. The Pearson correlation is used between continuous variables. The relationship between two categorical variables is analyzed with the chi-squared and phi. The results are in Table 2, these are without the missing values. The relationships between the variables with missing values are discussed in Appendix 2. Lastly, the multicollinearity is discussed.

The correlation between respondents' attitudes towards people of different ethnicities and contact with richer people showed a very low but statistically significant association ($r = -0.090$; $p < 0.05$). The relationship is negative, indicating that the directions of the variables of movement are opposed. The correlation between contact with poorer people and attitudes towards people of different ethnicities is small and insignificant ($r = 0.067$; $p = 0.059$). So, there was no evidence found for a significant relationship between the variables. The correlation between contact with richer people and contact with poorer people is significant and medium size ($r = 0.402$; $p < 0.001$). Moreover, income demonstrates a moderately high correlation with attitudes towards people of different ethnicities ($r = 0.145$; $p < 0.001$). Income

also has a relatively high (in this analysis) and significant correlation of ($r=0.369$ and $p<0.001$) with education.

The strongest correlation found in this analysis is between contact with people of different ethnicities and previous contact with people of different ethnicities ($r = 0.514$), and this relationship is highly significant ($p < 0.001$). This is a correlation of medium size.

Multicollinearity occurs when predictor variables are highly correlated (Agresti, 2018). It can be assessed using correlations and Variance Inflation Factor (VIF) scores. The highest correlation observed in this analysis (0.514) suggests that there is no strong multicollinearity among the variables, as this value is of medium size, and all other correlations are smaller. A correlation of 0,8 would be an indication for multicollinearity (Agresti, 2018). However, a more definitive assessment of multicollinearity will be conducted in the next subsection (4.2) using VIF scores.

Table 2*Correlations of all variables included in the analysis, without the missing values*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. |
|--|----------------------|----------------------|----------------------|--------------------|---------------------|----------------------|----------------------|----------------------|
| 1. Contact richer people | - | | | | | | | |
| 2. Contact poorer people | *.402 ^a | - | | | | | | |
| 3. Income | *-.118 ^a | .056 ^a | - | | | | | |
| 4. Attitude ethnicities | **-.090 ^a | .067 ^a | *.145 ^a | - | | | | |
| 5. Previous contact ethnicities | .002 ^a | .023 ^a | -.043 ^a | -.041 ^a | - | | | |
| 6. Contact ethnicities | -.006 ^a | *.125 ^a | **-.092 ^a | .032 ^a | *.514 ^a | - | | |
| 7. Education | **-.102 ^a | **-.104 ^a | *.369 ^a | *.253 ^a | *-.167 ^a | **-.114 ^a | - | |
| 8. Age | .050 ^a | .023 ^a | -.013 ^a | -.045 ^a | -.054 ^a | **-.073 ^a | *-.261 ^a | - |
| 9. Gender (man=0 vrouw=1). | .022 ^a | -.035 ^a | *-.243 ^a | *.128 ^a | -.002 ^a | .045 ^a | **-.128 ^b | **-.008 ^a |

Note. *Significant with $p < 0,001$, ** Significant at $p < 0,05$, ^aPearson correlation, ^bphi

4.2 model evaluation

After conducting descriptive statistics, hierarchical linear regression was performed to investigate the predictors of the attitude towards people of different ethnicities. As described in the analyses in Subsection 3.4. Four models are used. The models are all evaluated based on how well they fit the data, in which the F-change and the proportion of explained variance (R-squared) are used to evaluate the models. Afterwards, the assumptions of the hierarchical linear regression are checked to assess whether they were violated in this analysis. Finally, outliers and multicollinearity based on the VIF score are discussed.

Table 3 presents the results of the hierarchical linear regression. In Model 2, the centered independent variables 'contact richer people' and 'contact poorer people' are implemented besides the control variables as predictors of the attitudes towards people of different ethnicities. Although only slightly better than Model 1, this model is a significant step forward. It forecasts an additional 0.9% (R-squared went from 0.090 to 0.099), indicating an improvement. The F-change value is 4.140 and significant ($p < 0.001$), providing evidence to support that model 2 is better than model 1.

The centered moderator income was included in model 3. This model can predict 0.8% more than model 2 (R-squared went from 0.099 to 0.107). The F-change value is 6.269 and significant ($p = 0.012$), meaning there is significant evidence that this model is better than model 2.

In Model 4, the role of the independent variables contact with richer people and contact with poorer people, moderator income, and the interaction with the independent variables and income are tested. This model predicts 11.1% of attitudes towards people of different ethnicities and has an F-change value of 2.072. The F-change value is insignificant ($p = 0.127$), indicating that the interaction terms in Model 4 do not significantly improve the model fit compared to Model 3. However, the interaction term of contact with richer people and income significantly predicts attitudes towards people of different ethnicities ($b = -0.028$; $p = 0.043$). Therefore, in this research, Model 4 is considered the most suitable model.

Table 3

Multiple regression analysis with the attitudes of people towards others of different ethnicities as the dependent variable, N=794

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|------------------------------|---------------|----------|---------------|----------|---------------|----------|---------------|----------|
| | <i>b</i> (SE) | <i>p</i> | <i>b</i> (SE) | <i>p</i> | <i>b</i> (SE) | <i>p</i> | <i>b</i> (SE) | <i>p</i> |
| Constant | -.926 (.158) | <.001 | -.872 (.119) | <.001 | -.787 (.124) | <.001 | -.786 (.124) | <.001 |
| Previous contact ethnicities | -.031 (.044) | .476 | -.029 (.044) | .513 | -.035 (.044) | .419 | -.039 (.044) | .379 |
| Contact ethnicities | .059 (.034) | .083 | .047 (.034) | .172 | .054 (.034) | .116 | .053 (.034) | .121 |
| Age | .003 (.003) | .304 | .003 (.003) | .307 | .002 (.003) | .411 | .002 (.003) | .449 |
| Gender (0=man, 1=woman) | .329 (.078) | <.001 | .339 (.077) | <.001 | .383 (.079) | <.001 | .384 (.079) | <.001 |
| Education | .206 (.027) | <.001 | .192 (.028) | <.001 | .166 (.029) | <.001 | .163 (.029) | <.001 |
| Contact richer People | | | -.078 (.029) | .008 | -.070 (.029) | .016 | -.077 (.029) | .009 |
| Contact poorer people | | | .058 (.027) | .036 | .053 (.027) | .052 | .056 (.027) | .042 |
| Income | | | | | .052 (.021) | .012 | .047 (.021) | .028 |
| incomeXcontact_richer_people | | | | | | | -.028 (.014) | .043 |
| incomeXcontact_poorer_people | | | | | | | .002 (.012) | .874 |
| R-squared | .090 | | .099 | | .107 | | .111 | |
| F-change | 15.576 | <.001 | 4.140 | .016 | 6.269 | .012 | 2.072 | .127 |

Assumptions

To ensure the validity of the analysis, the four assumptions of hierarchical linear regression are examined. The first assumption of regression analysis is the independence of observations. The LISS panel took a random sample from the population register of CBS to select the respondents; this should lead to independence between the respondents. Nevertheless, households were selected. Including households in the dataset may introduce dependencies among observations, as mentioned before. Individuals within the same household often share similar characteristics and experiences. Only households' heads are used in the analysis to mitigate this issue. By doing so, the cases are independent and assumption 1 is not violated.

The second assumption underlying linear regression is linearity: the relationship between predictors and the outcome variable should be linear. Violations of this assumption can lead to model misspecification, compromising the model's fit and potentially leading to inaccurate conclusions.

To assess linearity, scatterplots and partial regression plots are examined. In Figure 7 a scatterplot of the residuals against the dependent variable, 'attitudes towards ethnicities' is evaluated. In an ideal scenario, the residuals would be randomly scattered around a horizontal line at zero, indicating no systematic deviations from linearity. However, since the dependent variable is categorical with five levels, the points in Figure 7 form five distinct lines. To further investigate potential non-linearity, partial regression plots are examined. After controlling for the effects of other predictors, these plots depict the relationship between each predictor and the dependent variable. These plots (see Figure 4 in Appendix 3) show no evidence of a quadratic effect, thus confirming the assumption of linearity.

The third assumption is homoscedasticity, which requires that the variance of the residuals remains constant across all levels of the predictor variables. If this assumption is violated (heteroscedasticity), the standard errors of the regression coefficients may be biased, leading to inaccurate hypothesis tests and confidence intervals.

The scatterplot (see Figure 7) was examined to assess this assumption. In an ideal situation, the residuals would be randomly dispersed around a horizontal line at zero, indicating no systematic pattern in their spread. However, the points form five distinct lines because the dependent variable is categorical with five levels. This pattern is expected due to the nature of the dependent variable and does not necessarily indicate heteroscedasticity.

While there is some minor clustering of points below the zero line, the overall spread of residuals appears relatively consistent across predictor values, suggesting that heteroscedasticity is not a major concern in this model. However, using a continuous dependent variable would generally be more appropriate for linear regression and would allow for a more definitive assessment of homoscedasticity.

The fourth assumption is normality, which means that the residuals need to have a normal distribution. Violating this assumption could result in incorrect confidence intervals and conclusions. The distribution of the residuals appears relatively symmetric (see Figure 8), indicating adherence to normality. However, slight deviations from the normal distribution line suggest potential non-normality. The skewness is -0.046 , indicating a slightly left-skewed distribution. That's why I conclude that the assumption of linearity is not violated.

In conclusion, the first assumption of independent observations was met by including only household heads in the analysis. The assumption of linearity was confirmed by examining scatterplots and partial regression plots, which revealed a linear relationship between the predictors and the outcome variable. Third, the assumption of homoscedasticity, which requires constant variance of residuals, was largely met, although the categorical nature of the dependent variable made a definitive assessment difficult. Finally, the assumption of normality of residuals was also largely met, with only minor deviations from a normal distribution observed. Using a categorical dependent variable in a linear regression model is not ideal, and future research could benefit from using a continuous dependent variable for a more robust analysis.

Figure 7

The scatterplot displays the relationship between the predicted values and the residuals of a linear regression model. The residuals are the differences between the observed values of the dependent variable (attitudes towards ethnicities) and the values predicted by the model. In this case, the dependent variable is categorical, resulting in the distinct horizontal bands of data points visible in the plot.

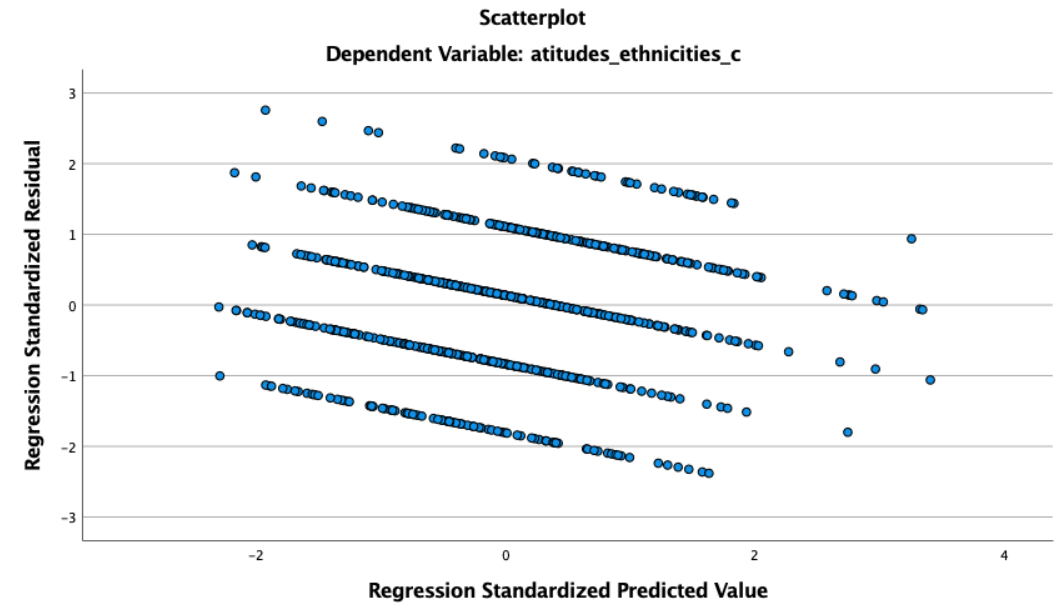
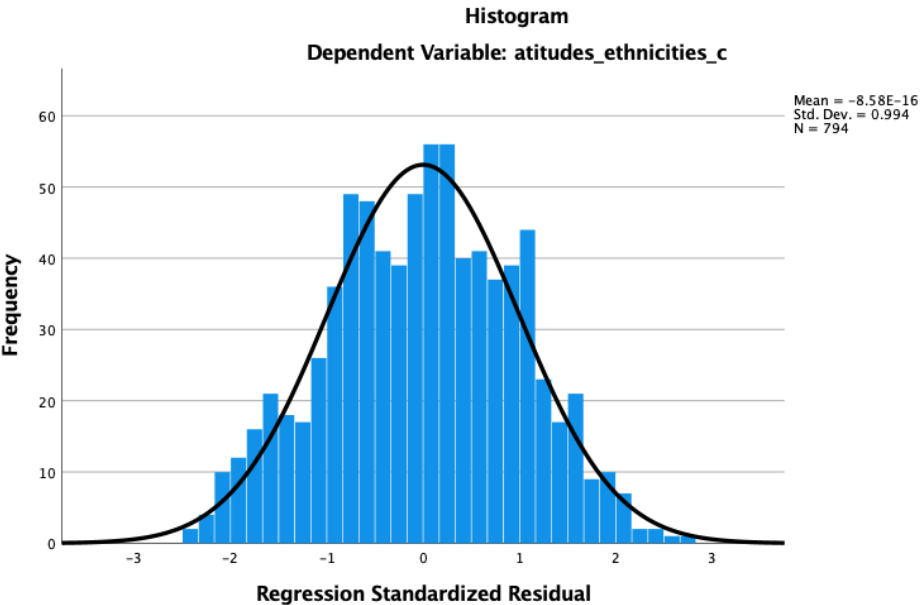


Figure 8

The illustration of the distribution of standardized residuals from a regression model predicting attitudes towards ethnicities



Outliers

The evaluation of outliers involved assessing their impact through several metrics, beginning with leverage, followed by Cook's Distance, and concluding with DFFit values (for the full analysis see Appendix 3). The analysis focused on identifying the most extreme cases and examining their characteristics. Furthermore, the potential effect of excluding outliers on the regression model was investigated.

The leverage is the first metric examined to evaluate outliers. The leverage examines the outliers in the x-direction. Cases with a value higher than 0.034 are possible outliers in this analysis. Considering this threshold, 34 cases would be outliers. However, most of them are still close to the cluster of values, indicating that they are not outliers. The cases with a higher leverage value than 0.065 were further away from the clustered data. Therefore it is chosen only to take those extreme values as outliers, resulting in 7 outliers. This avoids a substantial loss of data because deleting 34 cases is very high. The 7 outliers are examined. Remarkable is that they are all men, most of them have an average to high positive attitude towards people of different ethnicities than Dutch, and all of them except for one have a higher income than 4001 euros.

Second, the Cook's Distance values are examined. This measure applies the larger the absolute value of Cook's Distance, the greater the influence of an observation on all predicted values by the estimated regression equation. The threshold for this analysis is 0.00504, which means that values above this value could be outliers. There are 45 cases with a higher value than 0.00504. To avoid substantial data loss, only the extreme values were examined. These cases had a Cook's Distance higher than 0.02. This resulted in two cases being higher than this new threshold. Remarkable is that they are both men and score very high on the amount of contact they have with richer people, and they are both relatively young, 23 (the average age of respondents in this analysis is 65).

The last measure used to examine whether there are outliers is the DFFit. It looks at the impact of one specific case on the regression if the case was deleted. In this analysis, cases with a higher DFFit value than 0.213 are possible outliers. No cases precede this threshold.

When the outliers were dropped, the R-squared of model 4 changed from 0.111 to 0.114 in the linear regression, improving by 0.3%. There were no significant changes in the slopes of the predicting values and the model fit. Therefore, I have decided to retain the outliers in the model.

Multicollinearity VIF

The VIF scores are derived from the hierarchical linear regression. They show the extent to which multicollinearity has increased the standard errors of the regression coefficients. A rule of thumb is that a VIF lower than 2 is acceptable. The highest VIF found in this analysis is 1.427, suggesting that multicollinearity is not a significant concern in this analysis.

4.3 hypothesis testing

This subsection discusses whether the linear regression supports the hypotheses made in this research.

Main hypotheses

The first hypothesis states that the more contact one has with poorer people, the more positively associated attitudes one has towards people of different ethnicities and races. The slope of 'contact with poorer people' in Model 2 (see Table 3) is examined to see if this hypothesis is supported. The coefficient value is 0.058, which is small but significant ($p=0.036$). This means that there is evidence found that the more contact one has with poorer people, the more positive attitudes they have towards people of different ethnicities and races. Thus Hypothesis 1 is supported and is consistent with the secondary transfer effect.

Hypothesis 2 posits that the more contact one has with richer people the more positively associated attitudes one has towards people of different ethnicities. and races. This

hypothesis was assessed by examining the slope of 'contact richer people' in Model 2 (Table 3). The resulting slope of -0.078 is small but statistically significant ($p=0.008$), suggesting that more contact with richer individuals is associated with more negative attitudes towards individuals of different ethnicities than Dutch. Thus, Hypothesis 2 is not supported.

Hypothesis 3 states that having contact with richer people is less positively associated with people of other ethnicities than having contact with poorer people. As mentioned, having contact with richer people is negatively associated with attitudes towards people of other ethnicities ($b=-0.78$ and $p =0.008$), and having contact with poorer people is positively associated with attitudes towards people of other ethnicities ($b= 0.058$ and $p =0.036$). These results support hypothesis 3, meaning that having contact with richer people is less positively associated with people of other ethnicities than having contact with poorer people.

Moderator hypotheses

The fourth hypothesis posits that the positive effect of contact with richer people on the associated attitudes towards others of different ethnicities is stronger for individuals with higher incomes. To test this hypothesis, the interaction term of income and 'contact with richer people' (income X contact_richer_people) is examined in Model 4 (Table 3). Although the slope coefficient is small, it is significant ($b = -0.028$; $p = 0.043$). This indicates different slopes for different levels of the moderator income.

