Cinderella Komolafe* & Beáta Dávid**

Examining the characteristics of Roma–non-Roma interethnic romantic relationships using decision tree analysis

* [komolafe.cinderella@semmelweis.hu] (Doctoral School of Mental Health Sciences, Semmelweis University, Hungary)
** [david.bea@semmelweis.hu] (Semmelweis University, Hungary; HUN-REN Centre for Social Sciences)

Abstract

Interethnic romantic relationships can be perceived as indicators of integration, but they can also be facilitators of successful social integration. This is why we considered it important to study Roma people who had already had a non-Roma partner. We were looking for answers to the question of what is characteristic of these people compared to those who have only been in a romantic relationship or marriage with a Roma partner throughout their lives. In our study, we investigated the correlations using a Khi^2 test and decision tree analysis on a sample of 535 Roma people in Hungary. Among the sociodemographic characteristics, gender, marital status, actual relationship status, educational attainment, belonging to a Roma community (Romungro, Olah, Boyash), occupation and settlement type were significantly associated with whether Roma respondents had ever had a non-Roma partner. Roma people with less than eight years of primary education had the most homogeneous partner choice habits. Roma people with more than eight years of education, unmarried, cohabiting with their partner or not living with their partner had had non-Roma partners in the highest proportion. As educational attainment increases, it can be assumed that more and more Roma-non-Roma romantic relationships and marriages will be formed in Hungary.

Keywords: Roma; integration; mixed marriages; interethnic relationships; educational attainment

1 Introduction

The majority of researchers agree that interethnic romantic relationships and marriages are indicators of the proximity of majority and minority cultures (Hohmann-Marriott & Amato, 2008; Song, 2009; 2016). The more a minority group is integrated into the majority society, the more interethnic romantic relationships and marriages can be observed. Integration weakens ethnic ties and increases the chances of forming a relationship with a potential partner belonging to the majority society, which increases the chances of exogamy. In this way, interethnic marriages can be understood as a logical step in the integra-

tion process (Lieberson & Waters, 1988). Intermarriage is not only a measure of social and economic integration, but also a factor that potentially affects integration (Meng & Gregory, 2005).

In this study, we examine interethnic Roma-non-Roma romantic relationships and marriages using a sample of 535 Roma people from 2019. We describe the socio-demographic characteristics of Roma people who had already had a non-Roma partner. In our study, we sought to answer the question of what is characteristic of those Roma people who enter into interethnic romantic relationships and marriages in Hungary. We compared those Roma people who had already had a non-Roma partner with those who had only had Roma partners in their lives.

2 Partner choice and interethnic marriage

According to the theory of homophily, people's basic attitudes towards partner choice favour homogamous romantic relationships and marriages when the individual chooses a mate of similar ethnicity and status (Kenrick et al., 1993). The fact that the individual can usually communicate better with a similar partner plays a role in this, but the pressure from the family and the community also favours homogamous romantic relationships. From the point of view of the group, the choice preference and pressure from family, religious or other community can be explained by the fact that interethnic romantic relationships can lead to group dilution, weakening of cohesion and ultimately to community disintegration (Bukodi, 2002).

Gender differences can also be observed in the frequency of interethnic marriages. These may be different for each culture and ethnic group. A survey in the USA (Wang, 2015) examined men-women differences regarding interethnic marriages. African-American men were more likely intermarry than women. The opposite trend was observed for Asian-Americans (Wang, 2015). In the romantic relationships of Africans in Hungary, it can also be observed that men are more likely to form relationships and marriages with members of the majority society than women (Komolafe & Komolafe, 2019; Pári & Komolafe, 2017). This may be due to gender roles, cultural beliefs and traditions about women, and the fact that men migrate from African countries at a much higher rate than women, and thus men inevitably find themselves in a situation that leads to heterogamy in their new place of residence, as they have less chance to get into a romantic relationship with African women.

Exchange theory is another idea about partner choice, where everyone looks for a partner who offers them the greatest benefit or reward and the least cost. According to the theory, members of couples tend to have roughly similar values and exchange characteristics of different value (e.g. job, education, kindness, beauty, social status) (Lőrincz, 2006). Merton (1941) and Davis (1941) also applied the theory to interethnic marriages, which they defined as status exchange theory. In their study, African Americans who had acquired high socioeconomic status exchanged it for the higher status of their partner due to their belonging to majority society. Most research of this kind uses educational attainment as a measure of socioeconomic status. In general terms, status exchange theory posits that in an interethnic marriage, the member from a minority background tends to have higher educational attainment than the partner from the majority society (Davis, 1941; Merton, 1941).

Some research has confirmed the theory of status exchange (e.g. Kalmijn, 1993; Fu, 2001; Gullickson, 2006). For example, Kalmijn (1993) used annual marriage license data collected from 1968 to 1986 from 33 US states and found that black spouses were more likely to marry down from the point of view of educational attainment, which is consistent with status exchange theory. Some subsequent studies have failed to confirm the theory of status exchange, while several other studies have found only a weak correlation (e.g. Hwang et al., 1995; Liang & Ito, 1999; Jacobs & Labov, 2002; Rosenfeld, 2005; Hou & Myles, 2013). In addition to the different methods, changing historical and social circumstances may also play a role in the differences in results. At the time the theory was developed, interethnic marriages were much less socially accepted than they are today.