To illustrate this, formulas were derived from the regression equation of Model 4 by substituting the mean values of all variables except income and contact with richer people. This resulted in an equation where only the intercept, the contact variable, and the interaction term remained (see Multivariate Analyses in Appendix 2, for the full explanation):

Attitudes ethnicities = Intercept + b_6 (Contact Richer People) + b_9 (Income x Contact Richer People)

Substituting three income values (one standard deviation below the mean, the mean itself, and one standard deviation above the mean: 2.825, 4.79, and 6.755) into this equation yielded the following equations for attitudes towards ethnicities:

Attitudes ethnicities = -0.0291 - 0.1561 * contact richer people (green line)

Attitudes ethnicities = 0.0859 - 0.2111 * contact richer people (red line)

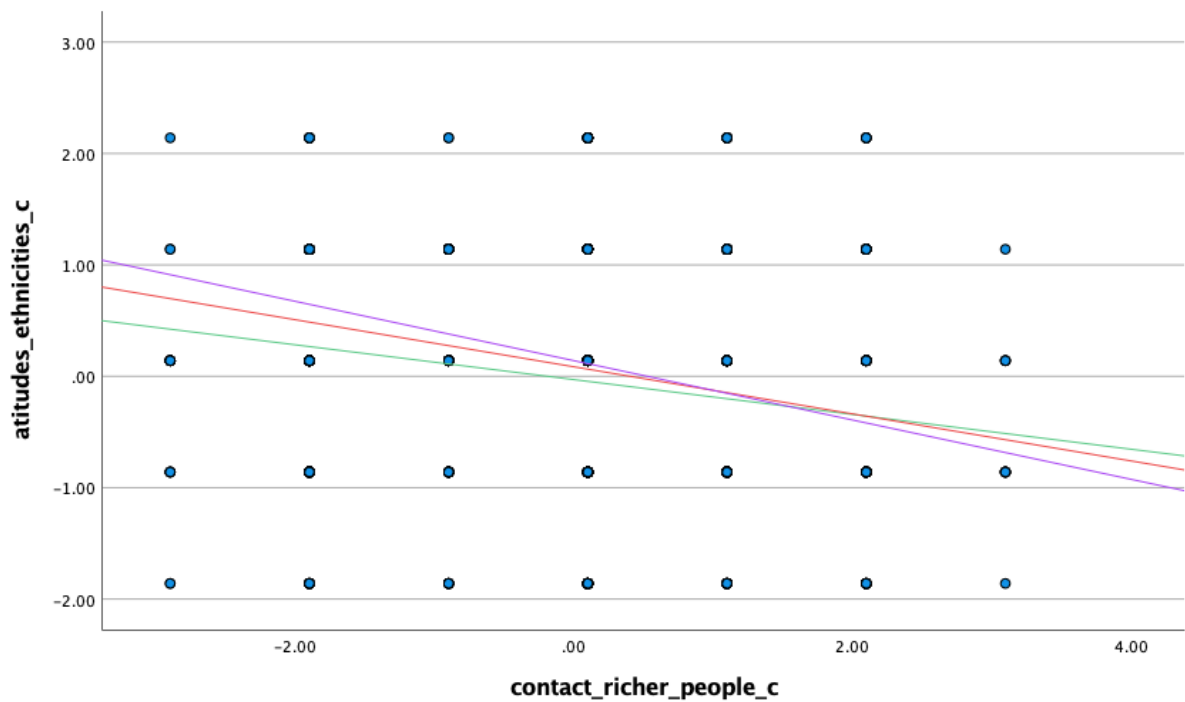
Attitudes ethnicities = 0.1409 - 0.2661 * contact richer people (purple line)

These formulas, presented in Figure 9, show that the slope of contact with richer people becomes more negative as income increases. Individuals with more contact with richer people and an income between 2501 and 3000 euros (category 6) have a stronger negative attitude towards people of different ethnicities and races ($b = -0.2661$) compared to those with an income between 501 and 1000 euros (income = 2.825) who also have more contact with richer people ($b = -0.1516$).

Hypothesis 4 predicted that the positive effect of more contact with richer people on attitudes towards people of different ethnicities and races would be stronger for individuals with higher incomes. Although the effect becomes stronger with higher income, it is negative. Therefore, Hypothesis 4 is not supported.

Figure 9

The relationship between contact with richer people and attitudes towards people of different ethnicities than Dutch, across various income levels. Each line represents a different income group, with the lowest income group being the green line (501 to 1000 EUR), the middle-income group being the red line (earning 1501 to 2000 EUR), and the highest income group (2501 to 3000 EUR) being the purple line.



Note: The graph indicates that for all income groups, increased contact with richer people is associated with a decrease in positive attitudes towards ethnic outgroups. This negative relationship is most pronounced for the highest income group, suggesting that for richer individuals, more contact with richer people may lead to a greater decrease in positive attitudes towards ethnic minorities. Conversely, the negative association is weakest for the lowest income groups, indicating that their attitudes towards ethnic minorities are less affected by contact with richer people.

The fifth and last hypothesis states that the positive effect of contact with poorer people on the associated attitudes towards others of different ethnicities is stronger for individuals with higher incomes. To evaluate this hypothesis, the interaction term of income and 'contact richer people' (incomeXcontact_poorer_people) is examined in Model 4 (in Table 3). The slope is very small and insignificant ($b=0.002$; $p=0.0874$). Nevertheless, with the same

method as above, the formulas are made to see how the slopes differ when other income values are used (2.825, 4.79, and 6.755). The following formulas can be made to see how the slope of 'contact poorer people' changes for different income values.

Attitudes ethnicities= $-1.4142 + 0.0617 * \text{contact poorer people}$ (green line)

Attitudes ethnicities= $-1.6402 + 0.0656 * \text{contact poorer people}$ (red line)

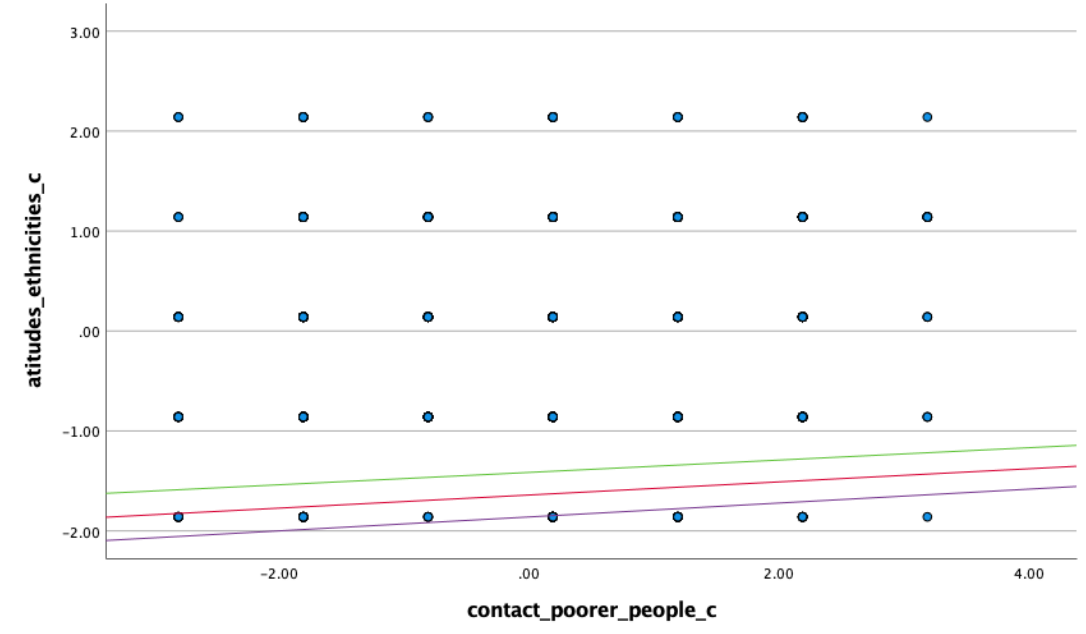
Attitudes ethnicities= $-1.8597 + 0.0695 * \text{contact poorer people}$ (purple line)

These formulas are presented in Figure 10. Each slope is different, with the green line showing the steepest slope. This indicates that individuals with more contact with poorer people and an income between 2501 and 3000 euros (category 6) have a stronger negative attitude towards people of different ethnicities and races ($b = 0.0695$) compared to those with an income between 501 and 1000 euros (income = 2.825) who also have more contact with poorer people ($b = 0.0617$).

The hypothesis predicted that the positive effect of more contact with poorer people on attitudes towards people of different ethnicities and races would be stronger for individuals with higher incomes. The effect is almost zero and insignificant, so Hypothesis 5 is not supported.

Figure 10

The relationship between contact with poorer people and attitudes towards people of different ethnicities than Dutch, across various income levels. Each line represents a different income group, with the lowest income group being the green line (501 to 1000 EUR), the middle-income group being the red line (earning 1501 to 2000 EUR), and the highest income group (2501 to 3000 EUR) being the purple line.



Note: For the income groups, increased contact with poorer people is associated with a slight increase in positive attitudes towards ethnic outgroups, but small and insignificant

5.1 Conclusion and Discussion

This chapter links the results to the scientific debate. It acknowledges the strengths and limitations, answers the research question, and makes recommendations for future research.

The first hypothesis of this research was that more contact with poorer people is associated with positive attitudes towards people of different ethnicities. This was because they learned more about the other group, created more empathy towards poorer people, and therefore had a more positive attitude towards them (Pettigrew, 2009; Pettigrew & Tropp, 2008). These positive attitudes can be generalized toward people of other ethnicities (Pettigrew, 2009; Tausch et al., 2010; Ünver-Aba & Çakal, 2024). Hypothesis 1 is supported, in line with the research of Pettigrew 2009 and Tausch and colleagues (2010). However, the effect is very small. A reason could be that more quantity of contact is not as meaningful as more quality (Landabur & Sirlopú, 2024), as friendships are shown to be more influential in decreasing prejudice and improving attitudes towards outgroups than frequency.

Contrary to Hypothesis 2, which predicted a positive association between contact with richer people and attitudes towards individuals of different ethnicities, the results revealed a negative association. This finding supports Hypothesis 3, which proposed that contact with richer people would be less positively associated with attitudes towards other ethnicities compared to contact with poorer people. Furthermore, Hypothesis 4, suggesting that the positive effect of contact with richer people would be stronger for higher-income individuals, was not supported. On the contrary, higher-income individuals had more negative associations with people of other ethnicities when having more contact with richer people.

Several factors may explain why this study supports Hypothesis 3 and not Hypotheses 2 and 4. First, the mechanisms driving positive attitudes from contact with poorer individuals, such as increased empathy and understanding, may not operate similarly with contact with richer individuals. Brown and Hewstone (2005) suggest empathy could be more easily felt towards

those perceived as less privileged, making it difficult to generalize positive feelings from contact with richer individuals to secondary outgroups. Second, as the intergroup contact theory acknowledges, contact can sometimes lead to negative attitudes (Kenfack et al., 2024). This is when perceived threats to one's group status are involved (Clark & Senik, 2010; Thora Bjornsdottir et al., 2024; Tropp & Pettigrew, 2005). The perceived threat from the primary outgroup (richer individuals) could mediate the relationship between contact and the associated attitudes towards the secondary outgroup (people of different ethnicities) (Zingora & Graf, 2019). This is a potential explanation for the negative association found in this study, further explaining the lack of support for Hypothesis 2 and the support for Hypothesis 3.

A reason why higher-income individuals, when having more contact with richer people, have more negatively associated attitudes towards people of different ethnicities could be the relative deprivation theory. When higher-income individuals have more contact with richer people, this contact might trigger feelings of relative deprivation. Comparing themselves to even wealthier individuals might lead to dissatisfaction and resentment rather than positive attitudes towards (Pettigrew, 2016) them and, by extension, towards people of other ethnicities (Pettigrew, 2009). This could be a reason why Hypothesis 4 is not supported.

Hypothesis 5 predicted a stronger positive effect of contact with poorer people on attitudes towards people of other ethnicities for higher-income individuals. This is not supported by the results. Higher-income individuals had little contact with people of different economic backgrounds, resulting in a small sample size. This is likely due to the tendency for people to have homogeneous social networks (McPherson et al., 2001). This could mean that there is not enough statistical power to detect a significant moderating effect (Agresti, 2018) of income on the relationship between more contact with poorer people and associated attitudes towards people of different ethnicities. A theoretical explanation for why this hypothesis is not supported is that contact with poorer people might not trigger feelings of relative deprivation, as people compare themselves to someone lower in the hierarchy.

This study has a couple of limitations. First, it did not measure how respondents perceived contact with people of different economic backgrounds. This is crucial in understanding how it might change attitudes (more positive or negative) and how it can extend to people of different ethnicities. It is important to consider both positive and negative forms of intergroup contact, as negative experiences can offset the beneficial effects of positive interactions among majority group members (Graf et al., 2014; Kenfack et al., 2024; Paolini et al., 2010). Further research is needed to understand the combined impact of these interactions on intergroup relations between people of different economic backgrounds and the associated attitudes towards people of different ethnicities and races.

Methodologically, a few operationalizations were based on a single item due to the dataset's limited number of relevant items related to the concepts. It can be argued that including more items would provide a more comprehensive measurement of the concepts, potentially leading to different results. The common set of questions used in other research could be asked to participants to gain a better understanding of the respondents' contact with people of different economic backgrounds. The question of the research from Islam & Hewstone, 1993, as cited in Dixon et al., 2005 would capture the different types of contact one could have with outgroup members, such as the quality and quantity of the contact, which would give more insights.

Another limitation is that only household heads are used in this research. Household heads tend to be older and more likely to be men than women, which may not represent the whole population well. Therefore, using them alone in the analysis may not accurately reflect the Dutch population. Due to this, the study may overrepresent the opinions and experiences of older men, therefore leaving out those of women and young adults.

This study's reliance on self-reported data may be subject to social desirability bias, where respondents may overreport positive behaviors or attitudes (Tausch et al., 2010). The cross-sectional design also limits the ability to draw causal inferences. Future research should

employ longitudinal designs to better understand the causal pathways between intergroup contact and attitudes towards different ethnicities (Tausch et al., 2010).

Lastly, the respondents who indicate more contact with people of different economic backgrounds might be referring to individuals of different ethnicities. Although this study controlled for contact with people of different ethnicities, future research could benefit from explicitly measuring this overlap. Additionally, the association between contact with people of different economic backgrounds and attitudes towards people of different ethnicities could vary for different minority groups, as each group has unique cultural experiences and histories (Gaygisiz, 2013). Future research should investigate these potential differences.

Despite these limitations, this study provides valuable insights into the complex relationship of intergroup contact between people of different economic backgrounds and the associated attitudes towards people of different ethnicities. Previous research has largely overlooked this area. Prior studies have primarily focused on contact between children of different socioeconomic statuses (Burkholder et al., 2021; Elenbaas, 2019; Gönül et al., 2023) or contact between racial and ethnic groups (Pettigrew & Tropp, 2005). The positive association between contact with poorer people and the attitudes towards people of different ethnicities aligns with the secondary transfer effect, which generally predicts positive outcomes from intergroup contact (Pettigrew, 2009; Tausch et al., 2010). However, contact with richer people is associated with negative attitudes towards people of different ethnicities, even more so for higher-income individuals. These findings contribute to the field as previous research has primarily focused on the positive effects of contact with limited attention to negative secondary transfer effects (Henschel & Kötting, 2023). These contradictory findings highlight the importance of considering the economic dimension of intergroup contact and the STEs. Additionally, the results support the idea that negative contact is more influential on attitudes than positive contact (Graf et al., 2014; Kenfack et al., 2024; Paolini et al., 2010). Because the negative association between contact with richer people and the associated attitudes towards people of different ethnicities was stronger than the positive association between contact with poorer people and attitudes towards people of other ethnicities.

More research into contact between people of different economic backgrounds is important for developing efficient indirect strategies to reduce ethnic prejudice in society. As there is still racism in the Netherlands. In further research, the role of threat and relative deprivation should be investigated to see when intergroup contact does and does not lead to more positive views of primary and secondary outgroups. Additionally, investigating the impact of contact with different economic groups on specific ethnic minority groups could provide valuable insights for developing tailored interventions to reduce prejudice and promote positive intergroup relations.

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Appendix 1

This appendix provides additional details about the variables' univariate statistics, which are discussed per variable. First, the frequencies and descriptive statistics of the variables in their original form are presented, including the scale information and the items selected for the variables. These are already mentioned in method section 3.3. New information has also been added, like the skewness of the variables. Second, the transformations applied to the variables are described. Lastly, the resulting changes of the transformations in the distribution of the variables are discussed, if necessary. Then the univariate statistics of the variables are discussed without the missing values. At the end of this appendix, it discusses how contact with people of different economic backgrounds varies across income categories.

As outlined in Result section 4.1, the analysis includes only household heads and individuals of Dutch ethnicity. Other individuals have been filtered out, ensuring the analysis focuses on the intended population.

This syntax was used to filter out the respondents with a non-Dutch background and non-household heads.

```
COMPUTE filter_$=(positie = 1 & herkomstgroep = 0 ).
VARIABLE LABELS filter_$ 'positie = 1 & herkomstgroep = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
```


Dependent variable: Attitudes Ethnicities

The name of the variable that is used to measure respondents' attitudes towards people of a non-Dutch ethnicities is **cv21m120**. As mentioned in Method Section 3.3, the respondents could answer on a 5-point scale by which 1= fully disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, and 5= fully agree. The statement was: There are too many people of foreign origin or descent in the Netherlands.

The mean is 3.11, so the average score is that people neither agree nor disagree with the statement: There are too many people of foreign origin or descent in the Netherlands. Most of the people choose option 3 in the middle, 'neither agree nor disagree.' The median is also 3. There is no normal distribution; it is left-skewed, with a skewness of -0.43, indicating higher values on the right side. The standard deviation is 1.081, which is not too big.

Table 1

The descriptives of the attitudes towards people of different ethnicities
Statistics

cv21m120 There are too many people of foreign origin or descent in the Netherlands.

| | | |
|------------------------|---------|-------|
| N | Valid | 2864 |
| | Missing | 583 |
| Mean | | 3.11 |
| Std. Error of Mean | | .020 |
| Mode | | 3 |
| Std. Deviation | | 1.081 |
| Variance | | 1.169 |
| Skewness | | -.043 |
| Std. Error of Skewness | | .046 |
| Range | | 4 |
| Minimum | | 1 |
| Maximum | | 5 |
| Percentiles | 25 | 2.00 |
| | 50 | 3.00 |
| | 75 | 4.00 |

Table 2

The frequency of the attitudes towards people of different ethnicities

cv21m120 There are too many people of foreign origin or descent in the Netherlands.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------------|-----------|---------|---------------|--------------------|
| Valid | 1 fully disagree | 196 | 5.7 | 6.8 | 6.8 |
| | 2 disagree | 639 | 18.5 | 22.3 | 29.2 |
| | 3 neither agree nor disagree | 983 | 28.5 | 34.3 | 63.5 |
| | 4 agree | 742 | 21.5 | 25.9 | 89.4 |
| | 5 fully agree | 304 | 8.8 | 10.6 | 100.0 |
| | Total | 2864 | 83.1 | 100.0 | |
| Missing | System | 583 | 16.9 | | |
| Total | | 3447 | 100.0 | | |

This syntax was used to find the frequency for the variable 'attitudes ethnicities'

```
FREQUENCIES VARIABLES=cv21m120
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM SEMEAN MEAN MODE SKEWNESS
  SESKEW
  /ORDER=ANALYSIS.
```

Adjustments

I have adjusted the variable so that a higher score indicates fewer negative attitudes toward people of different ethnicities. The new scoring system ranges from 1, indicating full agreement, to 5, indicating full disagreement. This modification aims to simplify the interpretation of the results.

This syntax was used to recode the variable 'attitudes ethnicities'.

```
RECODE cv21m120 (1=5) (2=4) (4=2) (5=1) (3=3) INTO attitudes_ethnicities.
VARIABLE LABELS attitudes_ethnicities 'There are too many people of foreign origin
or descent '+
  'in the Netherlands. '.
EXECUTE.
```

Independent variable: Contact richer people

I use variable **vm20a063** to measure the amount of contact the respondent has with richer people. The statement was: I often have contact with people who are a lot richer than me, for instance, in the street, in public transport, in shops, in the neighborhood, or at work. The respondents could answer on a 7-point scale: 1= Strongly disagree, 2= Disagree, 3= somewhat disagree, 4= Neither agree nor disagree, 5= Somewhat agree, 6= Agree, and 7= Strongly agree.

The mean is 3.91 (see Table 2), so in between 'somewhat disagree' and 'neither disagree nor disagree'. The most chosen answer is option 4 (see mode in table 3 and table 4): I neither agree nor disagree. The median is also 4. The distribution is asymmetric. It is left-skewed,

with a skewness of -0.143, indicating higher values on the right side of the distribution. The standard deviation is 1.387, which is not too big for a variable with a 7-point scale, around 21%.