Several studies have concluded that members of interethnic couples have roughly the same status and education (Liang & Ito, 1999; Jacobs & Labov, 2002; Fu, 2008). The theory that more highly educated members of minority groups are more likely to form interethnic romantic relationships is more prevalent in later research examining more modern societies (Song, 2016; Çelikaksoy, 2016). Theories by Furtado (2012) may also explain the connection. According to the 'cultural adaptability effect', more highly educated members of the minority group are better able to adapt to the different culture and customs of the majority society, and thus more easily form interethnic marriages with majority partners. According to the 'enclave effect', educated members are more likely to 'leave' and move out of their own ethnic group, thus reducing the chances of finding a partner from within their own group. As a result of the marriage their ties with their group of origin are loosened and thus they have less pull with other group members. According to the 'assortative matching' effect, for highly educated members, similarity in educational attainment can substitute for ethnic similarity. This is supported by the fact that where highly educated immigrants are surrounded by more, also highly educated immigrants, the chances of marrying outside the group are reduced. The reverse is also true. Where highly educated immigrants are surrounded by many lower-educated people from their own ethnic group, intermarriage is more common. Xuanning Fu's (2006) explanation of this phenomenon is more about individual freedom, in that higher socio-economic status gives minority group members greater freedom of choice to marry out of their ethnic group. The relationship between educational attainment and the propensity to intermarry varies across ethnic groups (Furtado & Theodoropoulos, 2011; Furtado, 2012).

The 'proximity hypothesis' also seeks to explain how we choose a partner; according to it, we prefer people we meet more often because we can get to know them better (Lőrincz, 2006). In relation to interethnic marriages, Blau and Schwartz (1984) found that in cities with a more heterogeneous community, where people of different origins live together, there is a greater likelihood of interethnic marriages, as individuals meet people different from themselves more often. The fewer minority members there are in a place, the more likely they are to form interethnic marriages. The larger the minority group is, the more likely they are to marry within the group. This is in line with Furtado's (2012) theories mentioned earlier, only there the main focus was on the distribution of educational attainment among minority group members. Research by Lichter et al. (2015) also confirms that limited opportunities for social interactions between immigrants and members of the majority society reduce the chances of interethnic marriages between the two groups (Lichter et al., 2015).

Overall, theories of partner choice suggest that ethnically homogamous marriages and romantic relationships are easier to form. It is worth examining what factors are associated with Roma people's interethnic romantic relationships. The main reason is that in research on interethnic relationships and marriages looking for more complex connections, indigenous minority groups such as the Roma people living in Hungary are less frequently studied. That is why we also presented theories that have been tested on African-Americans or minority groups who have immigrated to other countries. These do not allow us to draw clear conclusions about the Roma people, but they are a good starting point.

3 Relationship characteristics of Roma people

Since our study examines Roma-non-Roma romantic relationships and marriages, we will also look at the relationships of the Hungarian Roma population. In Hungary, Roma people tend to be in a romantic relationship or marriage earlier than the other most populous ethnic group, the Germans or majority Hungarians. They have a higher proportion of widows and more live in cohabiting relationships than in the other two groups surveyed (KSH, 2015). They are the most homogamous ethnic group, with 83.5 per cent of husbands and 84.9 per cent of wives identifying themselves as Roma living with a Roma spouse in 2001 (Tóth & Vékás, 2008). According to census data, Roma men in Hungary are more likely to marry non-Roma partners than Roma women (Tóth & Vékás, 2008; Szabó, 2022). However, this correlation may vary across cultures and countries in case of Roma people, as in a study from Spain, Roma women were more likely to marry non-Roma partners (Gamella, 2020; Gamella & Álvarez-Roldán, 2023). In settlements with a higher proportion of Roma people, homogamous marriages were more common (Tóth & Vékás, 2008).

The Hungarian Gypsy population can be divided into three major groups, between which there is often a boundary, also in terms of marriage (Szuhay, 1995; Szuhay, 2005). The Olah Gypsy (Vlach Roma) people, who make up approx. 10–15 per cent of Hungarian Roma people and speak the Romani language, are considered the most homogeneous Roma group (Vajda, 2015; Kovai, 2017; Szabóné Kármán, 2020). The Boyash Roma people are also bilingual, but their language is not the same as the Olah language, and they make up about five to eight per cent of the Gypsy population in Hungary (Kovai, 2017). They also tend to choose a partner from within their own group, and often marriage with an Olah partner is a bigger problem for them than marriage with non-Roma (Binder, 2008). Romungro, or 'Hungarian Gypsies', speak only Hungarian and constitute the most populous part (80 per cent) of the Gypsy population (Kovai, 2017). In addition to these, there are several other smaller communities in Hungary, such as Sinti, and there are other subgroups within larger groups.

Roma people with higher educational attainment are presumably less homogamous than their lower educated counterparts (Komolafe et al., 2022), but relatively little research has examined Roma partner choice and educational attainment. The 1990 and 2011 census data also show that a higher proportion of Roma people with a higher level of education are in a romantic relationship with a non-Roma partner (Szabó, 2022). In a study of students attending a Roma special college (Komolafe et al., 2021), while in theory Roma students tended to consider the origin of their partner to be irrelevant, in practice they tended to

choose a partner similar to themselves in terms of origin and educational attainment. In a Roma special college, it was easier for them to find a partner with a similar educational background and origin (Komolafe et al., 2021). Examining Roma women with higher education, it was repeatedly concluded that Roma women with a university degree had difficulties finding a suitable partner and some of them formed a romantic relationship with a non-Roma partner (Durst et al., 2016). Compared to the traditional pattern of early marriage, family formation was pushed to the end of the longer training period, in line with the majority social pattern, and with this, the chances of finding a Roma partner decreased. Roma women graduates often failed to conform to the image of women that was accepted in their communities (Komolafe et al., 2021). Roma people are at a disadvantage in the labour market (Messing & Árendás, 2022), but Roma women graduates wanted to fulfil their potential in the world of work, not only in household work and raising children (Szabóné Kármán, 2009; Durst et al., 2016). Overall, it can be said that there is no significant amount of literature either on educational attainment, or other sociodemographic factors and interethnic marriages of Roma people. We wanted to fill this gap with our current research.