This syntax was used to find the frequency of 'contact richer people'.

```
FREQUENCIES VARIABLES=vm20a063
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
  /HISTOGRAM
  /ORDER=ANALYSIS.
```

Table 3

The descriptives of contact with richer people

Statistics

vm20a063 I often have contact with people who are a lot richer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work

| | | |
|------------------------|---------|-------|
| N | Valid | 863 |
| | Missing | 2584 |
| Mean | | 3.91 |
| Mode | | 4 |
| Std. Deviation | | 1.387 |
| Variance | | 1.923 |
| Skewness | | -.143 |
| Std. Error of Skewness | | .083 |
| Kurtosis | | -.737 |
| Std. Error of Kurtosis | | .166 |
| Range | | 6 |
| Minimum | | 1 |
| Maximum | | 7 |
| Percentiles | 25 | 3.00 |
| | 50 | 4.00 |
| | 75 | 5.00 |

Table 4

The frequency of contact with richer people

vm20a063 I often have contact with people who are a lot richer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work

| | | Frequen cy | Percent | Valid Percent | Cumulative Percent |
|-------------|------------------------------|---------------|---------|------------------|-----------------------|
| Valid | 1 Strongly disagree | 21 | .6 | 2.4 | 2.4 |
| | 2 Disagree | 178 | 5.2 | 20.6 | 23.1 |
| | 3 Somewhat disagree | 76 | 2.2 | 8.8 | 31.9 |
| | 4 Neither agree nor disagree | 290 | 8.4 | 33.6 | 65.5 |
| | 5 Somewhat agree | 190 | 5.5 | 22.0 | 87.5 |
| | 6 Agree | 95 | 2.8 | 11.0 | 98.5 |
| | 7 Strongly agree | 13 | .4 | 1.5 | 100.0 |
| | Total | 863 | 25.0 | 100.0 | |
| Missin g | System | 2584 | 75.0 | | |
| | Total | 3447 | 100.0 | | |

Independent variable: Contact Poorer people

I use variable **vm20a062** to measure how much contact the respondent has with poorer people. The statement was: I often have contact with people who are a lot poorer than me, for instance, in the street, in public transport, in shops, in the neighborhood, or at work. The respondents could answer on a 7-point scale: 1= Strongly disagree, 2= Disagree, 3= somewhat disagree, 4= Neither agree nor disagree, 5= Somewhat agree, 6= Agree, and 7= Strongly agree.

The most chosen answer is also option 4: I neither agree nor disagree. The category 'somewhat disagree' has a relatively low score, while 'disagree' has a relatively high score, resulting in a less symmetric distribution. The mean is 3.81 (see Table 5), so between 'somewhat disagree' and 'neither disagree nor disagree.' The distribution is left-skewed with a skewness of -0.25.

```
FREQUENCIES VARIABLES=vm20a062
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
  /HISTOGRAM
  /ORDER=ANALYSIS.
```

Table 5

The descriptive statistics of contact with poorer people

| Statistics | | |
|---|---------|-------|
| vm20a062 I often have contact with people who are a lot poorer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | | |
| N | Valid | 863 |
| | Missing | 2584 |
| Mean | | 3.81 |
| Mode | | 4 |
| Std. Deviation | | 1.473 |
| Variance | | 2.170 |
| Skewness | | -.025 |
| Std. Error of Skewness | | .083 |
| Kurtosis | | -.792 |
| Std. Error of Kurtosis | | .166 |
| Range | | 6 |
| Minimum | | 1 |
| Maximum | | 7 |
| Percentiles | 25 | 2.00 |
| | 50 | 4.00 |
| | 75 | 5.00 |

Table 6*The frequency of contact with poorer people*

vm20a062 I often have contact with people who are a lot poorer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------------|-----------|---------|---------------|--------------------|
| Valid | 1 Strongly disagree | 37 | 1.1 | 4.3 | 4.3 |
| | 2 Disagree | 189 | 5.5 | 21.9 | 26.2 |
| | 3 Somewhat disagree | 80 | 2.3 | 9.3 | 35.5 |
| | 4 Neither agree nor disagree | 292 | 8.5 | 33.8 | 69.3 |
| | 5 Somewhat agree | 138 | 4.0 | 16.0 | 85.3 |
| | 6 Agree | 110 | 3.2 | 12.7 | 98.0 |
| | 7 Strongly agree | 17 | .5 | 2.0 | 100.0 |
| | Total | 863 | 25.0 | 100.0 | |
| Missing | System | 2584 | 75.0 | | |
| Total | | 3447 | 100.0 | | |

Moderator: Income

I use variable **nettoeat** for income. Income is measured by the personal net monthly income in categories.

Starting with 1= EUR 500 or less; 2= EUR 501 to EUR 1000; 3= EUR 1001 to EUR 1500; 4= EUR 1501 to EUR 2000; 5= EUR 2001 to EUR 2500; 6= EUR 2501 to EUR 3000; 7 = EUR 3001 to EUR 3500; 8= EUR 3501 to EUR 4000; 9 = EUR 4001 to EUR 4500; 10 = EUR 4501 to EUR 5000; with 11= EUR 5001 to EUR 7500; 12= More than EUR 7500, 13= I don't know, 14= I prefer not to say.

The average is 4.49, which means that the average income is between EUR 1501 and EUR 2000. The variable 'income' is kind of symmetric. However, it does have some outliers, as evident from the histogram. The skewness is 0.522, indicating some higher values on the left side of the distribution, resulting in asymmetry. The standard deviation is 1.965, which, with 13 response categories, is not large, at 15%.

This syntax was used to find the frequency of income:

```
FREQUENCIES VARIABLES=nettocat
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.
```

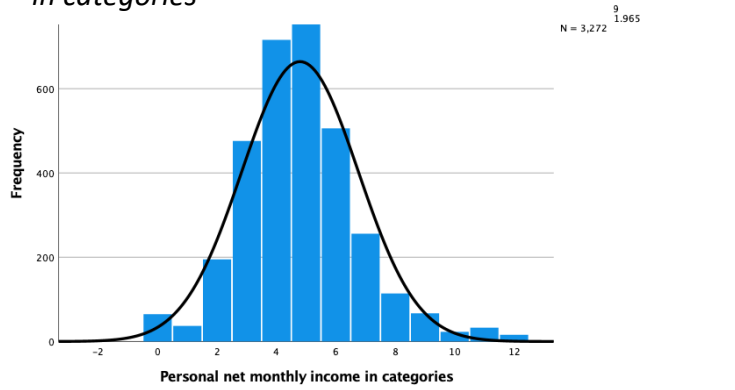
Table 7

The descriptives of income

| Statistics | | |
|--|---------|-------|
| nettocat Personal net monthly income in categories | | |
| N | Valid | 3272 |
| | Missing | 175 |
| Mean | | 4.79 |
| Mode | | 5 |
| Std. Deviation | | 1.965 |
| Variance | | 3.861 |
| Skewness | | .522 |
| Std. Error of Skewness | | .043 |
| Kurtosis | | 1.276 |
| Std. Error of Kurtosis | | .086 |
| Range | | 12 |
| Minimum | | 0 |
| Maximum | | 12 |
| Percentiles | 25 | 4.00 |
| | 50 | 5.00 |
| | 75 | 6.00 |

Figure 1

Frequency of personal net monthly income in categories



Control variable: Previous contact Ethnicities

For previous contact ethnicities, I used three variables. The first variable is **vm20a033**. The respondents could answer how much they agreed or disagreed with the statement: When I was 15, most of my friends had the same ethnic background as mine. The statement had a 7-point scale: 1= Strongly disagree, 2= Disagree, 3= somewhat disagree, 4= Neither agree nor disagree, 5= Somewhat agree, 6= Agree, and 7= Strongly agree.

The mean is 5.88 (see Table 8), so the average score is that people somewhat agree with the statement: When I was 15, most of my friends had the same ethnic background as mine. The mode is category 6, 'Agree' on the right side of the distribution. The variable is left-skewed, with a skewness of -1.625. Therefore, the distribution is asymmetric (see Figure 2). With 836

valid cases, a frequency of 8 in category 7 is relatively low. Similarly, the frequencies of 20 in response category 6 and 16 in category 5 are also relatively low. The standard deviation is 1.15, which represents 16% of the data.

This syntax was used to find statistics of the variables used for previous contact ethnicities.

```
FREQUENCIES VARIABLES=vm20a033 vm20a034 vm20a035
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
  KURTOSIS SEKURT
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.
```

Table 8

The descriptive of previous friends with the same ethnicity, pupils at school with the same ethnicity, and children I the neighborhood with the same ethnicity

| | | Statistics | | |
|------------------------|---------|---|---|--|
| | | vm20a033 Most of my friends had the same ethnic background as mine | vm20a034 At school, most of the pupils had the same ethnic background as mine | vm20a035 Most of the children in my neighborhood had the same ethnic background as mine |
| N | Valid | 1641 | 1641 | 1641 |
| | Missing | 9179 | 9179 | 9179 |
| Mean | | 5.64 | 5.58 | 5.66 |
| Std. Error of Mean | | .035 | .036 | .034 |
| Mode | | 6 | 6 | 6 |
| Std. Deviation | | 1.415 | 1.465 | 1.390 |
| Variance | | 2.002 | 2.147 | 1.931 |
| Skewness | | -1.625 | -1.614 | -1.668 |
| Std. Error of Skewness | | .060 | .060 | .060 |
| Kurtosis | | 2.165 | 2.057 | 2.370 |
| Std. Error of Kurtosis | | .121 | .121 | .121 |
| Minimum | | 1 | 1 | 1 |
| Maximum | | 7 | 7 | 7 |
| Percentiles | 25 | 6.00 | 5.00 | 6.00 |
| | 50 | 6.00 | 6.00 | 6.00 |
| | 75 | 6.00 | 6.00 | 6.00 |

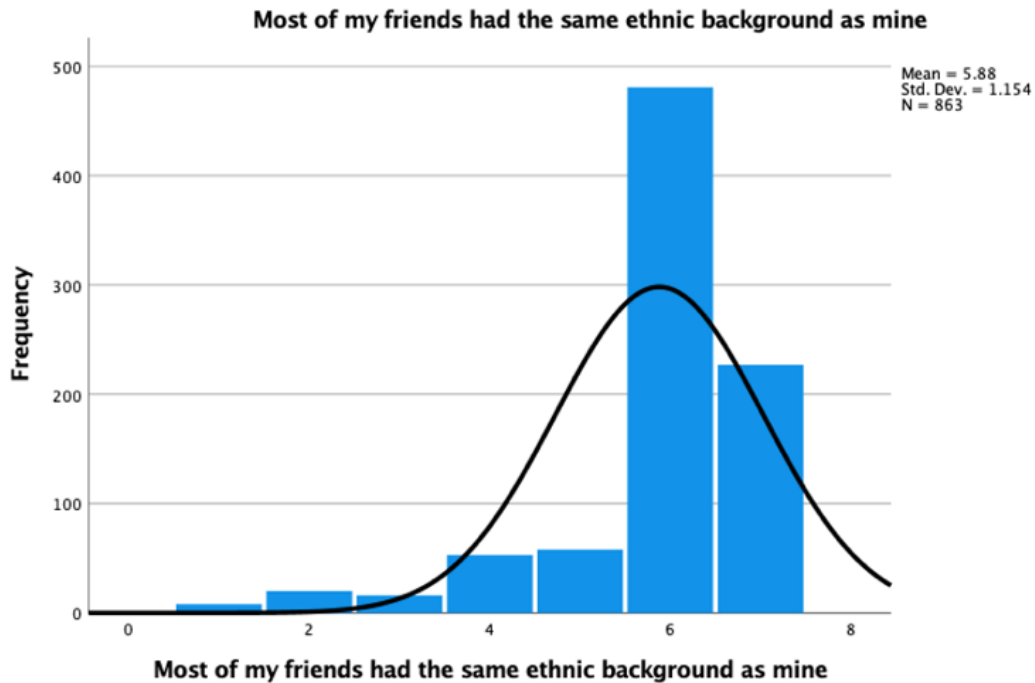
Table 9

The frequency of previous friends with the same ethnicity

| vm20a033 Most of my friends had the same ethnic background as mine | | | | | |
|--|------------------------------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 1 Strongly disagree | 8 | .2 | .9 | .9 |
| | 2 Disagree | 20 | .6 | 2.3 | 3.2 |
| | 3 Somewhat disagree | 16 | .5 | 1.9 | 5.1 |
| | 4 Neither agree nor disagree | 53 | 1.5 | 6.1 | 11.2 |
| | 5 Somewhat agree | 58 | 1.7 | 6.7 | 18.0 |
| | 6 Agree | 481 | 14.0 | 55.7 | 73.7 |
| | 7 Strongly agree | 227 | 6.6 | 26.3 | 100.0 |
| Total | | 863 | 25.0 | 100.0 | |
| Missing | System | 2584 | 75.0 | | |
| Total | | 3447 | 100.0 | | |

Figure 2:

Frequency of friends with the same ethnic background when the respondent was 15 years old



The second variable I use to measure previous contact with people of different ethnicities is variable **vm20a034**. This variable was measured with a statement: When I was 15 years old, most of the pupils in school had the same ethnic background as mine. Respondents could agree or disagree with the statement. This variable has the same 7-point scale as the previous variable mentioned above. Most of the people 'Agree' with the statement. The distribution is asymmetric and left-skewed, like the last variable (see Figure 3). The mean is 5.58 (see Figure 8).

The third variable I use to measure previous contact with people of different ethnicities is variable **vm20a035**. This variable was measured with a statement: When I was 15 years old, most of the children in my neighborhood had the same ethnic background as mine. They could agree or disagree with the statement. This variable has the same 7-point scale as the previous variable mentioned above. Most of the people 'Agree' with the statement. The distribution is the same as the last two variables, left-skewed (as seen in Figure 4). The mean is 5.66 (see Figure 8).

Figure 3:

Frequency of pupils at school with the same ethnic background when the respondent was 15 years old

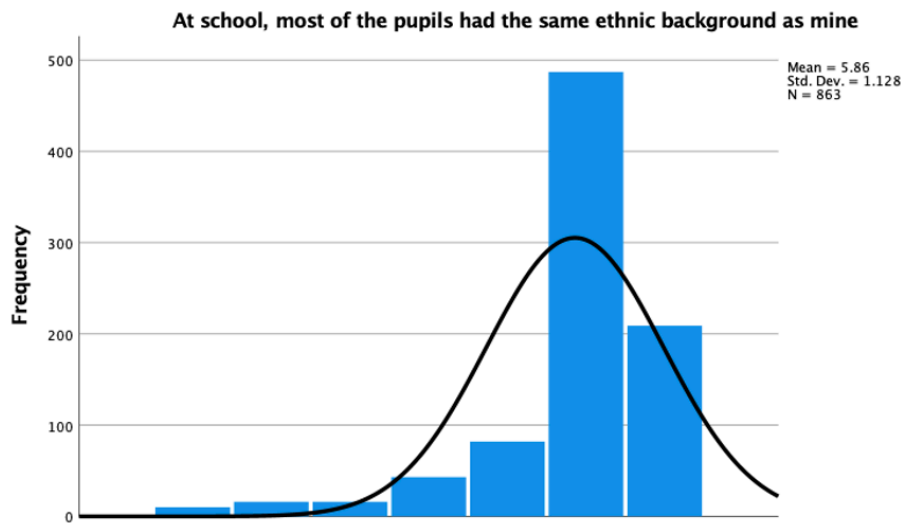
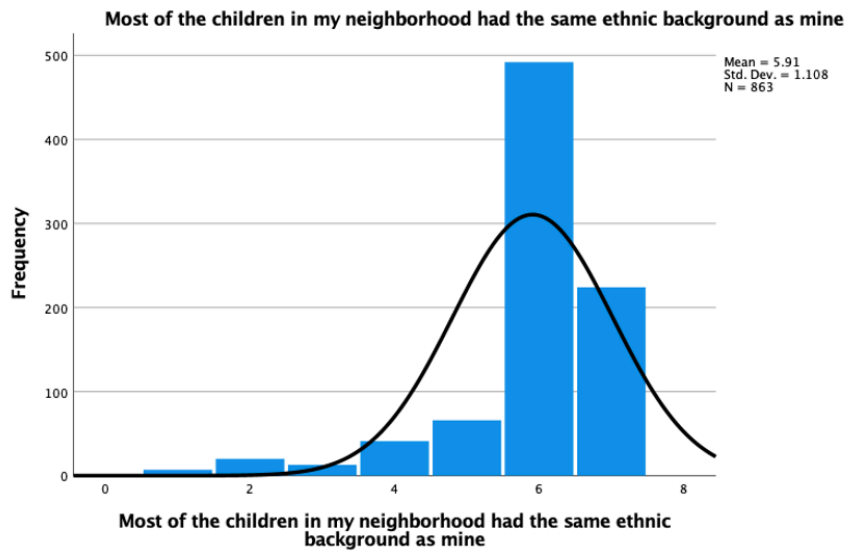


Figure 4:

Frequency in the neighborhood with the same ethnic background when the respondent was 15 years old



Reliability

After analyzing the descriptive statistics, I used Cronbach's Alpha to assess the reliability of the variables. The Cronbach's Alpha value obtained is 0.902, which is considered high (refer to Table 10). Additionally, the inter-item correlations are also high, with the lowest being

0.725 (refer to Table 11). This correlation is between having children in the neighborhood with the same ethnicity and having friends with the same ethnicity at the age of 15.

Table 10

The Cronbach's Alpha of the three items of that measure 'previous contact ethnicities': previous friends with the same ethnicity, pupils at school with the same ethnicity, and children in the neighborhood with the same ethnicity

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .902 | .902 | 3 |

Table 11

The inter item correlation for the items that measure 'previous contact ethnicities'

| | vm20a033 Most of my friends had the same ethnic background as mine | vm20a034 At school, most of the pupils had the same ethnic background as mine | vm20a035 Most of the children in my neighborhood had the same ethnic background as mine |
|--|---|--|--|
| vm20a033 Most of my friends had the same ethnic background as mine | 1.000 | .735 | .725 |
| vm20a034 At school, most of the pupils had the same ethnic background as mine | .735 | 1.000 | .802 |
| vm20a035 Most of the children in my neighborhood had the same ethnic background as mine | .725 | .802 | 1.000 |

Adjustments

I recoded the scales of all three variables, so a higher score means that people had more contact with people of different ethnicities in the past. The new scores are now: 1= I fully agree, and 7 I fully disagree. This way, the results are easier to interpret. The new variables are called: previous Contact Ethnicities Friends, Previous Contact Ethnicities School, and Previous Contact Ethnicities Neighborhood.

This syntax was used to recode the variables used for previous contact ethnicities.

```
RECODE vm20a033 vm20a034 vm20a035 (1=7) (2=6) (3=5) (4=4) (5=3) (6=2) (7=1) INTO
```

```

previousContactEthnicitiesFriends PreviousContactEthnicitiesSchool
PreviousContactEthnicitiesNeighborhood.
VARIABLE LABELS previousContactEthnicitiesFriends "when i was 15 years old, most
of my friends "+
"had '+ 'the same ethnic background as mine"
/PreviousContactEthnicitiesSchool 'At school, '+
'most of the pupils had the same ethnic background as mine'
/PreviousContactEthnicitiesNeighborhood 'Most of the children in my neighborhood
had the same '+

```

After this, I summed the three variables up and divided them by 3, so there is 1 variable called 'previous contact ethnicities'.

This syntax was used to compute the 3 items together to make one variable of previous contact ethnicities.

```

COMPUTE previous_contact_ethnicities=(previousContactEthnicitiesFriends +
PreviousContactEthnicitiesSchool + PreviousContactEthnicitiesNeighborhood) / 3.
EXECUTE.

```

This new variable gives new values that are options. Instead of only option 1 or 2, a respondent's score could be 1.33 (see Table 12). This results in a bit of a change in frequencies. Before, the highest frequency for previous contact with friends with the same ethnicity was 481 for answer 6, 'agree,' now it is option 2 (it is the same category 'agree' because the variable is recorded, 6=2 and 2=6), but now the frequency is 393. That is a change of 88 respondents. See Tables 9 and 13 for the differences. The distribution is now right-skewed, as can be seen in Figure 5.

This syntax was used to find the frequencies and descriptive statistics of previous contact ethnicities.

```

FREQUENCIES VARIABLES=previous_contact_ethnicities
/NTILES=4
/STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
/HISTOGRAM NORMAL
/ORDER=ANALYSIS.

```

Table 13

The frequency of previous contact ethnicities

Table 12

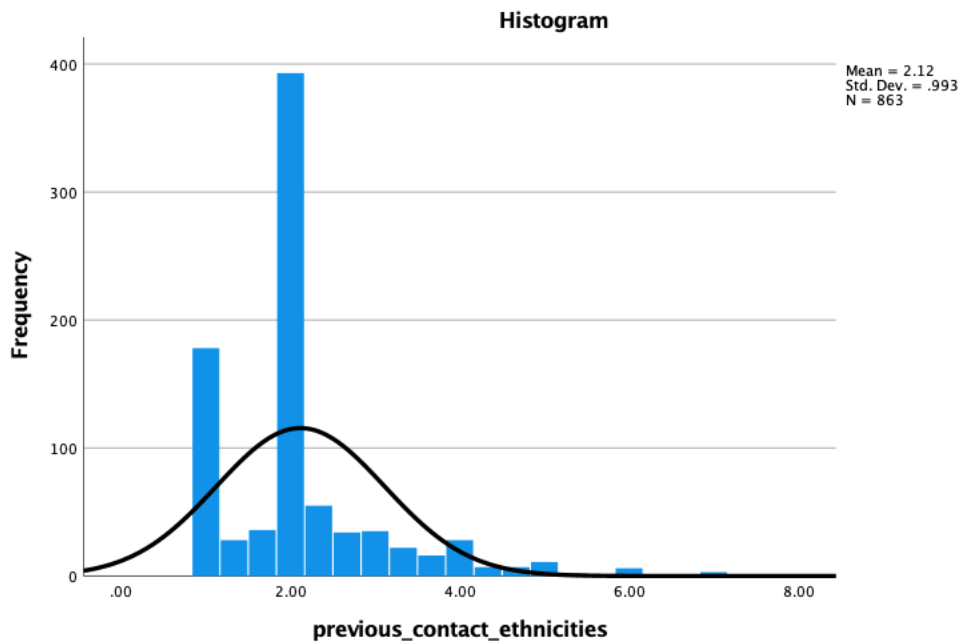
The descriptives of previous

| Statistics | | |
|------------------------------|---------|--------|
| previous_contact_ethnicities | | |
| N | Valid | 863 |
| | Missing | 2584 |
| Mean | | 2.1174 |
| Mode | | 2.00 |
| Std. Deviation | | .99281 |
| Variance | | .986 |
| Skewness | | 1.677 |
| Std. Error of Skewness | | .083 |
| Kurtosis | | 4.083 |
| Std. Error of Kurtosis | | .166 |
| Range | | 6.00 |
| Minimum | | 1.00 |
| Maximum | | 7.00 |
| Percentiles | 25 | 1.6667 |
| | 50 | 2.0000 |
| | 75 | 2.3333 |

| previous_contact_ethnicities | | | | | |
|------------------------------|--------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 1.00 | 178 | 5.2 | 20.6 | 20.6 |
| | 1.33 | 28 | .8 | 3.2 | 23.9 |
| | 1.67 | 36 | 1.0 | 4.2 | 28.0 |
| | 2.00 | 393 | 11.4 | 45.5 | 73.6 |
| | 2.33 | 55 | 1.6 | 6.4 | 80.0 |
| | 2.67 | 34 | 1.0 | 3.9 | 83.9 |
| | 3.00 | 35 | 1.0 | 4.1 | 87.9 |
| | 3.33 | 22 | .6 | 2.5 | 90.5 |
| | 3.67 | 16 | .5 | 1.9 | 92.4 |
| | 4.00 | 28 | .8 | 3.2 | 95.6 |
| | 4.33 | 7 | .2 | .8 | 96.4 |
| | 4.67 | 7 | .2 | .8 | 97.2 |
| | 5.00 | 11 | .3 | 1.3 | 98.5 |
| | 5.33 | 2 | .1 | .2 | 98.7 |
| | 5.67 | 1 | .0 | .1 | 98.8 |
| | 6.00 | 6 | .2 | .7 | 99.5 |
| | 6.67 | 1 | .0 | .1 | 99.7 |
| 7.00 | 3 | .1 | .3 | 100.0 | |
| Total | | 863 | 25.0 | 100.0 | |
| Missing | System | 2584 | 75.0 | | |
| Total | | 3447 | 100.0 | | |

Figure 5:

Frequency of previous contact ethnicities



Control variable: Contact Ethnicities

I use the variable **vm20a038** for contact ethnicities. This variable is measured with a statement on which they could agree or disagree. The statement was: Most of my friends have the same ethnic background as mine. The respondents could answer on a 7-point scale: 1= Strongly disagree, 2= Disagree, 3= somewhat disagree, 4= Neither agree nor disagree, 5= Somewhat agree, 6= Agree, and 7= Strongly agree.

Table 5 reveals that, on average, people somewhat agree with the statement: Most of my friends had the same ethnic background as mine (Mean= 5.54). The mode is 6, which is that most people agree with the statement. The distribution of contact ethnicities is right-skewed, with a skewness of 1.9, indicating a non-normal distribution. With 836 valid cases, the frequency of 6 in category 7 is relatively low (see Table 15). Similarly, the frequencies of 28 in response category 6 and 28 in category 5 are low. The standard deviation is 1.26, which accounts for 18% of the data.

This syntax was used to find the frequencies of contact ethnicities.

```
FREQUENCIES VARIABLES=vm20a038
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.
```

Table 14

The descriptives of contact ethnicities

Statistics

vm20a038 Most of my friends have the same ethnic background as mine

| | | |
|------------------------|---------|--------|
| N | Valid | 863 |
| | Missing | 2584 |
| Mean | | 5.54 |
| Mode | | 6 |
| Std. Deviation | | 1.264 |
| Variance | | 1.599 |
| Skewness | | -1.421 |
| Std. Error of Skewness | | .083 |
| Kurtosis | | 1.797 |
| Std. Error of Kurtosis | | .166 |
| Range | | 6 |
| Minimum | | 1 |
| Maximum | | 7 |
| Percentiles | 25 | 5.00 |
| | 50 | 6.00 |
| | 75 | 6.00 |

Table 15

The frequency of contact ethnicities

vm20a038 Most of my friends have the same ethnic background as mine

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------------|-----------|---------|---------------|--------------------|
| Valid | 1 Strongly disagree | 6 | .2 | .7 | .7 |
| | 2 Disagree | 36 | 1.0 | 4.2 | 4.9 |
| | 3 Somewhat disagree | 28 | .8 | 3.2 | 8.1 |
| | 4 Neither agree nor disagree | 83 | 2.4 | 9.6 | 17.7 |
| | 5 Somewhat agree | 110 | 3.2 | 12.7 | 30.5 |
| | 6 Agree | 461 | 13.4 | 53.4 | 83.9 |
| | 7 Strongly agree | 139 | 4.0 | 16.1 | 100.0 |
| | Total | 863 | 25.0 | 100.0 | |
| Missing | System | 2584 | 75.0 | | |
| Total | | 3447 | 100.0 | | |

Adjustments

I recoded the scale so that a higher score means that people have more contact with people of different ethnicities. The new scores are now 1 = I fully agree and 7 = I fully disagree. This change makes the results easier to interpret.

This syntax was used to recode the variables used for contact ethnicities.

```
RECODE vm20a038 (1=7) (2=6) (3=5) (4=4) (5=3) (6=2) (7=1) INTO
    contact_ethnicities__.
VARIABLE LABELS contact_ethnicities__ 'Most of my friends had the same '+'
    'ethnic background* as mine'.
EXECUTE.
```

Control variable: Education

I use the variable **oplcat** for education. It is measured with the level of education in CBS (Statistics Netherlands) categories. The respondents could choose between the categories: 1 primary school; 2 vmbo (intermediate secondary education, US: junior high school); 3 havo/vwo (higher secondary education/preparatory university education, US: senior high school); 4 mbo (intermediate vocational education, US: junior college); 5 hbo (higher vocational education, US: college); 6 wo (university).

The variable 'education' is asymmetric. The distribution is left-skewed, meaning it has slightly higher values on the right side, with a skewness of -0.478. The standard deviation is 1.448, which accounts for 24% of the data for six categories, nearly a quarter of the data.

The mode is 6, so most people have a HBO Diploma. The mean is 4.03, so the average education is MBO, and the mode is 6, so HBO.

This syntax was used to find the frequencies of 72education.

```
FREQUENCIES VARIABLES=oplcat
    /NTILES=4
    /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
    /HISTOGRAM NORMAL
    /ORDER=ANALYSIS.
```

Table 16*The descriptives of education*

oplcac Level of education in CBS (Statistics Netherlands) categories

| | | |
|------------------------|---------|-------|
| N | Valid | 3440 |
| | Missing | 7 |
| Mean | | 4.03 |
| Mode | | 5 |
| Std. Deviation | | 1.448 |
| Variance | | 2.096 |
| Skewness | | -.478 |
| Std. Error of Skewness | | .042 |
| Kurtosis | | -.822 |
| Std. Error of Kurtosis | | .083 |
| Range | | 5 |
| Minimum | | 1 |
| Maximum | | 6 |
| Percentiles | 25 | 3.00 |
| | 50 | 4.00 |
| | 75 | 5.00 |

Table 17*The frequency of education*

oplcac Level of education in CBS (Statistics Netherlands) categories

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--|-----------|---------|---------------|--------------------|
| Valid | 1 primary school | 166 | 4.8 | 4.8 | 4.8 |
| | 2 vmbo (intermediate secondary education, US: junior high school) | 592 | 17.2 | 17.2 | 22.0 |
| | 3 havo/vwo (higher secondary education/preparatory university education, US: senior high school) | 278 | 8.1 | 8.1 | 30.1 |
| | 4 mbo (intermediate vocational education, US: junior college) | 858 | 24.9 | 24.9 | 55.1 |
| | 5 hbo (higher vocational education, US: college) | 1038 | 30.1 | 30.2 | 85.2 |
| | 6 wo (university) | 508 | 14.7 | 14.8 | 100.0 |
| | Total | 3440 | 99.8 | 100.0 | |
| Missing | System | 7 | .2 | | |
| Total | | 3447 | 100.0 | | |

Control variable: Gender

I use the variable `geslacht` for gender. Respondents could choose 1=male, 2=female, or 3=other. In Tables 18 and 19, you can see most respondents are Males. An explanation could be that I only use household heads. It is more likely that a household head is a man than a woman.

This syntax was used to find the frequencies of 74gender.

```
FREQUENCIES VARIABLES=geslacht
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.
```

Table 18

The descriptives of gender

| Statistics | | |
|------------------------|---------|--------|
| geslacht Gender | | |
| N | Valid | 3447 |
| | Missing | 0 |
| Mean | | 1.36 |
| Mode | | 1 |
| Std. Deviation | | .481 |
| Variance | | .231 |
| Skewness | | .576 |
| Std. Error of Skewness | | .042 |
| Kurtosis | | -1.670 |
| Std. Error of Kurtosis | | .083 |
| Range | | 1 |
| Minimum | | 1 |
| Maximum | | 2 |
| Percentiles | 25 | 1.00 |
| | 50 | 1.00 |
| | 75 | 2.00 |

Table 19

The frequency of

| geslacht Gender | | | | | |
|-----------------|----------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 1 Male | 2200 | 63.8 | 63.8 | 63.8 |
| | 2 Female | 1247 | 36.2 | 36.2 | 100.0 |
| | Total | 3447 | 100.0 | 100.0 | |

Adjustments

I made it a dummy variable making 0= male and 1= Female, so it's easier to interpret.

This syntax was used to recode the variables used for gender.

```
RECODE geslacht (1=0) (2=1) INTO Gender.
VARIABLE LABELS Gender 'vrouw'.
EXECUTE.
```

Control variable: Age

I use the variable lftdhhh for age. It's the age of the household head. The respondents could fill in their age in whole numbers. The mean is 55,37; on average, the age of the respondents is 55 years. The median is 57.00, so that's close to the mean. Most people in the sample are 70 years old (mode 70). The distribution is left-skewed, with a skewness of -1.81.

This syntax was used to find the frequencies of 75age.

```
FREQUENCIES VARIABLES=lftdhhh
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.
```

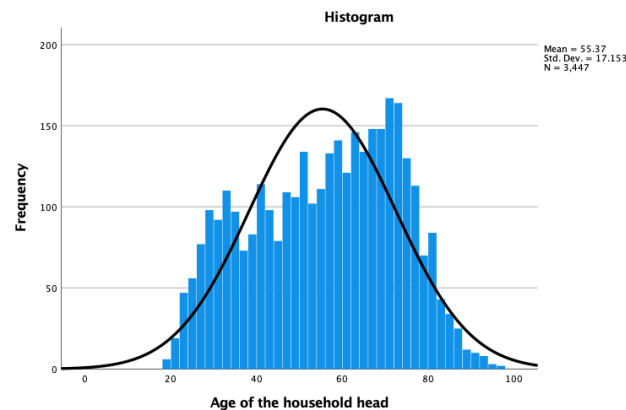
Table 20

The descriptives of age

| Statistics | | |
|-----------------------------------|---------|---------|
| lftdhhh Age of the household head | | |
| N | Valid | 3447 |
| | Missing | 0 |
| Mean | | 55.37 |
| Mode | | 70 |
| Std. Deviation | | 17.153 |
| Variance | | 294.213 |
| Skewness | | -.181 |
| Std. Error of Skewness | | .042 |
| Kurtosis | | -.960 |
| Std. Error of Kurtosis | | .083 |
| Range | | 78 |
| Minimum | | 19 |
| Maximum | | 97 |
| Percentiles | 25 | 41.00 |
| | 50 | 57.00 |
| | 75 | 70.00 |

Figure 6

Histogram of age



Data without missing values

In this section, the changes in univariate statistics of the data with and without missing values are discussed. Table 20 presents the univariate statistics with missing values, and Table 21 presents the univariate statistics without missing values.

The distribution of age mainly changed after the missing values were removed. The mean went from age 55.37 (17.15) to 61.35 (15.20); see Tables 20 and 21. The maximum went from age 97 to 92. The total number of respondents went from 3447 to 794. The mean of contact with richer people changed from 3.91 (1.39) to 3.90 (1.41), so a minor change. For contact poorer people, the mean stayed the same, but the standard deviation changed from 1.47 to 1.50. The mean of attitudes towards people of different ethnicities went from 2.89 to 2.86. The average of education went from 4.03 to 3.92. The rest of the descriptive statistics of the variables differed minimally; if not, they were the same. The univariate statistics differ minimally between the two datasets, indicating that the absence of data has a minor impact on the analysis and its results. The absence of data does not significantly impact the conclusions drawn from the analysis. However, it is crucial to remember that the average age of the respondents is higher without the missing values.

Figure 7
Histogram of age without missing values

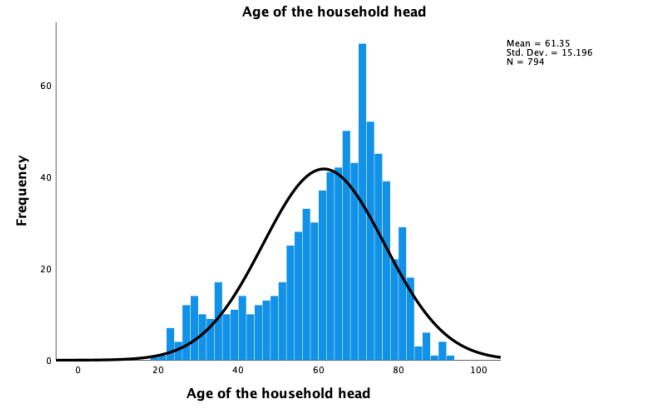


Table 20

Description of the variables included in the analysis: mean (standard deviation), minimum and maximum value, lower quartile, median, upper quartile, and the number of respondents.

| <i>Variable</i> | <i>Mean</i> | <i>Minimum</i> | <i>Maximum</i> | <i>Lower quartile</i> | <i>Median</i> | <i>upper quartile</i> | <i>N Total</i> |
|---|-----------------------------|----------------|----------------|-----------------------|---------------|-----------------------|----------------|
| | <i>(Standard deviation)</i> | | | | | | |
| Contact richer economic background (7-pointscale) | 3.91 (1.39) | 1 | 7 | 3.00 | 4.00 | 5.00 | 863 |
| Contact poorer (7-pointscale) | 3.81 (1.47) | 1 | 7 | 2.00 | 4.00 | 5.00 | 863 |
| Income 13-pointscale | 4.79 (1.97) | 0 | 12 | 4.00 | 5.00 | 6.00 | 3272 |
| Attitudes ethnicities (5-point scale) | 2.89 (1.08) | 1.00 | 5.00 | 2.00 | 3.00 | 4.00 | 2864 |
| Previous contact Ethnicities (7-point scale) | 2.12 (1.15) | 1.00 | 7.00 | 1.67 | 2.00 | 2.33 | 863 |
| contact ethnicities (7-point scale) | 2.46 (1.26) | 1.00 | 7.00 | 2.00 | 2.00 | 3.00 | 863 |
| Education | 4.03 (1.45) | 1 | 6 | 3.00 | 4.00 | 5.00 | 3440 |
| Age | 55.37 (17.15) | 19 | 97 | 41 | 57 | 70 | 3447 |
| Gender (man=0; women=1) | 1.36 (0.48) | 1 | 2 | 1.00 | 1.00 | 2.00 | 3447 |

Table 21

Description of the variables included in the analysis, without missing values: mean (standard deviation), minimum and maximum value, lower quartile, median, upper quartile, and the number of respondents

| <i>Variable</i> | <i>Mean</i> | <i>Minimum</i> | <i>Maximum</i> | <i>Lower quartile</i> | <i>Median</i> | <i>upper quartile</i> | <i>N Total</i> |
|--|-----------------------------|----------------|----------------|-----------------------|---------------|-----------------------|----------------|
| | <i>(Standard deviation)</i> | | | | | | |
| Contact richer economic background. (7-pointscale) | 3.90 (1.41) | 1 | 7 | 3.00 | 4.00 | 5.00 | 794 |
| Contact poorer (7-pointscale) | 3.81 (1.50) | 1 | 7 | 2.00 | 4.00 | 5.00 | 794 |
| Income 13-pointscale | 4.79 (1.97) | 0 | 12 | 3.00 | 5.00 | 6.00 | 794 |
| Attitudes ethnicities (5-point scale) | 2.86 (1.08) | 1.00 | 5.00 | 2.00 | 3.00 | 4.00 | 794 |
| Previous contact Ethnicities (7-point scale) | 2.11 (2.00) | 1.00 | 7.00 | 1.67 | 2.00 | 2.33 | 794 |
| contact ethnicities (7-point scale) | 2.45 (1.27) | 1.00 | 7.00 | 2.00 | 2.00 | 3.00 | 794 |
| Education | 3.92 (1.45) | 1 | 6 | 3.00 | 4.00 | 5.00 | 794 |
| Age | 61.35 (15.20) | 19 | 92 | 53 | 65 | 72 | 794 |
| Gender (man=0; women=1) | 1.36 (0.48) | 1 | 2 | 0.00 | 0.00 | 1.00 | 794 |

Syntax output

This syntax was used to find the descriptive statistics and frequencies for all the variables used in this analyzes.

```
FREQUENCIES VARIABLES=vm20a063 vm20a062 nettocat attitudes_ethnicities
previous_contact_ethnicities
contact_ethnicities__ lftdhhh oplcat Gender
/NTILES=4
/STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
/HISTOGRAM NORMAL
/ORDER=ANALYSIS.
```

This syntax was used to delete the missing values.

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT attitudes_ethnicities
  /METHOD=ENTER vm20a063 vm20a062 nettocat lftdhhh geschlacht oplcat
previous_contact_ethnicities
  contact_ethnicities__
  /SAVE RESID.
```

```
RECODE RES_1 (SYSMIS=0) (ELSE=1).
EXECUTE.
```

```
USE ALL.
COMPUTE filter_$=(RES_1 = 1).
VARIABLE LABELS filter_$ 'RES_1 = 1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
```

This syntax was used to find the descriptive statistics and frequencies for all the variables used in this analyzes, without any missing values.