4 Sample and method

In our exploratory, cross-sectional, quantitative, questionnaire-based research, we wanted to find answers to the question of what is typical of those Roma people who form romantic relationships with (also) non-Roma people compared to those who have romantic relationships only with Roma people.

4.1 Data collection, data analysis

In 2019, we used the Tablet-assisted Personal Interviewing method to collect data from a non-representative sample of Roma adults in Hungary. For data collection, we used non-probability, snowball sampling (Babbie, 2003). We aimed to launch snowballs from as many directions as possible, so that respondents belong to different networks of contacts.

A fundamental problem in all Roma research is to be able to survey a population that represents the Roma population well enough. Since there are only estimates of the number of Roma people, and there are often difficulties in identifying who can be called of Roma origin (Pénzes at al., 2018; Kemény & Janky, 2003; Ladányi & Szelényi, 2001), it is not possible to create a representative sample. The respondents included in the analysis were assumed to be of Roma origin before the data collection, in connection with the snowball sampling, based on a recommendation, but only those who declared themselves Roma were included in the analysis. Thus, the final filter for origin was self-declaration.

As a quota, during the data collection, we determined that the three largest Roma groups (Olah, Boyash, Romungro) should be in a similar proportion in the sample. In addition to these groups, the respondents could enter the category 'Gypsy in general' and could also specify themselves under the other category which group they felt they be-

longed to. There is sometimes crossover between these groups due to interethnic marriages and many sub-groups exist outside the main groups, so clear categorisation is sometimes difficult. In the analysis, we used the main Roma group, as defined by the respondents themselves, to which they think they belong most.

In our fundamentally exploratory research, we aim to compare those respondents who had already had a non-Roma partner in their life with those who had only had a Roma partner. The literature on educational attainment in interethnic partnerships and marriages is the most extensive, so we only formulated a hypothesis regarding this: 'We hypothesise that higher educated Roma individuals choose a non-Roma partner in their lifetime in greater proportion than those with a lower level of education.'

For the analysis of correlations, we used IBM SPSS 28. Statistics software, Khi^2 test and decision tree analysis with CHAID method. The decision tree method was used to divide the sample into parts, as it breaks down complex decision problems into smaller problems and provides an easily comprehensible representation of possible outcomes. It has the advantage of excluding variables that are irrelevant to the situation, i.e. those that do not have a significant grouping effect. Within this framework, CHAID (Chi-squared Automatic Interaction Detector), which was used in the analysis, is a Khi^2-based method, which is an alternative to traditional cluster analysis. The method is able to handle both categorical and continuous dependent and independent variables (Dudás, 2018). The CHAID method is used to study the strongest correlations between the dependent variable and the possible predictor variables, which themselves may interact with each other (Sut & Simsek, 2011). 'The main goal of the exploratory algorithm is to cluster observations in terms of the dependent variable (Y) in such a way that the variance within groups is as small as possible and the variance between groups is as large as possible. During the procedure, a hierarchy of explanatory variables (Xi) emerges according to the extent to which they explain the variance of the target variable' (Hámori, 2001, p. 703). The method is applied in economics, health and social sciences (Chan et al., 2006; Horner et al., 2010; Brewer et al., 2018).

4.2 Participants

535 respondents of Roma origin were surveyed. There were slightly more women (53.5 per cent) than men in the sample. The average age of respondents was 43 years (standard deviation 16.1), the youngest was 18 while the oldest was 84. The sample is relatively young, broken down by age group, 18–29-year-olds accounted for the largest proportion. The uniqueness of the sample is that the three Roma groups were included in similar proportions (Romungro 35.0 per cent, Olah 34.2 per cent, Boyash 30.1 per cent, Sinti 0.2, 'Gypsies in general' 0.6). Their educational level is low, more than half of the sample (55.1 per cent) have eight years of primary education, similar to the Hungarian Roma population. Those with an education above the high school diploma are included in the sample in a similar proportion (6.9 per cent) as in the KSH census data on Roma (KSH, 2011). From an economic point of view, the active are in the majority (57.4 per cent) compared to the inactive (33.5 per cent), unemployed (7.5 per cent) and students (1.7 per cent). In terms of occupation, the proportion of people doing intellectual work is the lowest (6.5 per cent). Commu-

nal workers (15.1 per cent) are over-represented in the sample compared to the Hungarian average population (KSH, 2019). Most of the respondents are semi-skilled or unskilled workers (49.0 per cent), followed by skilled workers (29.5 per cent).

In terms of educational attainment, the majority of respondents (57.8 per cent) are not mobile compared to their parents, neither up nor down, i.e. they have the same level of education as their parents. A low proportion of them (3.2 per cent) are from the capital. More than half of the respondents (51.2 per cent) were born in the settlement where they lived at the time of survey.

Table 2 in the Appendix shows the distribution of socio-demographic characteristics of our Roma sample.

4.3 Instrument

In our questionnaire survey, the sociodemographic factors examined were: gender, age, marital status, actual relationship situation, educational attainment, economic activity, occupation and settlement types. By comparing the educational attainment of respondents and their parents, we created a "mobility by educational attainment" variable. Those with higher education than at least one of their parents were upwardly mobile, those with lower education than both parents were downwardly mobile, and those with the same education as one of their parents were stagnant.

In the questionnaire, we asked respondents about their partner's ethnicity (Roma, non-Roma, other). Relatively few respondents (51) had a non-Roma partner, so we decided to compare two larger groups of respondents: those who had had a non-Roma partner (218) and those who had only had a Roma partner (313) in their life. These two categories are more representative of the preferences of Roma respondents to enter into interethnic romantic relationships than if we only looked at current partners. The examined variable was formed from two questions. One question asked about the respondent's current partner's origin and the other asked whether the respondent had had a non-Roma partner in their life before their current partner. With the new variable, we categorize respondents not only by the origin of the current partner. In the case of couples, we did not distinguish whether the respondent's spouse or partner was Roma or non-Roma. They declared the origin of who they defined as a partner or ex-partner of theirs.

5 Results

5.1 Roma people who had had a non-Roma partner

The following table (Table 1) shows the distribution of respondents who had ever had a non-Roma partner. In the table, the distribution (%) represents the value compared to respondents who had only had romantic relationships with Roma partners.

Table 1 Incidence (%) of non-Roma partners according to different
socio-demographic groups

| | | Has had a non-Roma partner | | |
| | | Men | Women | Total |
		Distribution (%)	Distribution (%)	Distribution (%)
Has had a non-Roma partner		–	–	40.7
Gender (N=535)	Men	–	–	47
	Women	–	–	35.3
Age (N=535)	18-29	57.4	38.5	46.2
	30-39	61.5	37.3	48.6
	40-49	50.0	47.0	48.2
	50-59	38.6	24.4	31.8
	60 and above	26.4	19.0	23.2
Marital status (N=533)	Unmarried	67.3	50.0	58.3
	Married	33.6	21.4	27.8
	Lives in a cohabitation relationship	51.9	44.6	47.7
	Widow, widower	33.3	15.6	21.3
	Divorced	62.5	54.5	57.9
Actual relationship situation (N=531)	Lives with spouse	34.3	21.4	28.1
	Lives with a partner	52.4	43.4	47.4
	Has a partner but does not live with them	66.7	83.3	72.2
	Has no partner	57.8	37.3	45.0
Roma community (N=531)	Hungarian Gypsy/Romungro	58.7	41.1	48.1
	Olah Gypsy/Vlach Roma	43.2	25.0	34.4
	Boyash	40.3	39.3	39.8
Settlement type (N=535)	Capital	100.0	66.7 (n.s.)	88.2
	County seat, city with county rights	51.9	33.3 (n.s.)	41.1
	City	41.2	39.8 (n.s.)	40.5
	Town, village	43.8	30.9 (n.s.)	36.7

Table 1 *(contiued)*

		Has had a non-Roma partner		
		Men	**Women**	**Total**
		Distribution (%)	**Distribution (%)**	**Distribution (%)**
Educational attainment (N=535)	Under 8 years of elementary	16.7	21.2	19.0
	8 years of elementary	49.2	27.9	37.3
	Secondary education, without high school diploma (vocational diploma)	49.3	52.2	50.7
	At least high school diploma	75.0	61.9	67.6
Occupation (N=292)	Intellectual	70.0 (n.s.)	66.7	68.4
	Skilled	51.9 (n.s.)	67.6	58.1
	Semi-skilled, unskilled	46.9 (n.s.)	34.0	42.7
	Communal worker	54.5 (n.s.)	21.2	29.5

For numbers marked with '(n.s.)' the Khi^2 test yielded no significant results, which are described in more detail after the table.

Gender and the origin of the respondents' partners were significantly related ($\chi^2(1)$=7.513; p=0.006). A smaller proportion of women had heterogamous romantic relationships than men.

The age of the respondents was significantly related ($\chi^2(4)$=22.104; p<0.001) to whether they had had a non-Roma partner. Examining men ($\chi^2(4)$=17.178; p=0.002) and women ($\chi^2(4)$=11.371; p=0.023) separately, we also found a significant correlation. While in the case of men it was the 30–39 age group that had the most respondents who had had a heterogamous romantic relationship in their life, while this was typical for women in the 40–49 age group. The smallest difference in the proportions between men and women is seen in the 40–49 age group. Over the age of 50, the proportion of those who had already had a non-Roma partner decreased for both genders.

Marital status shows a significant correlation with the origin of the partners, looking at the genders together ($\chi^2(4)$=43.382; p<0.001), as well as men ($\chi^2(4)$=19.915; p=0.001) and women ($\chi^2(4)$=25.719; p<0.001) examined separately. In the case of married and widowed persons Roma-Roma romantic relationships were more typical. Those who chose a partner from outside their ethnic group were more often in a cohabiting relationship or were divorced or unmarried. The actual partnership situation was related to the origin of the partners (Women: $\chi^2(3)$=17.538; p<0.001; Men: $\chi^2(3)$=11.730; p=0.008; Together: $\chi^2(2)$=25.273; p<0.001). For both genders, those who had a partner but did not live with them had the highest proportion of non-Roma partners. Those who lived with their spouses had only had a Roma partner in the highest proportion.

There was a significant correlation between belonging to a Roma community and the origin of the partner ($\chi^2(2)$=7.308; p=0.026). However, a significant correlation was also found for women ($\chi^2(2)$=6.276; p=0.043) and men ($\chi^2(2)$=6.066; p=0.048) when broken down by genders. Romungro respondents had had a non-Roma partner in the highest proportion. Olah women and Boyash men had the lowest proportion of having had non-Roma partners.