```
FREQUENCIES VARIABLES=vm20a063 vm20a062 nettocat attitudes_ethnicities
previous_contact_ethnicities
  contact_ethnicities__ lftdhhh oplcat Gender
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MODE SKEWNESS SESKEW
KURTOSIS SEKURT
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.
```

People of different incomes and their contact with people of different economic backgrounds

People who earn more than 3500 Euros are considered to have a higher income (category 8 to 12). Tables 12 and 13 show that of the 68 higher-income people, 25 have more contact with poorer people, and 14 have more contact with richer people. Of the 63 people with lower incomes earning 1000 or less (category 0-3), 15 report having more contact with poorer people, and 21 have more contact with richer people. High-income and low-income individuals have relatively low contact with people of different economic backgrounds in this sample. It is crucial to remember when conclusions are made because the sample size is small.

Table 22

Crosstab of people in different income categories and their contact with poorer people

| nettocat Personal net monthly income in categories * vm20a062 I often have contact with people who are a lot poorer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work Crosstabulation | | vm20a062 I often have contact with people who are a lot poorer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | | | | | | | Total |
|--|-------------------------|---|------------|---------------------|------------------------------|------------------|---------|------------------|-------|
| Count | | 1 Strongly disagree | 2 Disagree | 3 Somewhat disagree | 4 Neither agree nor disagree | 5 Somewhat agree | 6 Agree | 7 Strongly agree | |
| nettocat Personal net monthly income in categories | 0 No income | 1 | 1 | 1 | 5 | 4 | 2 | 0 | 14 |
| | 1 EUR 500 or less | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 5 |
| | 2 EUR 501 to EUR 1000 | 3 | 10 | 3 | 20 | 4 | 4 | 0 | 44 |
| | 3 EUR 1001 to EUR 1500 | 10 | 28 | 8 | 52 | 17 | 24 | 3 | 142 |
| | 4 EUR 1501 to EUR 2000 | 9 | 44 | 15 | 48 | 30 | 15 | 3 | 164 |
| | 5 EUR 2001 to EUR 2500 | 5 | 46 | 20 | 55 | 28 | 29 | 3 | 186 |
| | 6 EUR 2501 to EUR 3000 | 4 | 24 | 12 | 36 | 18 | 11 | 3 | 108 |
| | 7 EUR 3001 to EUR 3500 | 0 | 11 | 9 | 18 | 15 | 8 | 2 | 63 |
| | 8 EUR 3501 to EUR 4000 | 3 | 8 | 5 | 11 | 4 | 5 | 0 | 36 |
| | 9 EUR 4001 to EUR 4500 | 0 | 1 | 3 | 1 | 5 | 3 | 1 | 14 |
| | 10 EUR 4501 to EUR 5000 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 5 |
| | 11 EUR 5001 to EUR 7500 | 0 | 2 | 1 | 1 | 2 | 3 | 1 | 10 |
| | 12 More than EUR 7500 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 3 |
| Total | | 35 | 180 | 77 | 253 | 127 | 105 | 17 | 794 |

Table 23

Crosstab of people in different income categories and their contact with richer people

nettocat Personal net monthly income in categories * vm20a063 I often have contact with people who are a lot richer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work Crosstabulation

| Count | | vm20a063 I often have contact with people who are a lot richer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | | | | | | | Total |
|--|-------------------------|---|------------|---------------------|------------------------------|------------------|-----------|------------------|------------|
| | | 1 Strongly disagree | 2 Disagree | 3 Somewhat disagree | 4 Neither agree nor disagree | 5 Somewhat agree | 6 Agree | 7 Strongly agree | |
| nettocat Personal net monthly income in categories | 0 No income | 0 | 4 | 2 | 4 | 2 | 1 | 1 | 14 |
| | 1 EUR 500 or less | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 5 |
| | 2 EUR 501 to EUR 1000 | 1 | 5 | 3 | 19 | 9 | 5 | 2 | 44 |
| | 3 EUR 1001 to EUR 1500 | 6 | 23 | 4 | 43 | 38 | 25 | 3 | 142 |
| | 4 EUR 1501 to EUR 2000 | 6 | 41 | 16 | 50 | 30 | 18 | 3 | 164 |
| | 5 EUR 2001 to EUR 2500 | 3 | 33 | 20 | 57 | 49 | 23 | 1 | 186 |
| | 6 EUR 2501 to EUR 3000 | 2 | 29 | 9 | 36 | 21 | 9 | 2 | 108 |
| | 7 EUR 3001 to EUR 3500 | 0 | 13 | 8 | 22 | 15 | 5 | 0 | 63 |
| | 8 EUR 3501 to EUR 4000 | 1 | 9 | 4 | 14 | 7 | 1 | 0 | 36 |
| | 9 EUR 4001 to EUR 4500 | 0 | 4 | 3 | 3 | 3 | 1 | 0 | 14 |
| | 10 EUR 4501 to EUR 5000 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 5 |
| | 11 EUR 5001 to EUR 7500 | 1 | 3 | 3 | 2 | 1 | 0 | 0 | 10 |
| 12 More than EUR 7500 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 3 | |
| Total | | 20 | 169 | 72 | 255 | 177 | 88 | 13 | 794 |

This syntax was used to get the crosstabs between income categories and contact with richer and poorer people:

CROSSTABS

```

/TABLES=nettocat BY vm20a063
/FORMAT=AVALUE TABLES
/CELLS=COUNT
/COUNT ROUND CELL
/BARCHART.

```

CROSSTABS

```

/TABLES=nettocat BY attitudes_ethnicities
/FORMAT=AVALUE TABLES
/CELLS=COUNT
/COUNT ROUND CELL
/BARCHART.

```


Appendix 2

This appendix discusses the bivariate statistics and the multivariate analyses in detail. I provide the syntaxes and outputs that I used.

Bivariate analyses

First, I discuss the various measures used to assess associations between the variables. Next, I examine the relationships between the variables, considering missing values. Then, I examine the changes in the correlations between the datasets with and without missing values. Finally, I provide an overview of the syntaxes and outputs utilized for this analysis.

Types of relationship measures used

In Table 1, the correlation coefficients between the variables are presented. Various measures of association between the variables are utilized, each selected to suit the specific type of examined relationship. Pearson correlation was utilized to evaluate the association between two continuous variables and between ordinal and continuous variables. The chi-square test compares observed frequencies to expected frequencies in a cross-tabulation to determine if there is a significant association between two categorical variables. A significant chi-square result signals the presence of an association. Phi gives the strength of association between two categorical variables, ranging from 0 to 1. A phi of 0 implies no association, while a value of 1 signifies a perfect association. Greater phi values denote stronger associations between the variables.

Bivariate statistics without missing values

Let's explore the relationships between the variables, considering the missing values (see correlation coefficients in the lower triangle). The strongest relationship observed is between 'contact richer people' and 'contact poorer people', with a correlation coefficient of 0.412. This relationship is statistically significant at $p < 0.001$, indicating strong evidence of an association between the variables. In the realm of social sciences, this correlation is considered medium-sized. Interestingly, no large correlations were found in this analysis.

The second most significant correlation, at 0.361, is between 'education' and 'income'. Like the previous one, this correlation is considered medium-sized and statistically significant at $p < 0.001$.

Regarding 'having contact with people of different ethnicities' and 'contact with poorer people', the correlation coefficient is 0.133. While this correlation is relatively small, it remains statistically significant ($p < 0.001$).

It's crucial to note that these correlations do not imply causation. However, it's worth considering the possibility that individuals who have more contact with people of different ethnicities may also have more contact with poorer individuals. This speculation arises from the observation that individuals of non-Dutch ethnicity may also belong to the category of 'poorer people' with whom they have increased contact.

The highest correlation the dependent variable attitudes ethnicities has is 0.259 and with education, with a significance of $p < 0.001$.

The change in correlations

The correlation coefficient between attitudes towards people of ethnicities other than Dutch and income increased from 0.071 to 0.145 ($p < 0.001$). The relationship remains small despite more than doubling in strength after dropping missing values. The correlation between 'contact richer people' and age doubled, rising from 0.025 to 0.050, but remained insignificant. The correlation between 'contact richer people' and 'contact poorer people' slightly decreased from 0.412 to 0.402 but remained significant ($p < 0.001$).

The correlation coefficient for attitudes towards ethnicities and age was -0.109 and significant ($p < 0.001$). However, after filtering out missing values, the correlation decreased to -0.045 with a p-value of 0.207. Thus, the relationship became half as small, and there is insufficient evidence to conclude its significance. The correlation between age and 'contact with poorer people' changed from -0.005 to 0.023. While the direction of the relationship shifted from negative to positive, it remained small and insignificant.

Although many relationships between variables changed little, some were relatively bigger, and one changed from significant to insignificant. The relationships with the variable age

changed the most; this could be explained by the distribution of age, which also changed the most when the missing values were deleted, as mentioned in Appendix 1. Considering these changes is crucial when making conclusions about the results.

Table 1

Product-moment correlations of all variables included in the analysis are presented in the lowest triangle and in the upper triangle. The highlighted numbers show the most change when the missing values are erased.

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |
|--|--------------------------|--------------------------|--------------------------|---------------------------|-----------------------|----------------------|----------------------|--------------------------|----------------------|
| 1. Contact richer people | – | *.402^a | *-.118 | **-.090 ^a | .002 ^a | -.006 ^a | ** .102 ^a | .050^a | .022 ^a |
| 2. Contact poorer People | *.412^a | – | .056 ^a | .067 ^a | .023 ^a | *-.125 ^a | ** .104 ^a | .023^a | -.035 ^a |
| 3. Income | *-.115 ^a | .053 ^a | – | *.145^a | -.043 ^a | **-.092 ^a | *.369 ^a | -.013 ^a | *-.243 ^a |
| 4. Attitude ethnicities | **-.084 ^a | .063 ^a | *.071^a | – | -.041 ^a | .032 ^a | *.253 ^a | -.045^a | *.128 ^a |
| 5. Previous contact ethnicities | .011 ^a | .026 ^a | -.041 ^a | -.044 ^a | – | *.514 ^a | *.167 ^a | -.054 ^a | -.002 ^a |
| 6. Contact ethnicities | .000 ^a | *.133 ^a | **-.098 ^a | .032 ^a | *.516 ^a | – | ** .114 ^a | ** .073 ^a | .045 ^a |
| 7. Education | **-.097 ^a | .099 ^a | *.361 ^a | *.259 ^a | *-.156 ^a | **-.106 ^a | – | *-.261 ^a | ** .128 ^b |
| 8. Age | .025^a | -.005^a | .017 ^a | *-.109^a | ** -.078 ^a | .043 ^a | *-.284 ^a | – | **-.008 ^a |
| 9. Gender (man=0 vrouw=1). | .033 ^a | -.015 ^a | *-.242 ^a | *.118 ^a | -.010 ^a | ** .067 ^a | ** .069 ^b | *-.081 ^a | – |

*Note: *Significant with p<0,001, ** Significant at p<0.05, ^aPearson cprrelation, ^bPhi;*

Syntax and outputs for the bivariate statistics:

This syntax was used to find the correlations of the variables in this analysis.

CORRELATIONS

```

/VARIABLES=vm20a063 vm20a062 nettocat attitudes_ethnicities
previous_contact_ethnicities
contact_ethnicities__ oplcat lftdhhh Gender
/PRINT=TWOTAIL NOSIG FULL
/MISSING=PAIRWISE.
    
```

Generated this output, with missing values:

| | | vm20a063 I often have contact with people who are a lot richer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | vm20a062 I often have contact with people who are a lot poorer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | nettocat Personal net monthly income in categories | attitudes_ethnicities There are too many people of foreign origin or descent in the Netherlands. | previous_contact_ethnicities | contact_ethnicities__ Most of my friends had the same ethnic background* as mine | oplcat Level of education in CBS (Statistics Netherlands) categories | lftdhhh Age of the household head | Gender vrouw |
|---|---------------------|---|---|--|--|------------------------------|--|--|-----------------------------------|--------------|
| vm20a063 I often have contact with people who are a lot richer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | Pearson Correlation | 1 | .412 | -.115 | -.084 | .011 | .000 | -.097 | .025 | .033 |
| | Sig. (2-tailed) | | <.001 | <.001 | .015 | .756 | .997 | .004 | .462 | .331 |
| | N | 863 | 863 | 819 | 839 | 863 | 863 | 862 | 863 | 863 |
| vm20a062 I often have contact with people who are a lot poorer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | Pearson Correlation | .412 | 1 | .053 | .063 | .026 | .133 | .099 | -.005 | -.015 |
| | Sig. (2-tailed) | <.001 | | .127 | .069 | .450 | <.001 | .004 | .886 | .655 |
| | N | 863 | 863 | 819 | 839 | 863 | 863 | 862 | 863 | 863 |
| nettocat Personal net monthly income in categories | Pearson Correlation | -.115 | .053 | 1 | .071 | -.041 | -.098 | .361 | .017 | -.242 |
| | Sig. (2-tailed) | <.001 | .127 | | <.001 | .238 | .005 | <.001 | .342 | <.001 |
| | N | 819 | 819 | 3272 | 2729 | 819 | 819 | 3266 | 3272 | 3272 |
| attitudes_ethnicities There are too many people of foreign origin or descent in the Netherlands. | Pearson Correlation | -.084 | .063 | .071 | 1 | -.044 | .032 | .259 | -.109 | .118 |
| | Sig. (2-tailed) | .015 | .069 | <.001 | | .200 | .360 | <.001 | <.001 | <.001 |
| | N | 839 | 839 | 2729 | 2864 | 839 | 839 | 2860 | 2864 | 2864 |
| previous_contact_ethnicities | Pearson Correlation | .011 | .026 | -.041 | -.044 | 1 | .516 | -.156 | -.078 | .010 |
| | Sig. (2-tailed) | .756 | .450 | .238 | .200 | | <.001 | <.001 | .023 | .771 |
| | N | 863 | 863 | 819 | 839 | 863 | 863 | 862 | 863 | 863 |
| contact_ethnicities__ Most of my friends had the same ethnic background* as mine | Pearson Correlation | .000 | .133 | -.098 | .032 | .516 | 1 | -.106 | .043 | .067 |
| | Sig. (2-tailed) | .997 | <.001 | .005 | .360 | <.001 | | .002 | .209 | .049 |
| | N | 863 | 863 | 819 | 839 | 863 | 863 | 862 | 863 | 863 |
| oplcat Level of education in CBS (Statistics Netherlands) categories | Pearson Correlation | -.097 | .099 | .361 | .259 | -.156 | -.106 | 1 | -.284 | -.006 |
| | Sig. (2-tailed) | .004 | .004 | <.001 | <.001 | <.001 | .002 | | <.001 | .732 |
| | N | 862 | 862 | 3266 | 2860 | 862 | 862 | 3440 | 3440 | 3440 |
| lftdhhh Age of the household head | Pearson Correlation | .025 | -.005 | .017 | -.109 | -.078 | .043 | -.284 | 1 | -.081 |
| | Sig. (2-tailed) | .462 | .886 | .342 | <.001 | .023 | .209 | <.001 | | <.001 |
| | N | 863 | 863 | 3272 | 2864 | 863 | 863 | 3440 | 3447 | 3447 |
| Gender vrouw | Pearson Correlation | .033 | -.015 | -.242 | .118 | .010 | .067 | -.006 | -.081 | 1 |
| | Sig. (2-tailed) | .331 | .655 | <.001 | <.001 | .771 | .049 | .732 | <.001 | |
| | N | 863 | 863 | 3272 | 2864 | 863 | 863 | 3440 | 3447 | 3447 |

Generated this output, without missing values:

| | | Correlations | | | | | | | | |
|---|---------------------|---|---|---|--|------------------------------|---|---|-----------------------------------|--------------|
| | | vm20a063 I often have contact with people who are a lot richer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | vm20a062 I often have contact with people who are a lot poorer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | nettoctat Personal net monthly income in categories | attitudes_ethnicities There are too many people of foreign origin or descent in the Netherlands. | previous_contact_ethnicities | contact_ethnicities_ Most of my friends had the same ethnic background* as mine | oplcats Level of education in CBS (Statistics Netherlands) categories | lftdhhh Age of the household head | Gender vrouw |
| vm20a063 I often have contact with people who are a lot richer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | Pearson Correlation | 1 | .402 | -.118 | -.090 | .002 | -.006 | -.102 | .038 | .022 |
| | Sig. (2-tailed) | | <.001 | <.001 | .011 | .947 | .864 | .004 | .289 | .534 |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |
| vm20a062 I often have contact with people who are a lot poorer than me, for instance in the street, in public transport, in shops, in the neighborhood or at work | Pearson Correlation | .402 | 1 | .056 | .067 | .023 | .125 | .104 | .001 | -.035 |
| | Sig. (2-tailed) | <.001 | | .118 | .059 | .515 | <.001 | .003 | .979 | .321 |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |
| nettoctat Personal net monthly income in categories | Pearson Correlation | -.118 | .056 | 1 | .145 | -.043 | -.092 | .369 | -.023 | -.243 |
| | Sig. (2-tailed) | <.001 | .118 | | <.001 | .228 | .010 | <.001 | .526 | <.001 |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |
| attitudes_ethnicities There are too many people of foreign origin or descent in the Netherlands. | Pearson Correlation | -.090 | .067 | .145 | 1 | -.041 | .032 | .253 | -.045 | .128 |
| | Sig. (2-tailed) | .011 | .059 | <.001 | | .243 | .369 | <.001 | .207 | <.001 |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |
| previous_contact_ethnicities | Pearson Correlation | .002 | .023 | -.043 | -.041 | 1 | .514 | -.167 | -.057 | -.002 |
| | Sig. (2-tailed) | .947 | .515 | .228 | .243 | | <.001 | <.001 | .108 | .957 |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |
| contact_ethnicities_ Most of my friends had the same ethnic background* as mine | Pearson Correlation | -.006 | .125 | -.092 | .032 | .514 | 1 | -.114 | .061 | .045 |
| | Sig. (2-tailed) | .864 | <.001 | .010 | .369 | <.001 | | .001 | .088 | .205 |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |
| oplcats Level of education in CBS (Statistics Netherlands) categories | Pearson Correlation | -.102 | .104 | .369 | .253 | -.167 | -.114 | 1 | -.279 | -.063 |
| | Sig. (2-tailed) | .004 | .003 | <.001 | <.001 | <.001 | .001 | | <.001 | .077 |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |
| lftdhhh Age of the household head | Pearson Correlation | .038 | .001 | -.023 | -.045 | -.057 | .061 | -.279 | 1 | -.075 |
| | Sig. (2-tailed) | .289 | .979 | .526 | .207 | .108 | .088 | <.001 | | .034 |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |
| Gender vrouw | Pearson Correlation | .022 | -.035 | -.243 | .128 | -.002 | .045 | -.063 | -.075 | 1 |
| | Sig. (2-tailed) | .534 | .321 | <.001 | <.001 | .957 | .205 | .077 | .034 | |
| | N | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 794 |

This syntax was used to find the correlations between education and gender.

CROSSTABS