The relationship between the origin of the partners and the type of settlement was significant ($\chi^2(3)$=17.252; p=0.001). However, the correlation was only observed for men ($\chi^2(3)$=14.565; p=0.002), not for women ($\chi^2(3)$=4.502; p=0.212). Table 1 shows that interethnic romantic relationships predominated in the capital, where most Roma men formed heterogamous romantic relationships. (The type of settlement was not related to the level of education; among the respondents, those who lived in the capital either had eight years of primary school education or graduated from secondary school without getting a high school diploma.)

One of our variables was related to territorial mobility. We asked the respondents if they currently lived in the settlement where they had been born or not. Moving away from the place of birth ($\chi^2(1)$=1.675; p=0.196) did not show a significant correlation with the origin of the partners.

Economic activity did not show a significant correlation with the origin of the partner either examining men ($\chi^2(3)$=1.143; p=0.767) and women ($\chi^2(3)$=1.608; p=0.657) separately or together ($\chi^2(3)$=1.546; p=0.672).

The origin of the partner was significantly related to the educational attainment of the respondents ($\chi^2(3)$=30.533; p<0.001). The more highly educated the respondent was, the more likely it was that they had already had a non-Roma partner. The correlation can be observed for women ($\chi^2(3)$=21.768; p<0.001) and men ($\chi^2(3)$=16.534; p=0.001).

Mobility by educational attainment, i.e. the difference in educational level of the respondents and their parents, did not show a significant correlation with the origin of the partner both overall ($\chi^2(2)$=2.673; p=0.263) and when examining the genders separately (Women: $\chi^2(2)$=0.372; p=0.830; Men: $\chi^2(2)$=3.402; p=0.184).

The occupation of the respondents and the origin of the partners showed a significant correlation ($\chi^2(3)$=14.250; p=0.003). The higher the status of the given job was, the higher the rate of choosing a non-Roma partner was. Broken down by gender, this correlation was significant only for women ($\chi^2(3)$=18.468; p<0.001), but not for men ($\chi^2(3)$=2.137; p=0.544). (The occupation was related to the educational level: the higher the educational level was, the higher the proportion of people who took on higher level work was.)

5.2 Examining factors related to the ethnic composition of romantic relationships with decision tree analysis

A decision tree analysis was conducted using the CHAID method to find out which socio-demographic variables are the most important determinants of the origin of the Roma respondents' partners. The decision tree shows those variables that had the most significant grouping effect at the given level of the tree. The other variables have weaker effects compared to the selected variables and are therefore not included in the decision tree. The

target variable is the origin of the current and past partners, with the categories of having only had a Roma partner or having had a non-Roma partner. The potential explanatory variables were gender, age, belonging to a Roma group, actual partnership status, educational attainment, type of settlement and occupation. During the decision tree analysis, the variables of Roma community, type of settlement, and occupation did not show significant grouping effects. Significant grouping effects were found for gender, age, educational attainment and actual partnership status (Figure 1).
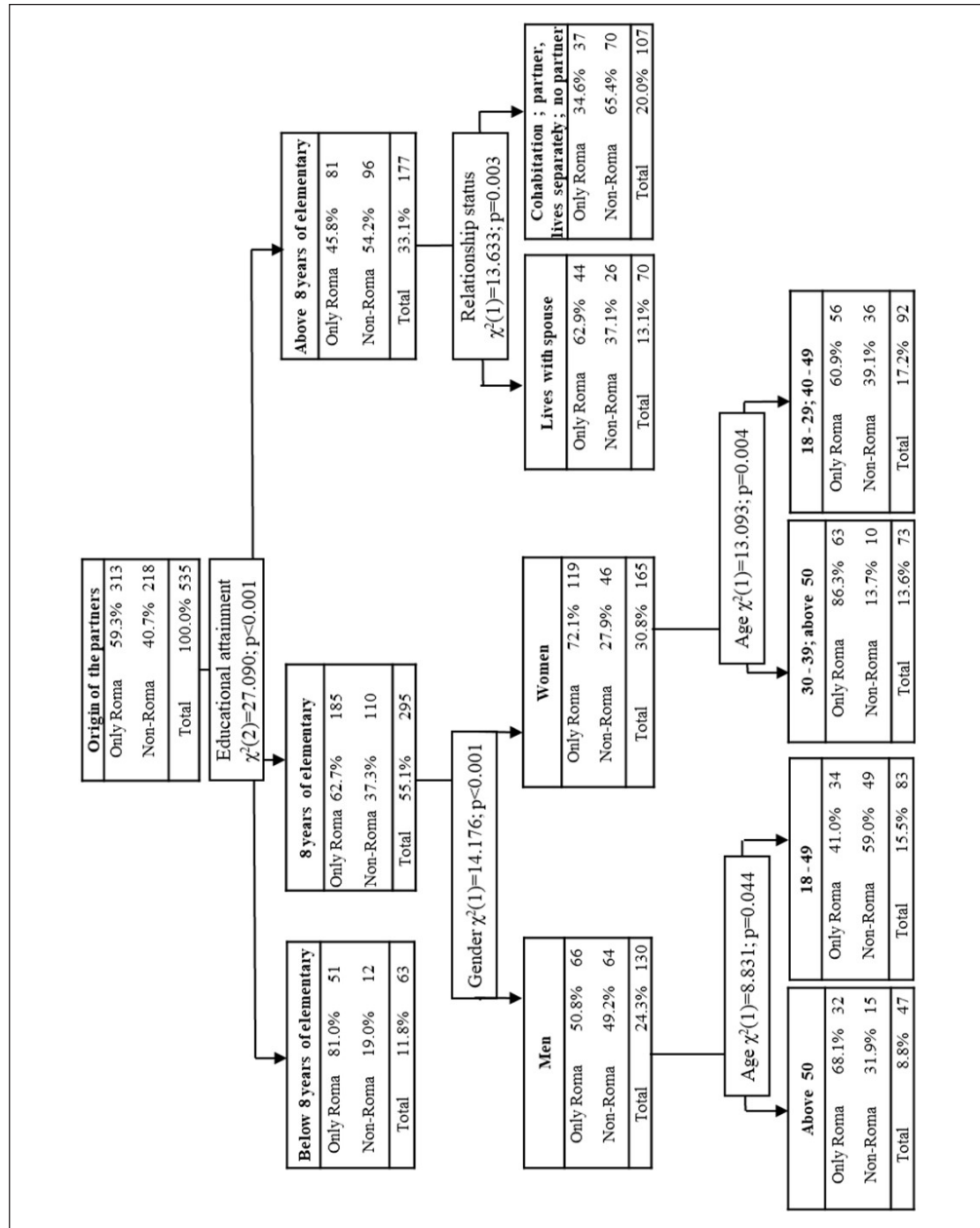

Figure 1 Factors that most determine the origin of partners, decision tree analysis (N=535)

The first, significantly grouping variable was educational attainment. Those with less than eight years of elementary education had had a non-Roma partner in the lowest proportion, and those with higher than eight years of elementary education had had a non-Roma partner in the highest proportion. Within those with eight years of elementary education, the grouping variable was gender. A higher proportion of men with eight years of elementary education had been with a non-Roma partner than women. For both women and men, age was the main grouping variable at the next level of the decision tree, however, while men under the age of 50 chose non-Roma partners at a higher rate, women with eight years of elementary education had had non-Roma partners at the highest rate between the ages of 18–29 and 40–49.

For those with more than eight years of elementary education, the actual partnership situation was a significant grouping variable. Within the whole sample, those with more than eight years of elementary education, those living with a partner and those with a partner who did not live together and unmarried people had had (also) non-Roma partners at the highest rate. Thus, for those with higher education, marriage as the most traditional form of cohabitation tends to lead Roma people towards homogamous relationships.

6 Discussion and conclusion

In our study, we examined, along different socio-demographic variables, the characteristics of Roma people who have had a non-Roma partner. Women were significantly less likely to have had heterogamous romantic relationships than men. In the 2001 and 2011 censuses, the proportion of Roma people reporting their ethnicity had formed interethnic marriages or cohabiting relationships at a similar rate across genders, with only a slight difference of a few percent in favour of men (Tóth & Vékás, 2008; KSH, 2020; Szabó, 2022). However, this correlation can vary from culture to culture and country to country, for example, a study in Spain found that Roma women are more likely to marry a non-Roma partner (Gamella, 2020; Gamella & Álvarez-Roldán, 2023). At the international level, both among African-Americans and among Africans in Hungary, men are more likely than women to enter into romantic relationships and marriages with members of the majority society (Wang, 2015; Komolafe & Komolafe, 2019). This may be due to gender roles specific to the culture, to ideas and traditions about women or to migration characteristics. The fact that Roma men are significantly more likely to choose a non-Roma partner may also be related to their higher territorial mobility. They are more mobile than Roma women within the country for employment reasons, often going to work in areas with a better economic situation, less densely populated by Roma people (Görgőy, 2023) and this may also be responsible for their increased chances of heterogamy and reduced chances of endogamy as they enter the majority society.

Marital status shows a significant correlation with the origin of the current and past partners. With married and widowed couples, Roma-Roma couples were more typical. Those who chose a partner from outside their ethnic group were more often in a cohabiting relationship or were divorced or unmarried. We could see a similar correlation when we asked about the actual relationship situation, with a higher proportion of those living with a spouse having only been with Roma partners in their life, compared to singles,

people living with a partner and those who had a partner but did not live with them. This correlation is also interesting from the point of view that, according to KSH data, Roma women have a lower rate of marriage and a higher rate of cohabitation compared to Hungarian or German ethnicities (KSH, 2015).

The Roma community also played a role in partner choice: examining the genders separately, non-Roma partner choice was significantly lower for Olah women and Boyash men than for Romungro. The reason for this may be that Olah and Boyash people preserved their language and traditions the most, so they are the ones who strive to marry within the group the most (Dupcsik, 2010; Szabóné Kármán, 2020). Romungro people have quit their own traditions and language the most, and they have been integrated into the Hungarian majority society the most (Kovai, 2017). Other factors may also play a role in this.

Settlement type had a significant effect on partner choice only for men. Non-Roma partner selection took place in Budapest in the largest proportion. In a more heterogeneous environment or where the given minority group is represented in a smaller proportion, there is a greater chance of forming a partnership or marriage with someone outside the group (Blau & Schwartz, 1984; Lőrincz, 2006; Song, 2016). Nearly half of the Roma people live in villages or large towns and only a small proportion of them live in Budapest (Pénzes et al., 2018), so Roma people living in the capital can encounter many more non-Roma people. The dominance of the capital in the formation of interethnic couples is also partially due to this. Furthermore, according to research examining Olah and Boyash gypsies, the importance of traditional customs is also decreasing in cities and the capital (Binder, 2008; Vajda, 2015).