```

/TABLES=lftdhhh BY Gender
/FORMAT=AVALUE TABLES
/STATISTICS=CHISQ PHI
/CELLS=COUNT
/COUNT ROUND CELL.

```

Generated this output with missing values:

| oplcac Level of education in CBS (Statistics Netherlands) categories * | | | | | Chi-Square Tests | | |
|--|--|--------------|------|-------|------------------------------|--------|-----------------------------------|
| Gender vrouw Crosstabulation | | | | | | | |
| Count | | Gender vrouw | | Total | Value | df | Asymptotic Significance (2-sided) |
| | | .00 | 1.00 | | | | |
| oplcac Level of education in CBS (Statistics Netherlands) categories | 1 primary school | 107 | 59 | 166 | Pearson Chi-Square | 16.331 | .006 |
| | 2 vmbo (intermediate secondary education, US: junior high school) | 371 | 221 | 592 | Likelihood Ratio | 16.379 | .006 |
| | 3 havo/vwo (higher secondary education/preparatory university education, US: senior high school) | 158 | 120 | 278 | Linear-by-Linear Association | .117 | .732 |
| | 4 mbo (intermediate vocational education, US: junior college) | 590 | 268 | 858 | N of Valid Cases | 3440 | |
| | 5 hbo (higher vocational education, US: college) | 647 | 391 | 1038 | | | |
| | 6 wo (university) | 324 | 184 | 508 | | | |
| Total | | 2197 | 1243 | 3440 | | | |

| Symmetric Measures | | | |
|--------------------|------------|-------|--------------------------|
| | | Value | Approximate Significance |
| Nominal by Nominal | Phi | .069 | .006 |
| | Cramer's V | .069 | .006 |
| N of Valid Cases | | 3440 | |

Generated this output without missing values:

| oplcac Level of education in CBS (Statistics Netherlands) categories * | | | | | Chi-Square Tests | | |
|--|--|--------------|------|-------|------------------------------|--------|-----------------------------------|
| Gender vrouw Crosstabulation | | | | | | | |
| Count | | Gender vrouw | | Total | Value | df | Asymptotic Significance (2-sided) |
| | | .00 | 1.00 | | | | |
| oplcac Level of education in CBS (Statistics Netherlands) categories | 1 primary school | 22 | 12 | 34 | Pearson Chi-Square | 12.995 | .023 |
| | 2 vmbo (intermediate secondary education, US: junior high school) | 93 | 70 | 163 | Likelihood Ratio | 13.110 | .022 |
| | 3 havo/vwo (higher secondary education/preparatory university education, US: senior high school) | 38 | 30 | 68 | Linear-by-Linear Association | 3.134 | .077 |
| | 4 mbo (intermediate vocational education, US: junior college) | 144 | 54 | 198 | N of Valid Cases | 794 | |
| | 5 hbo (higher vocational education, US: college) | 144 | 85 | 229 | | | |
| | 6 wo (university) | 70 | 32 | 102 | | | |
| Total | | 511 | 283 | 794 | | | |

| Symmetric Measures | | | |
|--------------------|------------|-------|--------------------------|
| | | Value | Approximate Significance |
| Nominal by Nominal | Phi | .128 | .023 |
| | Cramer's V | .128 | .023 |
| N of Valid Cases | | 794 | |

Multivariate analyses

The hierarchical linear regression analysis is conducted, and the results are thoroughly discussed. Following this, the syntaxes and outputs are presented.

Model fit and hypotheses

Table 2 reveals the results of the linear regression analysis. In Model 1, the effects of the control variables on attitudes towards individuals of ethnicities other than Dutch are examined. These variables collectively predict 9.0% of the variance in attitudes towards individuals of different ethnicities than Dutch.

Model 1 reveals that women tend to have higher scores on attitudes towards ethnicities ($b = 0.325$). A score of 1, as opposed to 0, indicates a higher score on attitudes, suggesting that women have a more positive attitude towards people of different ethnicities or races than men. The slope is significant, indicating evidence that one's gender positively affects one's attitude towards others of different ethnicities than Dutch. Someone's education is also significant in their attitudes towards others with different ethnicities than Dutch ($b=0.206$ and $p<0.001$).

In Model 2, the centered variables for contact with richer and poorer people were included as predictors along with the control variables. Model 2 accounts for an additional 0.9% of the variance ($R\text{-squared} = 0.99$). The F-change value of 3.4.140 with a p -value smaller than 0.001 indicates that Model 2 is significantly better than Model 1. Thus, the current model slightly improves over Model 1.

The slope for contact with poorer people is 0.058 and significant ($p = 0.036$), providing support for Hypothesis 1. Indicating that contact with poorer people explains a significant portion of attitudes towards individuals with non-Dutch backgrounds.

Contrary to Hypothesis 2, which predicts that contact with richer people would lead to more positive attitudes towards individuals of different ethnicities, the slope for contact with richer people (-0.078) is small but significant. Suggesting that attitudes towards people of other ethnicities than Dutch decrease by 0.078 when contact with richer people increases by 1, holding all other variables constant.

Having more contact with poorer people is more positively associated with attitudes towards people of other ethnicities ($b = 0.058$) than having contact with richer people ($b = -0.078$), indicating support for Hypothesis 3.

The centered moderator income was added to Model 3. This model accounts for an additional 0.8% of the variance compared to Model 2 ($R\text{-squared} = 0.104$). The F -change value is 6.269, indicating significance ($p = 0.012$) and suggesting that Model 3 performs better than Model 2. The positive slope for income indicates that for every one-unit increase in income, attitudes towards ethnicities increase by 0.055. This slope is also statistically significant.

The interaction terms were added to Model 4, completing the model for the analysis. This means that the role of contact (with richer and poorer people), income, and interaction are tested. Model 4 predicts 11.1% of one's attitude towards people of different ethnicities than Dutch and has an F -change value of 2.072. However, the F -change value is not statistically significant, indicating no evidence suggesting that Model 4 is an improvement over Model 3. The slope of the interaction term of contact with richer people and income ($\text{income} \times \text{contact_richer_people}$) is small and negative ($b = -0.28$) and significant. Indicating that there is evidence that the interaction term is a good predictor for one's attitude towards people of different ethnicities. There are different slopes for different levels of the moderator. The slope of the interaction term of contact with poorer people and income ($\text{income} \times \text{contact_poorer_people}$) is close to zero negative (-0.002) and insignificant ($p = 0.874$). It could also be a coincidence that is found.

Hypothesis 4 predicted that the positive effect of more contact with richer people on the associated attitudes towards people of different ethnicities and races is stronger for individuals with higher incomes. Although the effect gets stronger when the individual has a higher income, the effect is negative. No support was found for hypothesis 4 (See Subsection 4.3).

Hypothesis 5 states that the positive effect of more contact with poorer people on the associated attitudes towards people of different ethnicities and races is stronger for individuals with higher incomes. I found no support for Hypothesis 5 (See Subsection 4.3).

Formulas are made from the results of Model 4 (in Table 2) to see how the slopes differ when there are different incomes. Underneath, a step-by-step guide shows how the equations are derived.

1. Starting with the regression equation from Model 4 to create the formulas:

Attitudes ethnicities = Constant + b_1 (Previous Contact Ethnicities) + b_2 (Contact Ethnicities) + b_3 (Age) + b_4 (Gender) + b_5 (Education) + b_6 (Contact Richer People) + b_7 (Contact Poorer People) + b_8 (Income) + b_9 (Income x Contact Richer People) + b_{10} (Income x Contact Poorer People)

2. Then the mean values for all variables except income and the contact variable of interest are substituted:

The mean values from the analysis are:

Previous Contact Ethnicities: 2.11

Contact Ethnicities: 2.45

Age: 61.35

Gender: 0.36 (proportion of women)

Education: 3.92

The coefficients from Model 4 (Table 3 in the text) are:

Constant: -0.786

b_7 (Contact Poorer People): 0.056

b_{10} (Income x Contact Poorer People): 0.002

b_6 (Contact Richer People): -0.077

b_9 (Income x Contact Richer People): -0.028

By substituting these values, these formulas derive:

For contact with poorer people:

$$\text{Attitudes ethnicities} = (-0.786 - 0.390 * 2.11 + 0.053 * 2.45 + 0.002 * 61.35 + 0.384 * 0.36 + 0.163 * 3.92) + 0.056 * (\text{Contact Poorer People}) + 0.002 * \text{Income} * (\text{Contact Poorer People})$$

For contact with richer people:

$$\text{Attitudes ethnicities} = (-0.786 - 0.390 * 2.11 + 0.053 * 2.45 + 0.002 * 61.35 + 0.384 * 0.36 + 0.163 * 3.92) - 0.077 * (\text{Contact Richer People}) - 0.028 * \text{Income} * (\text{Contact Richer People})$$

This simplifies the equations

For contact with poorer people to:

$$\text{Attitudes ethnicities} = -1.6402 + b7(\text{Contact Poorer People}) + b10(\text{Income} * \text{Contact Poorer People})$$

For contact with poorer people to:

$$0.0859 + b6(\text{Contact Poorer People}) + b9(\text{Income} * \text{Contact Poorer People})$$

3. Substituted different income values to see how the slope changes:

Three income values are chosen: the mean income, 1 standard deviation above and below the mean.

- a. Low income: 2.825 (one standard deviation below the mean)
- b. Mean income: 4.79
- c. High income: 6.755 (one standard deviation above the mean)

Then each income value was substituted into the simplified equations from step 2 and to get the final equations:

For contact with poorer people:

$$\text{Lower income (2.825): Attitudes ethnicities} = -1.4142 + 0.0617 * \text{Contact Poorer People}$$

$$\text{Mean income (4.79): Attitudes ethnicities} = -1.6402 + 0.0656 * \text{Contact Poorer People}$$

Higher income (6.755): Attitudes ethnicities = $-1.8597 + 0.0695 * \text{Contact Poorer People}$

For contact with richer people:

Lower income (2.825): Attitudes ethnicities = $-0.0291 - 0.1561 * \text{Contact Richer People}$

Mean income (4.79): Attitudes ethnicities = $0.0859 - 0.2111 * \text{Contact Richer People}$

Higher income (6.755): Attitudes ethnicities = $0.1409 - 0.2661 * \text{Contact Richer People}$

In Figures 1 and 2 the different slopes for different incomes are presented.

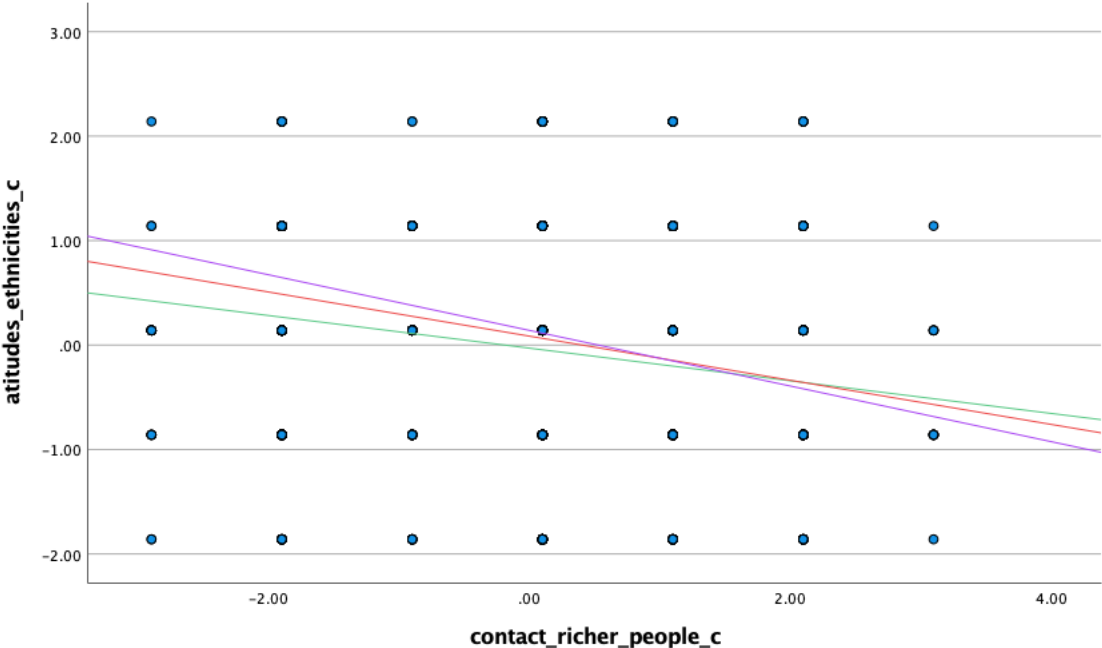
Table 2

Multiple regression analysis with the attitudes of people towards other of different ethnicities as dependent variable

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|------------------------------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|
| | <i>b (SE)</i> | <i>p</i> | <i>b (SE)</i> | <i>p</i> | <i>b (SE)</i> | <i>p</i> | <i>b (SE)</i> | <i>p</i> |
| Constant | -.926 (.158) | <.001 | -.872 (.119) | <.001 | -.787 (.124) | <.001 | -.786 (.124) | <.001 |
| Previous contact ethnicities | -.031 (.044) | .476 | -.029 (.044) | .513 | -.035 (.044) | .419 | -.039 (.044) | .379 |
| Contact ethnicities | .059 (.034) | .083 | .047 (.034) | .172 | .054 (.034) | .116 | .053 (.034) | .121 |
| Age | .003 (.003) | .304 | .003 (.003) | .307 | .002 (.003) | .411 | .002 (.003) | .449 |
| Gender (0=man, 1=woman) | .329 (.078) | <.001 | .339 (.077) | <.001 | .383 (.079) | <.001 | .384 (.079) | <.001 |
| Education | .206 (.027) | <.001 | .192 (.028) | <.001 | .166 (.029) | <.001 | .163 (.029) | <.001 |
| Contact richer People | | | -.078 (.029) | .008 | -.070 (.029) | .016 | -.077 (.029) | .009 |
| Contact poorer people | | | .058 (.027) | .036 | .053 (.027) | .052 | .056 (.027) | .042 |
| Income | | | | | .052 (.021) | .012 | .047 (.021) | .028 |
| incomeXcontact_richer_people | | | | | | | -.028 (.014) | .043 |
| incomeXcontact_poorer_people | | | | | | | .002 (.012) | .874 |
| R-squared | .090 | | .099 | | .107 | | .111 | |
| F-change | 15.576 | <.001 | 4.140 | .016 | 6.269 | .012 | 2.072 | .127 |

Figure 1

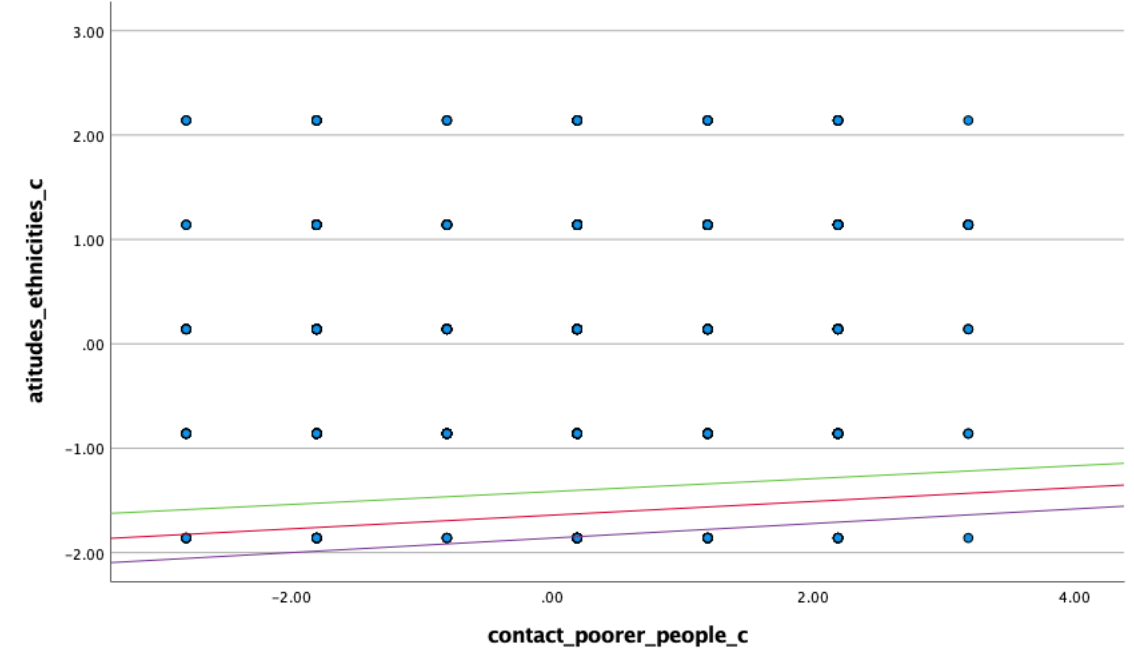
The relationship between contact with richer people and attitudes towards people of different ethnicities than Dutch, across various income levels. Each line represents a different income group, with the lowest income group being the green line (501 to 1000) and the highest income group (2501 to EUR 3000) being the purple line.



Note: The graph indicates that for all income groups, increased contact with richer people is associated with a decrease in positive attitudes towards ethnic outgroups. This negative relationship is most pronounced for the highest income group, suggesting that for richer individuals, more contact with richer people may lead to a greater decrease in positive attitudes towards ethnic minorities. Conversely, the negative association is weakest for the lowest income groups, indicating that their attitudes towards ethnic minorities are less affected by contact with richer people.

Figure 2

The relationship between contact with poorer people and attitudes towards people of different ethnicities than Dutch, across various income levels. Each line represents a different income group, with the lowest income group being the green line and the highest income group being the purple line.



Note: For the income groups, increased contact with poorer people is associated with a slight increase in positive attitudes towards ethnic outgroups, but small and insignificant

Syntax and outputs for the multivariate analysis

This syntax was for the hierarchical linear regression:

```
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT attitudes_ethnicities_c
  /METHOD=ENTER previous_contact_ethnicities_c contact_ethnicities_c age_c Gender
  oplcat
  /METHOD=ENTER contact_richer_people_c contact_poorer_people_c
  /METHOD=ENTER income_c
  /METHOD=ENTER incomeXcontact_richer_people incomeXcontact_poorer_people
  /PARTIALPLOT ALL
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS HISTOGRAM(ZRESID)
  /SAVE PRED COOK LEVER RESID ZRESID DFFIT.
```

This output was generated:

| Model Summary | | | | | | | | | | |
|---------------|------|----------|-------------------|----------------------------|-----------------|-------------------|-----|-----|---------------|--|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | Change Statistics | | | | |
| | | | | | | F Change | df1 | df2 | Sig. F Change | |
| 1 | .300 | .090 | .084 | 1.03759 | .090 | 15.576 | 5 | 788 | <.001 | |
| 2 | .315 | .099 | .091 | 1.03348 | .009 | 4.140 | 2 | 786 | .016 | |
| 3 | .326 | .107 | .097 | 1.03003 | .007 | 6.269 | 1 | 785 | .012 | |
| 4 | .334 | .111 | .100 | 1.02863 | .005 | 2.072 | 2 | 783 | .127 | |

| Model | | Coefficients | | | | | | | | | | Collinearity Statistics | | | | |
|-------|---|------------------|-------------------------|--------------------------------|--------|-------|---------------------------------|-------|------------|---------|-------|-------------------------|-------|--|--|--|
| | | Unstandardized B | Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. | 95,0% Confidence Interval for B | | Zero-order | Partial | Part | Tolerance | VIF | | | |
| 1 | (Constant) | -.926 | .118 | | -7.835 | <.001 | -1.158 | -.694 | | | | | | | | |
| | previous_contact_ethnicities_c | -.031 | .044 | -.029 | -.713 | .476 | -.118 | .055 | -.041 | -.025 | -.024 | .707 | 1.415 | | | |
| | contact_ethnicities_c | .059 | .034 | .069 | 1.735 | .083 | -.008 | .126 | .032 | .062 | .059 | .725 | 1.380 | | | |
| | age_c | .003 | .003 | .037 | 1.029 | .304 | -.002 | .008 | -.045 | .037 | .035 | .892 | 1.121 | | | |
| | Gender vrouw | .329 | .078 | .145 | 4.239 | <.001 | .177 | .481 | .128 | .149 | .144 | .982 | 1.018 | | | |
| | opcat Level of education in CBS (Statistics Netherlands) categories | .206 | .027 | .275 | 7.603 | <.001 | .153 | .260 | .253 | .261 | .258 | .882 | 1.134 | | | |
| | (Constant) | -.872 | .119 | | -7.305 | <.001 | -1.106 | -.638 | | | | | | | | |
| | previous_contact_ethnicities_c | -.029 | .044 | -.026 | -.654 | .513 | -.115 | .058 | -.041 | -.023 | -.022 | .706 | 1.416 | | | |
| | contact_ethnicities_c | .047 | .034 | .055 | 1.366 | .172 | -.021 | .115 | .032 | .049 | .046 | .707 | 1.414 | | | |
| | age_c | .003 | .003 | .037 | 1.021 | .307 | -.002 | .008 | -.045 | .036 | .035 | .892 | 1.121 | | | |
| 2 | Gender vrouw | .339 | .077 | .150 | 4.380 | <.001 | .187 | .491 | .128 | .154 | .148 | .980 | 1.020 | | | |
| | opcat Level of education in CBS (Statistics Netherlands) categories | .192 | .028 | .256 | 6.959 | <.001 | .138 | .246 | .253 | .241 | .236 | .849 | 1.177 | | | |
| | contact_richer_people_c | -.078 | .029 | -.101 | -2.674 | .008 | -.134 | -.021 | -.090 | -.095 | -.091 | .811 | 1.234 | | | |
| | contact_poorer_people_c | .058 | .027 | .080 | 2.098 | .036 | .004 | .112 | .067 | .075 | .071 | .793 | 1.261 | | | |
| | (Constant) | -.787 | .124 | | -6.369 | <.001 | -1.030 | -.545 | | | | | | | | |
| | previous_contact_ethnicities_c | -.035 | .044 | -.033 | -.809 | .419 | -.122 | .051 | -.041 | -.029 | -.027 | .703 | 1.422 | | | |
| | contact_ethnicities_c | .054 | .034 | .063 | 1.573 | .116 | -.013 | .122 | .032 | .056 | .053 | .702 | 1.424 | | | |
| | age_c | .002 | .003 | .029 | .822 | .411 | -.003 | .007 | -.045 | .029 | .028 | .886 | 1.128 | | | |
| | Gender vrouw | .383 | .079 | .169 | 4.843 | <.001 | .228 | .538 | .128 | .170 | .163 | .931 | 1.074 | | | |
| | opcat Level of education in CBS (Statistics Netherlands) categories | .166 | .029 | .222 | 5.672 | <.001 | .109 | .224 | .253 | .198 | .191 | .746 | 1.340 | | | |
| 3 | contact_richer_people_c | -.070 | .029 | -.091 | -2.403 | .016 | -.127 | -.013 | -.090 | -.085 | -.081 | .802 | 1.248 | | | |
| | contact_poorer_people_c | .053 | .027 | .074 | 1.945 | .052 | .000 | .107 | .067 | .069 | .066 | .790 | 1.266 | | | |
| | income_c | .052 | .021 | .095 | 2.504 | .012 | .011 | .093 | .145 | .089 | .084 | .797 | 1.254 | | | |
| | (Constant) | -.786 | .124 | | -6.359 | <.001 | -1.029 | -.543 | | | | | | | | |
| | previous_contact_ethnicities_c | -.039 | .044 | -.035 | -.881 | .379 | -.125 | .047 | -.041 | -.031 | -.030 | .702 | 1.424 | | | |
| | contact_ethnicities_c | .053 | .034 | .063 | 1.554 | .121 | -.014 | .121 | .032 | .055 | .052 | .701 | 1.427 | | | |
| | age_c | .002 | .003 | .027 | .758 | .449 | -.003 | .007 | -.045 | .027 | .026 | .885 | 1.129 | | | |
| | Gender vrouw | .384 | .079 | .170 | 4.857 | <.001 | .229 | .539 | .128 | .171 | .164 | .928 | 1.077 | | | |
| | opcat Level of education in CBS (Statistics Netherlands) categories | .163 | .029 | .218 | 5.570 | <.001 | .106 | .221 | .253 | .195 | .188 | .743 | 1.346 | | | |
| | contact_richer_people_c | -.077 | .029 | -.100 | -2.630 | .009 | -.134 | -.020 | -.090 | -.094 | -.089 | .790 | 1.265 | | | |
| 4 | contact_poorer_people_c | .056 | .027 | .077 | 2.037 | .042 | .002 | .110 | .067 | .073 | .069 | .788 | 1.269 | | | |
| | income_c | .047 | .021 | .084 | 2.199 | .028 | .005 | .088 | .145 | .078 | .074 | .772 | 1.296 | | | |
| | incomeXcontact_richer_people | -.028 | .014 | -.071 | -2.029 | .043 | -.055 | -.001 | -.082 | -.072 | -.068 | .940 | 1.064 | | | |
| | incomeXcontact_poorer_people | .002 | .012 | .005 | .159 | .874 | -.023 | .026 | .005 | .006 | .005 | .960 | 1.042 | | | |

This syntax was used to get the scatterplots of Figures 1 and 2

GRAPH