In our analysis, educational attainment showed a correlation with the origin of the partners. The higher the educational level of the Roma respondents was, the more common it was that they had already had a non-Roma partner. In the decision tree, educational attainment was also shown to be the strongest grouping variable. Therefore, we consider our hypothesis that 'We hypothesise that higher educated Roma individuals choose a non-Roma partner in their lifetime in greater proportion than those with a lower level of education' accepted. This result is consistent with several studies on interethnic romantic relationships and marriage (Furtado & Theodoropoulos, 2011; Furtado, 2012; Song, 2016), according to which more highly educated members of minority groups marry members of the majority society more often than those with low education. One of Furtado's (2012) theories may explain the relationship between educational attainment and the partner's origin, according to which more educated members of minority groups, where there are many people with lower education who belong to their own ethnic group, enter into interethnic marriages more often than in those minority groups where there is a higher proportion of highly educated people. The educational attainment of the Roma population has improved in recent decades, but they still have a lower level of educational attainment compared to the majority society (KSH, 2016; Bernát, 2018). Thus, if Roma people with a high level of education want to choose a partner who matches their level of education, they have less chance of finding a partner from their own group.

The occupation of the respondents and the origin of the partners showed significant correlation, however, this correlation was typical only for women. The higher the status of the given job was, the higher the rate of choosing a non-Roma partner was. This may also

be due to the correlations obtained for educational attainment, because with a higher education, there are more chances to get a job that requires higher qualifications. An examination of the life course of Roma women with a degree may explain why this is more the case for women based on the data. Judit Szabóné Kármán (2009) shows that Roma women with a degree are often less valued by Roma men. The main tasks of Roma women are to provide for their husbands and families, which is hindered by their commitment to study and work. Women who continue their education are excluded from traditional, early marriage and are often left without a partner or choose a non-Roma partner. In a study by Judit Durst, Anna Fejős and Zsanna Nyírő (2016), Roma women graduates were very committed to their work, even after having children, in contrast to other first-generation graduates whose enthusiasm for work was reduced by having children. For Roma women, having children with a partner who would allow them to fulfil their potential in their work was an important consideration. In their study, Roma women with a degree were unable or unwilling to conform to the traditional Gypsy woman ideal, where housework and childcare would be their main tasks. In the case of these women, it is typical that in their romantic relationships, the man takes on a similar share of housework and childcare as they do (Durst et al., 2016). These findings suggest that the correlation between the status of occupation and the formation of interethnic romantic relationships for women is likely to be due to cultural background, and it is not the interethnic romantic relationship that results in higher occupational status.

We theorize that, as the educational attainment of the Roma population shows a rising trend, more and more interethnic relationships may be formed in Hungary in the future, which is both a measure and a facilitator of integration.

References

Babbie, E. (2003). *A társadalomtudományi munka gyakorlata [The practice of social science work].* Balassi.

Bernát, A. (2018). A magyarországi romák társadalmi integrációja a 2010-es években [The social integration of the Hungarian Roma in the 2010s]. In T. Kolosi & I. Gy. Tóth (Eds.), *Társadalmi Riport 2018 [Social Report 2018]* (pp. 144–165). TÁRKI.

Binder, M. (2008). Egy beás cigány közösség etnikai és nemzeti identitásáról [About the ethnic and national identity of a Boyash Gypsy community]. *Kultúra és Közösség, 12*(2), 5–16.

Blau, P. M. & Schwartz, J. E. (1984). *Crosscutting Social Circles: Testing A Macrostructural Theory of Intergroup Relations.* Transaction Publishers.

Brewer Jr., S. L., Brewer, H. J. & Kulik, K. S. (2018). Bullying Victimization in Schools: Why the Whole School, Whole Community, Whole Child Model Is Essential. *School Health, 88*(11), 794–802. https://doi.org/10.1111/josh.12686

Bukodi, E (2002). Ki kivel (nem) házasodik? A partnerszelekciós minták változása az egyéni életútban és a történeti időben [Who is (not) marrying whom? Changes of partner selection patterns in individual lives and historical time]. *Szociológiai Szemle, 12*(2), 28–58.

Çelikaksoy, A. (2016). Household formation behavior: An analysis of relative education and exogamy for descendants of immigrants in Sweden. *Ethnicities, 16*(4), 547–567. https://doi.org/10.1177/1468796816638397

Chan, F., Cheing, G., Chung Chan, J. Y., Rosenthal D., A. & Chronister J. (2006). Predicting employment outcomes of rehabilitation clients with orthopedic disabilities: A CHAID analysis. *Disability and Rehabilitation, 28*(5), 257–270. https://doi.org/10.1080/09638280500158307

Davis, K. (1941). Intermarriage in Caste Societies. *American Anthropologist 43*(3), 376–395. https://doi.org/10.1525/aa.1941.43.3.02a00030

Dés, F. (2021). Costs of social mobility in the context of intimate partner relationships. "It is really easy to be angry at someone who is in front of me and not at the system, which produces the inequalities between us". *Szociológiai Szemle, 31*(3), 51–73. https://doi.org/10.51624/SzocSzemle.2021.3.3

Dudás, P. (2018). Szegmentálás döntési fa alkalmazásával [Segmentation using a decision tree]. *Economica New, 9*(2), 49–54. https://doi.org/10.47282/ECONOMICA/2018/9/2/4133

Dupcsik, Cs. (2010). Mentalitások és kutatások [Mentalities and research]. *Esély,* 2, 73–82. http://hdl.handle.net/10831/78797

Durst, J., Fejős, A. & Nyírő, Zs. (2016). „Másoknak ez munka, nekem szívügyem" Az etnicitás szerepe a diplomás roma nők munka- család konstrukcióinak alakulásában ["For others it's a job, for me it's my life": The role of ethnicity in graduate Roma women's constructions of work and family]. *Socio.hu, 6*(2), 198–225. https://doi.org/10.18030/socio.hu.2016.2.198