```
/SCATTERPLOT(BIVAR)=contact_richer_people_c WITH attitudes_ethnicities_c
/MISSING=LISTWISE.
```

GRAPH

```
/SCATTERPLOT(BIVAR)=contact_poorer_people_c WITH attitudes_ethnicities_c
/MISSING=LISTWISE.
```


Appendix 3

This appendix presents a detailed evaluation of the assumptions used in linear regression, outliers, and multicollinearity.

Assumptions

In this subsection, the assumptions of hierarchical linear regression are assessed to ensure the validity of the analysis. These assumptions include the independence of observations, linearity, homoscedasticity, and normality of residuals.

Independent observations

The first assumption of regression analysis is the independence of observations. Violating this assumption can lead to inaccurate standard deviations, consequently affecting the accuracy of the linear regression model and the validity of its conclusions. The LISS panel took a random sample from the population register of CBS to select the respondents; this should lead to independence between the respondents. Nevertheless, households were selected. Including households in the dataset may introduce dependencies among observations. Individuals within the same household often share similar characteristics and experiences. Only household heads' are used in the analysis to mitigate this issue. By doing so, I ensured the independence of cases and preserved the assumption of independence.

Linearity

The second assumption underlying linear regression is linearity: the relationship between predictors and the outcome variable should be linear. Violations of this assumption can lead to model misspecification, compromising the model's fit and potentially leading to inaccurate conclusions.

To assess linearity, we examined scatterplots and partial regression plots. Figure 3 displays a scatterplot of the residuals against the dependent variable, 'attitudes towards ethnicities.' In an ideal scenario, the residuals would be randomly scattered around a horizontal line at zero, indicating no systematic deviations from linearity. However, since the dependent variable is categorical with five levels, the points in Figure 3 form five distinct lines.

To further investigate potential non-linearity, we examined partial regression plots, which depict the relationship between each predictor and the dependent variable after controlling for the effects of other predictors. These plots (Figures 4) show no evidence of a quadratic effect, thus confirming the assumption of linearity.

Homoscedasticity

The third assumption is homoscedasticity, which requires that the spread (or variance) of the residuals remains constant across all levels of the predictor variables. If this assumption is violated (heteroscedasticity), the standard errors of the regression coefficients may be biased, leading to inaccurate hypothesis tests and confidence intervals.

The scatterplot in Figure 3 was examined to assess this assumption. Ideally, residuals would be randomly dispersed around a horizontal line at zero, indicating no systematic pattern in their spread. However, the points in Figure 3 form five distinct lines because the dependent variable is categorical with five levels. This pattern is expected due to the nature of the dependent variable and does not necessarily indicate heteroscedasticity.

While there is some minor clustering of points below the zero line, the overall spread of residuals appears relatively consistent across predictor values, suggesting that heteroscedasticity is not a major concern in this model. However, using a continuous dependent variable would generally be more appropriate for linear regression and would allow for a more definitive assessment of homoscedasticity.

Normal distribution residuals

The fourth assumption is normality, which means that the residuals need to have a normal distribution. Violating this assumption could result in incorrect confidence intervals and conclusions. The distribution of the residuals appears relatively symmetric (see Figure 4), indicating adherence to normality. However, slight deviations from the normal distribution line suggest potential non-normality. The skewness is -0.046 , indicating a slightly left-skewed distribution. That's why I conclude that the assumption of linearity is not violated.

In conclusion, the first assumption of independent observations was met by including only household heads in the analysis. The assumption of linearity was confirmed by examining scatterplots and partial regression plots, which revealed a linear relationship between the predictors and the outcome variable. Third, the assumption of homoscedasticity, which requires constant variance of residuals, was largely met, although the categorical nature of the dependent variable made a definitive assessment difficult. Finally, the assumption of normality of residuals was also largely met, with only minor deviations from a normal distribution observed. Using a categorical dependent variable in a linear regression model is not ideal, and future research could benefit from using a continuous dependent variable for a better analysis.

Figure 3

a scatterplot of attitude ethnicities with the predicted values on the x-axis and the residuals on the y-axis

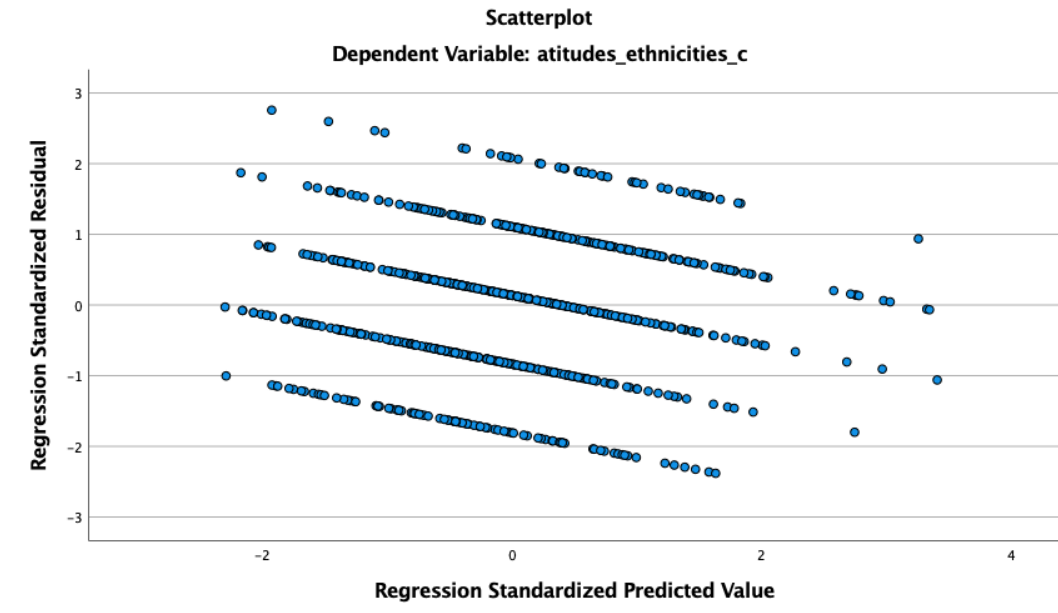
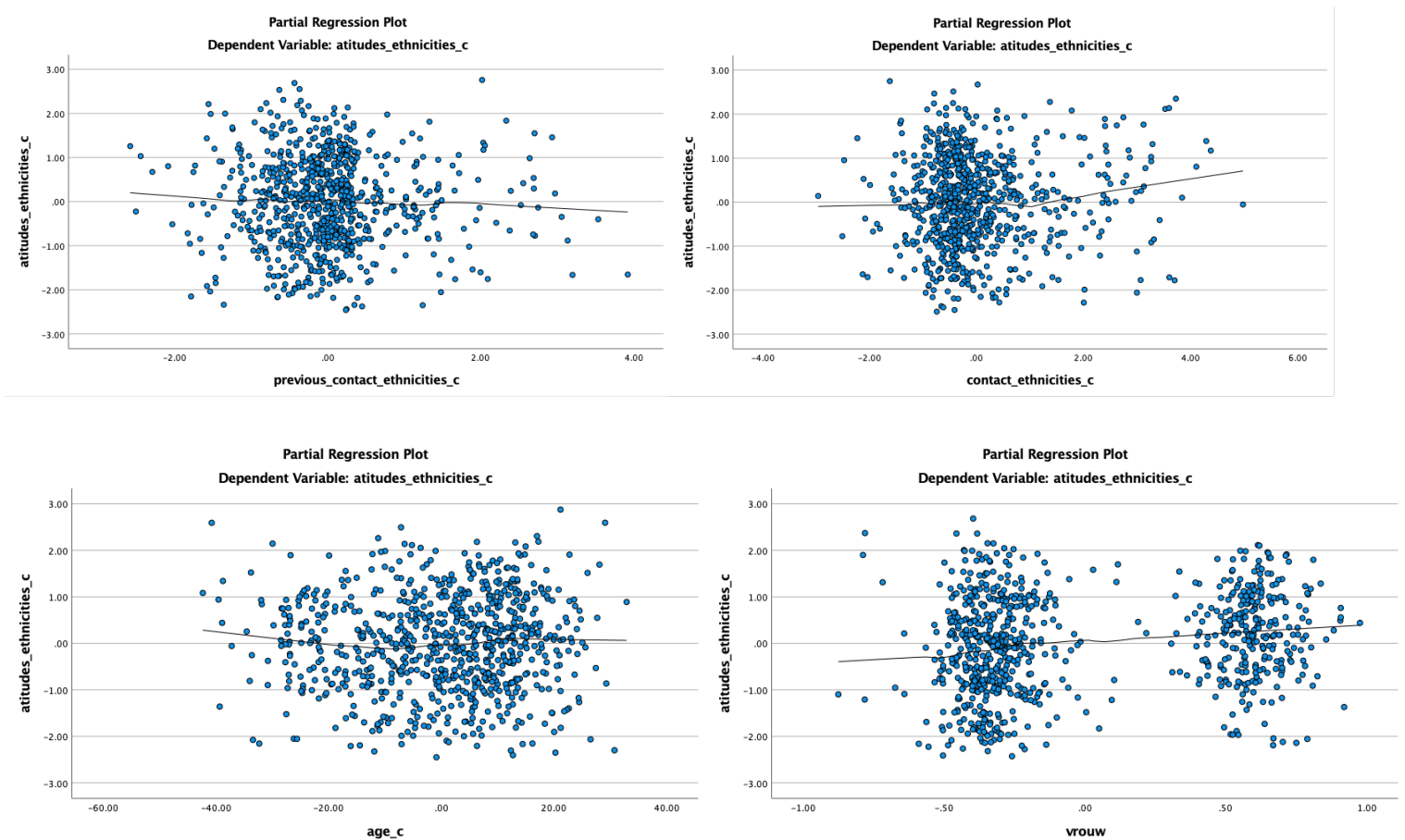


Figure 4

Partial plots of the centered dependent variable 'attitudes ethnicities' and all the (centered) predictors in the analysis.



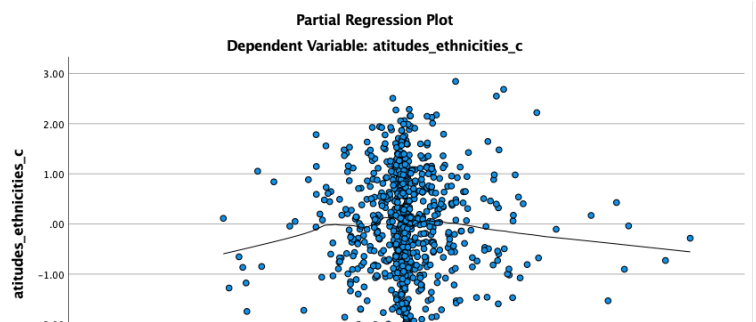
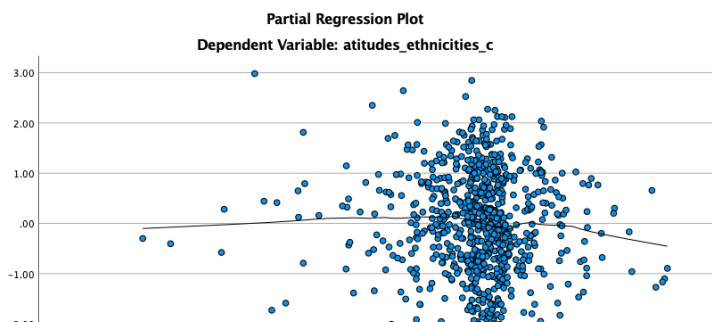
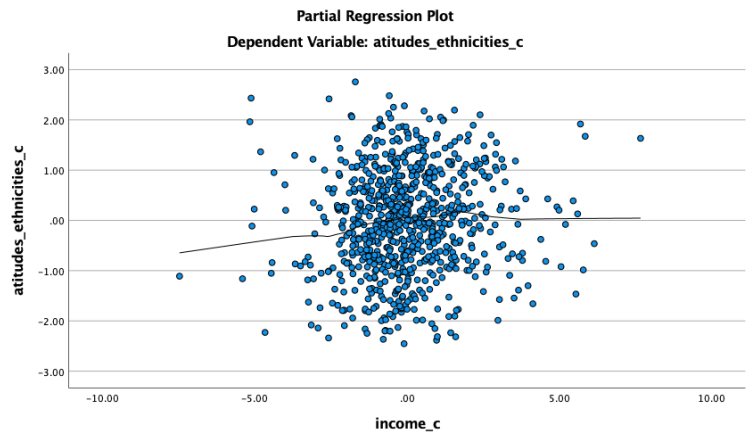
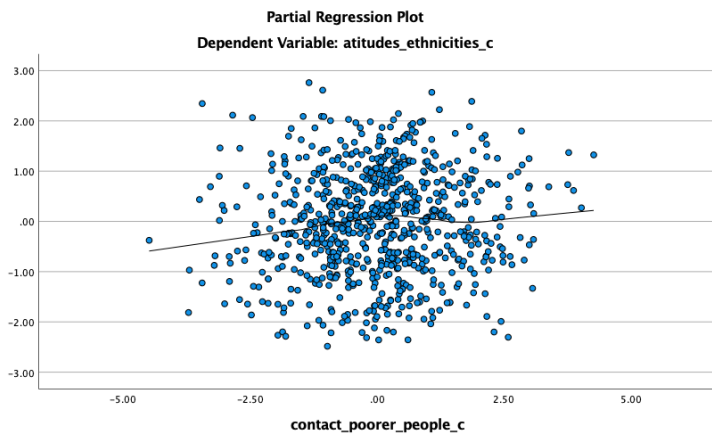
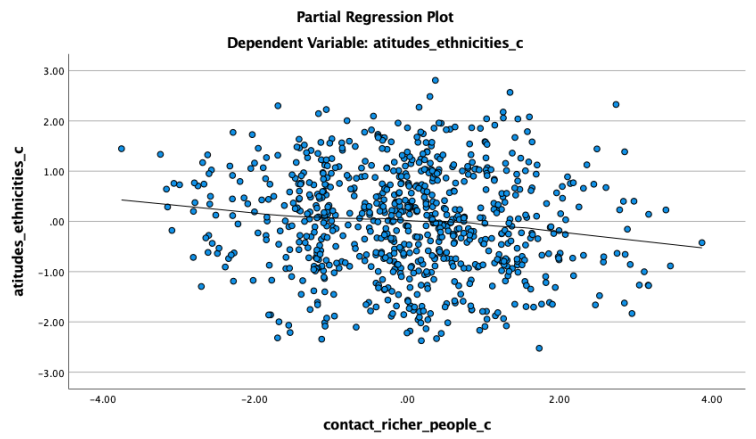
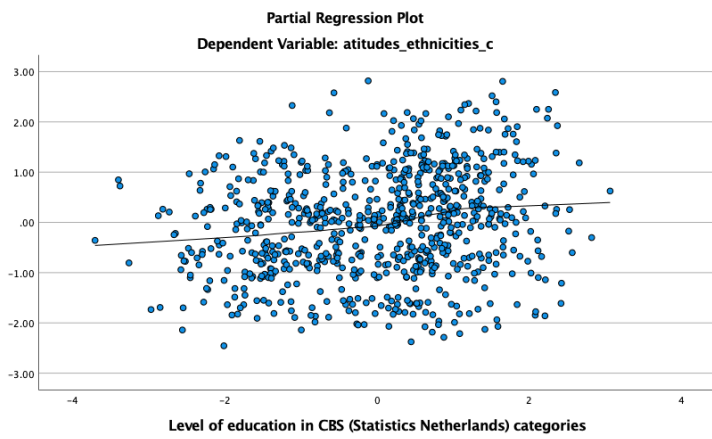
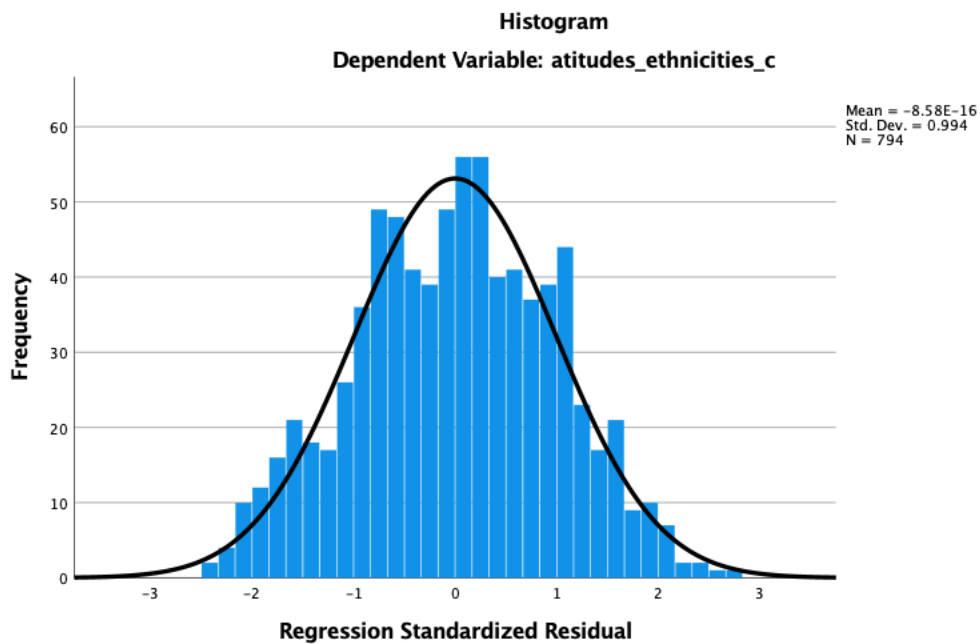


Figure 5

Histogram of the dependent variable 'attitudes ethnicities' plotted against the standardized residuals



This syntax was used to examine the assumptions:

```
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT attitudes_ethnicities_c
  /METHOD=ENTER previous_contact_ethnicities_c contact_ethnicities_c age_c Gender
oplcat
  /METHOD=ENTER contact_richer_people_c contact_poorer_people_c
  /METHOD=ENTER income_c
  /METHOD=ENTER incomeXcontact_richer_people incomeXcontact_poorer_people
  /PARTIALPLOT ALL
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS HISTOGRAM(ZRESID)
  /SAVE PRED COOK LEVER RESID ZRESID DFFIT.
```

Outliers

Three strategies are used to determine whether this analysis has outliers. The first one examines whether the leverage values are higher than the specific thresholds of the data. The second examines whether the Cook's Distance values are too high. The third measure to evaluate outliers is the DFFit. The cases with the highest values on these measures are discussed. Lastly, the linear regression is repeated without the most extreme cases to see if there are any significant changes.

The leverage indicates outliers in the x-direction. The greater the deviation of a case from the mean, the higher its leverage and, consequently, the greater its influence on the estimated slopes. A commonly used rule of thumb is that leverages exceeding $2p/n$ or $3p/n$, where p represents the number of estimated parameters and n is the sample size, can potentially cause issues. This analysis calculates the thresholds as $(2*9)/794 = 0.023$ and $(3*9)/794 = 0.034$. I will focus on cases exceeding the latter threshold. There are 36 cases with a higher leverage than 0.034; see Figure 6. Removing that many cases would result in substantial data loss. It's crucial to consider that exceeding this threshold doesn't automatically classify cases as outliers. Therefore, I will focus on examining cases with leverage values greater than 0.065. These cases demonstrate a tendency to cluster more closely together below this threshold. 7 Cases have a higher leverage than 0.065, which can be found in Table 1, with the accompanying Cook's Distance and DFFit. It is remarkable that all 7 respondents are men with a university degree. All of them, except for one person, have a higher income than 4001 euros net a month. Most of them have an average to high positive attitude towards people of different ethnicities than Dutch. Most of the respondents with a relatively high leverage score have little contact with richer people and much contact with poorer people.

Second, the Cook's Distance (CD) is analyzed, which examines the outliers in the x-direction and y-direction. The Cook's Distance is the product of the studentized residuals and leverage. The Cook's Distance is only high when both components are high. The larger the absolute value of Cook's Distance, the greater the influence of an observation on all predicted values by the estimated regression equation. The rules of thumb are when the CD is bigger than 1, there's a big problem, and when the CD exceeds $4/n$, there might be a

problem. In this analysis, the threshold value is $4/794=0.00504$. The leverage values and Cook's Distance are plotted against each other in Figure 6. There are 45 cases exceeding the threshold. Dropping 45 cases leads to substantial data loss. Therefore, I will only examine the extreme values at a CD bigger than 0.0200. These are two cases, including one that also exceeds the leverage threshold of 0.065. Figure 7 is a scatter plot of the leverage and the CD with the thresholds I used, CD 0.0200 and Leverage 0.065. The two respondents with the highest CD values are both men and score very high on the amount of contact they have with richer people, and they are both relatively young, 23.

The last measure I use to evaluate the outliers is the DFFit measure, which calculates the effect of removing individual cases on the model fit. The observations with a comparatively high DFFIT value are evaluated and determined if any exceed pre-established bounds. For this specific thesis, the threshold values are 0.213 and 0.319, based on the formulas $2\sqrt{p/n}$ and $3\sqrt{p/n}$. Not a single observation exceeds these predetermined bounds (see Figure 8). This means that no measure greatly impacts the analysis after it is dropped.

The linear regression was repeated after the outliers were dropped to evaluate whether the data had significant changes. In model 2, the coefficients for the independent variables 'contact richer people' and 'contact poorer people' changed from -0.076 to -0.084 and from 0.057 to 0.070. Despite these changes, both coefficients remained statistically significant with p -values of 0.005 and 0.012 (compared to previous values of $p=0.009$ and $p=0.038$). The R-squared value for model 4 increased to 0.114 when outliers were excluded, representing a marginal improvement of 0.3% over the model, including outliers. However, this increase was not statistically significant ($p=0.088$), as indicated by an F-change value of 2.442. The slope of the interaction term 'contact richer people * income' changed from -0.028 to -0.034, with the p -value decreasing from 0.043 to 0.032. Conversely, the interaction term 'contact poorer people * income' coefficient changed from 0.002 to 0.00. So, the relationship disappeared. Despite these changes, the overall significance of the variables and model stayed the same. Considering the minor changes in model performance and coefficient significance, I have decided to retain the outliers in the model.

Figure 6

Cook's Distance on the y-axis, Leverage on the x-axis, red lines show the threshold values

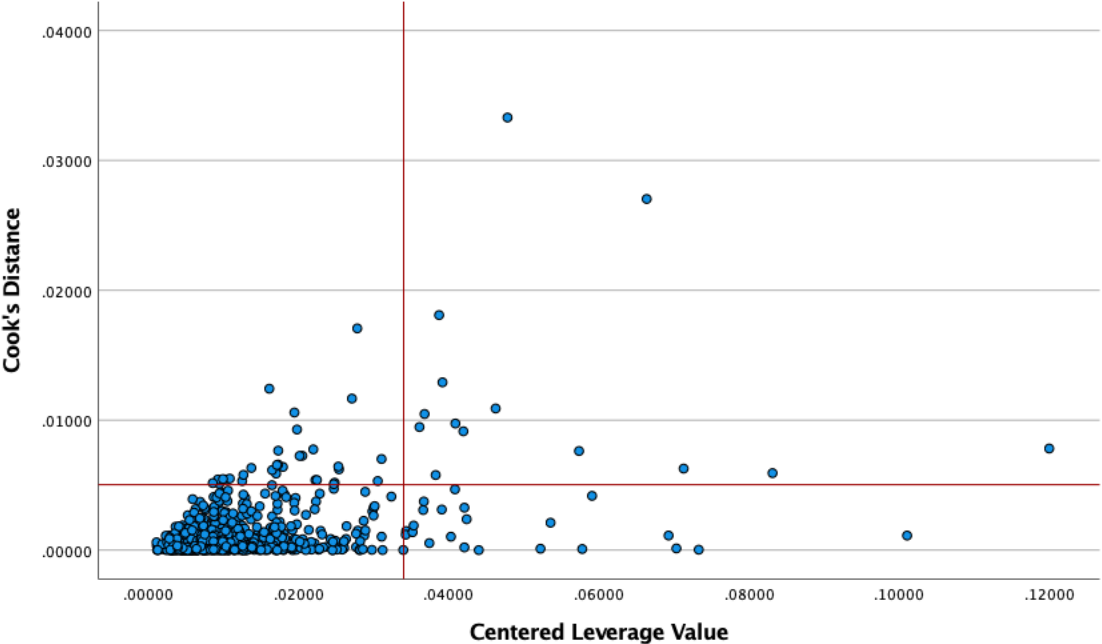


Table 1

Outliers

| Case | Leverage | Cook's Distance |
|-------------|-----------------|------------------------|
| 14 | 0.04782 | 0.03330 |
| 8 | 0.06636 | 0.02704 |
| 1 | 0.11996 | 0.00782 |
| 2 | 0.10103 | 0.01112 |
| 3 | 0.08311 | 0.00593 |
| 4 | 0.07329 | 0.00003 |
| 5 | 0.07128 | 0.00628 |
| 6 | 0.07031 | 0.00013 |

Figure 7

scatterplot with the most extreme Cook's Distance values after the red line on the y-axis and with the most extreme Leverage values on the x-axis

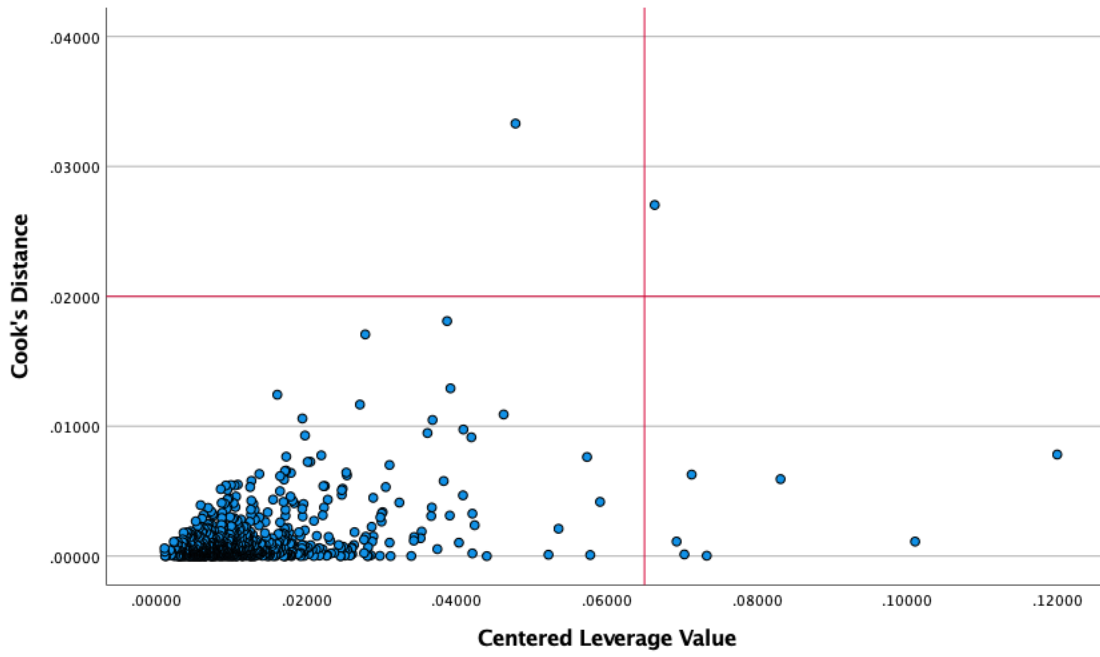
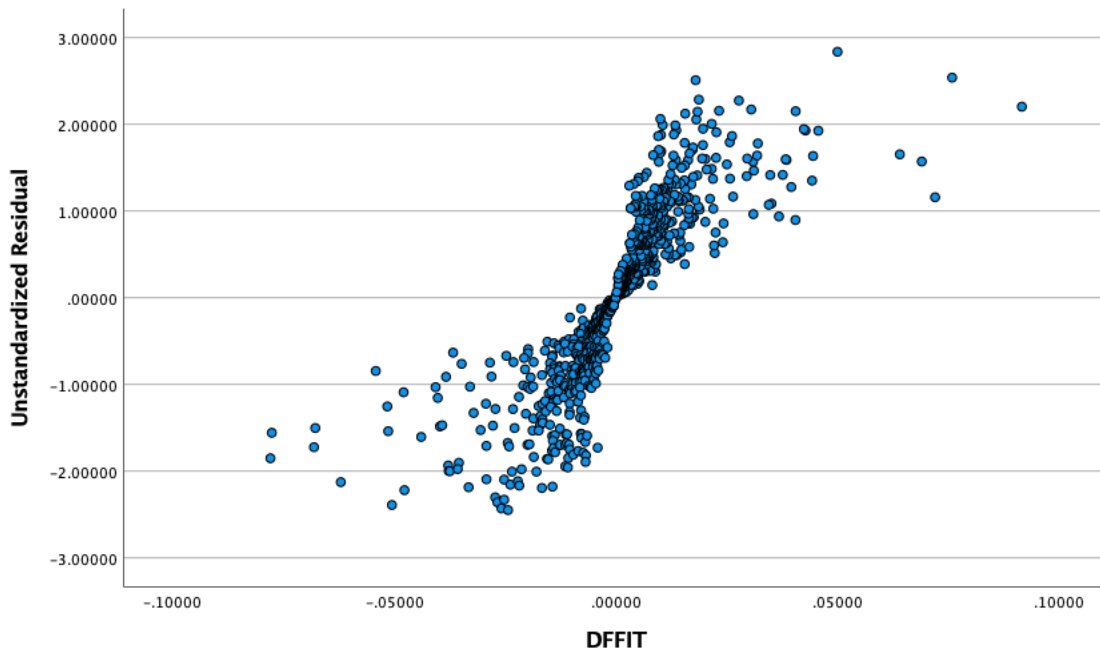


Figure 8

Dffit values plotter against unstandardized residual



Multicollinearity

The last evaluation in this output concerns multicollinearity, which is already mentioned in Section 4.1 and 4.2. Multicollinearity occurs when the predictors in an analysis have a strong relationship with each other. When this is the case, it is unclear which independent variable predicts which specific part of the independent variable. Besides looking at the correlations of the variables, the VIF (Variance Inflation Factor) is used to examine whether there is multicollinearity. The VIF shows the extent to which multicollinearity has increased the standard errors of the regression coefficients. A rule of thumb is that a VIF lower than 2 is acceptable. The highest VIF found in this analysis is 1.427, suggesting that multicollinearity is not a significant concern in this analysis.

Output control outliers

The syntaxes and outputs I used to evaluate the outliers are presented below.

This syntax was used to generate the plot of the Cook's Distance with the Leverage (Figure 6 and 7),

```
GRAPH
  /SCATTERPLOT(BIVAR)=LEV_1 WITH COO_1
  /MISSING=LISTWISE.
```

Then I looked at the highest Cook's Distance, Leverage and DFFit, with descending sort cases.

I used this syntax. This is how I could make Table 1:

```
SORT CASES BY LEV_1 (D).
SORT CASES BY COO_1 (D).
SORT CASES BY DFF_1 (D).
```

Then I made Figure 8 for DFFit , using this syntax:

```
GRAPH
  /SCATTERPLOT(BIVAR)=DFF_1 WITH RES_2
  /MISSING=LISTWISE.
```

Then, I filtered the data to drop the cases with a leverage value higher than 0.065 and Cook's Distance of 0.002 using this syntax:

```
USE ALL.
COMPUTE filter_$=(COO_1 < 0.02 & LEV_1 < 0.065).
VARIABLE LABELS filter_$ 'COO_1 < 0.02 & LEV_1 < 0.065 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
```

Lastly, I did a new linear regressions without the outliers, using this syntax:

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT atitudes_ethnicities_c
  /METHOD=ENTER previous_contact_ethnicities_c contact_ethnicities_c age_c Gender
  oplcat
```

```
/METHOD=ENTER previous_contact_ethnicities_c contact_ethnicities_c age_c Gender  
oplcat  
    contact_richer_people_c  
/METHOD=ENTER previous_contact_ethnicities_c contact_ethnicities_c age_c Gender  
oplcat  
    contact_richer_people_c income_c  
/METHOD=ENTER previous_contact_ethnicities_c contact_ethnicities_c age_c oplcat  
    contact_richer_people_c income_c incomeXcontact_richer_people  
/SCATTERPLOT=(*ZRESID ,*ZPRED) (atitudes_ethnicities_c ,*ZRESID)  
/RESIDUALS HISTOGRAM(ZRESID)  
/SAVE COOK LEVER RESID ZRESID DFFIT.
```

Appendix 4

In this Appendix, I will reflect on how I used AI. I have used Chat GPT to improve my writing in English. As I follow a Dutch study, I'm not used to writing in English. I no longer have the exact example, but I have put this text in Chat GPT to show what kind of output it gives. Can you highlight any, grammar or spelling mistakes in this text? This way, I can see where I made mistakes and how I can improve my English writing. I later stopped using this method and used Grammarly. Grammarly is an app that helped me with grammar, highlighting my mistakes in words and sentences. The improvements were shown in Microsoft Word. This made writing go faster and made the sentences clearer.

Chat GPT use:

Can you highlight any, grammar or spelling mistakes in this text?

Also, due to the lack of items in the dataset the operationalizations were mostly provided by one item. It could be argued that more items could cover more of the concept, and is therefore better for operationalizations of the concepts.

Chat GPT output:

Here is the text with grammar and spelling mistakes highlighted and corrected:

Also, due to the lack of items in the dataset**, ** the operationalizations were mostly provided by one item. It could be argued that more items could cover more of the concept**, ** and **would** therefore **be** better for operationalizations of the concepts.

Corrected text:

"Also, due to the lack of items in the dataset, the operationalizations were mostly provided by one item. It could be argued that more items could cover more of the concept, and would therefore be better for operationalizations of the concepts."

AI use for theory

I have asked Chat GPT a question about theory for my moderator. But this was only after I read many articles and had written some parts, but it did not add up. It was difficult to connect the things I had. This was before the deadline of the concept version. The second point Chat GPT gave me, inspired me to rewrite what I already had. So, to be clear, I did not use the output of Chat GPT. I used the theory from articles I found myself ,on Psych Info, and rewrote them. I do not think I have grabbed too fast of the use of AI because I first did my own research and later rewrote my own piece after I got inspired by AI, meaning I did not copy what chat GPT had.

Chat GPT use:

when people have more contact with richer people they can have more positive attitudes towards this group. this can generalize through the secondary transfer effect, meaning that they also have better attitudes towards an outgroup not involved in the contact. if someone has an higher income, how do they generalize different than people with a lower income?

Chat GPT gave this output:

When individuals with higher income have more contact with richer people, they may indeed develop more positive attitudes towards this group. This positivity can potentially generalize through the secondary transfer effect, resulting in improved attitudes towards an outgroup not directly involved in the initial contact. However, the process of generalization may vary between individuals with higher and lower incomes due to several factors:

1. **Social Circles and Exposure:** Individuals with higher incomes may predominantly interact with others from similar economic backgrounds, leading to limited exposure to individuals from lower income strata. As a result, their generalization process may be more confined to attitudes towards individuals and groups within their socioeconomic sphere. Conversely, individuals with lower incomes may have more diverse social circles, interacting with people from various economic backgrounds, which could influence their generalization process to be more inclusive of individuals from different socioeconomic statuses.

2. **Perceptions of Social Hierarchies:** Socioeconomic status often correlates with perceptions of social hierarchies and power dynamics. Individuals with higher incomes may be more likely to perceive themselves as occupying privileged positions within society, which could influence their generalization process to reinforce positive attitudes towards groups perceived as higher in the social hierarchy, such as richer individuals. On the other hand, individuals with lower incomes may be more attuned to experiences of marginalization or disadvantage, potentially leading to a more critical appraisal of social hierarchies and a nuanced approach to generalizing attitudes towards different socioeconomic groups.

3. **Media and Cultural Influences:** Media representations and cultural narratives about wealth and success can shape individuals' perceptions and attitudes towards different socioeconomic groups. Individuals with higher incomes may be exposed to media portrayals that glamorize wealth and affluence, contributing to positive attitudes towards richer individuals and potentially influencing their generalization process. In contrast, individuals with lower incomes may have different media consumption patterns or cultural influences that offer alternative perspectives on socioeconomic disparities, affecting their generalization of attitudes towards different economic groups.

4. **Personal Experiences and Social Identity:** Personal experiences of socioeconomic status and social identity can also influence the generalization process. Individuals with

higher incomes may identify more strongly with their economic status and prioritize maintaining positive attitudes towards similar individuals or groups. Conversely, individuals with lower incomes may have diverse social identities shaped by intersecting factors such as race, ethnicity, and class, leading to a more nuanced approach to generalizing attitudes towards different socioeconomic groups.

Overall, the generalization of attitudes towards different economic groups may be influenced by individuals' social circles, perceptions of social hierarchies, media influences, personal experiences, and social identities, all of which can vary based on income level.