Fu, V. K. (2001). Racial Intermarriage Pairings. *Demography, 38*(2), 147–159. https://doi.org/10.1353/dem.2001.0011

Fu, X. (2006). Impact of socioeconomic status on inter-racial mate selection and divorce. *The Social Science Journal, 43*(2), 239–258. https://doi.org/10.1016/j.soscij.2006.02.004

Fu, X. (2008). Interracial marriage and family socio-economic well-being: Equal status exchange or caste status exchange? *The Social Science Journal, 45*(1), 132–155. https://doi.org/10.1016/j.soscij.2007.12.008

Furtado, D. (2012). Human capital and interethnic marriage decisions. *Economic Inquiry, 50*(1), 82–93. https://doi.org/10.1111/j.1465-7295.2010.00345.x

Furtado, D. & Theodoropoulos, N. (2011). Interethnic marriage: A choice between ethnic and educational similarities. *Journal of Population Economics, 24*, 1257–1279. https://doi.org/10.1007/s00148-010-0319-7

Gamella, J. F. (2020). La expansión de los matrimonios mixtos entre los Gitanos/Calé de España. Análisis de un caso. In O. Magano & M. Mendes (Eds.), *Ciganos em portugal, espanha e brasil: analisando contextos, demandas e processos identitários* (pp. 197–212). ISCTE, Instituto Universitário de Lisboa.

Gamella, J. F. & Álvarez-Roldán, A. (2023). Breaking secular endogamy: The growth of inter-marriage among the *Gitanos/Calé* of Spain. *The History of the Family, 28*(3), 457–483. https://doi.org/10.1080/1081602X.2022.2159852

Görgőy, R. (2023). Kapaszkodók és buktatók: roma fiatalok iskolai előmenetelének főbb befolyásoló tényezői hátrányos helyzetű településeken, kvalitatív megközelítésben [Grips and pitfalls: a qualitative approach to the main factors influencing the educational progress of Roma youth in disadvantaged settlements]. *Kapocs, 6*(1), 112–131.

Gullickson, A. (2006). Education and Black-White Intermarriage. *Demography, 43*(4), 673–689. https://doi.org/10.1353/dem.2006.0033

Hámori, G. (2001). CHAID alapú döntési fák jellemzői [Characteristics of CHAID-based decision trees]. *Statisztikai Szemle, 79*(8), 703–710.

Hohmann-Marriott, B. E. & Amato, P. (2008). Relationship Quality in Interethnic Marriages and Cohabitations. *Social Forces, 87*(2), 825–855. https://doi.org/10.1353/sof.0.0151

Horner, B. S., Fireman, D. G. & Wang, W. E. (2010). The relation of student behavior, peer status, race, and gender to decisions about school discipline using CHAID decision trees and regression modeling. *Journal of School Psychology, 48*(2), 135–161. https://doi.org/10.1016/j.jsp.2009.12.001

Hou, F. & Myles, J. (2013). Interracial marriage and status-caste exchange in Canada and the United States. *Ethnic and Racial Studies, 36*(1), 75–96. https://doi.org/10.1080/01419870.2011.634505

Hwang, S., Saenz, R. & Aguirre, B. E. (1994). Structural and Individual Determinants of Outmarriage among Chinese-, Filipino-, and Japanese-Americans in California. *Sociological Inquiry, 64*(4), 396–414. https://doi.org/10.1111/j.1475-682X.1994.tb00399.x

Jacobs, J. & Labov, T. G. (2002). Gender Differentials in Intermarriage Among Sixteen Racial and Ethnic Groups. *Sociological Forum, 17*(4), 621–646. https://doi.org/10.1023/A:1021029507937

Kalmijn, M. (1993). Trends in Black/White Intermarriage. *Social Forces, 72*(1), 119–146. https://doi.org/10.1093/sf/72.1.119

Kemény, I. & Janky, B. (2003). A cigány nemzetiségi adatokról [About Gypsy nationality data]. *Kisebbségkutatás,12*(2), 309–315.

Kenrick, D. T., Groth, G. E., Trost, M. R. & Sadalla, E. K. (1993). Integrating evolutionary and social exchange perspectives on relationships: Effects of gender, self-appraisal, and involvement level on mate selection criteria. *Journal of Personality and Social Psychology, 64*(4), 951–969. https://doi.org/10.1037/0022-3514.64.6.951

Komolafe, C. & Komolafe, M. (2019). Párkapcsolati elégedettség az afrikai-magyar családokban [Relationship satisfaction in African–Hungarian families]. *Kapocs, 2*(3–4), 138–150.

Komolafe, C., Lukács, J. Á., Szabó, T. & Dávid, B. (2021). „A magyar azért nem jó, mert magyar. A cigány azért nem jó, mert túl cigány." Roma szakkollégiumi hallgatók párválasztással kapcsolatos elképzelései [Roma university students' ideas on the choice of partners]. *Különleges Bánásmód – Interdiszciplináris folyóirat, 7*(4), 31–43. https://doi.org/10.18458/KB.2021.4.31

Komolafe, C., Lukács J. Á., Szabó, T. & Dávid, B. (2022). A barátok szerepe a roma egyetemisták társadalmi mobilitásában és beilleszkedésében [The role of friends in the social mobility and integration of Roma students]. *Máltai Tanulmányok, 4*(2), 69–81.

Kovai, C. (2017). *A cigány–magyar különbségtétel és a rokonság [The Gypsy–Hungarian distinction and kinship]*. L'Harmattan.

KSH [Hungarian Central Statistical Office] (2011). 1.2 A népesség nemzetiség és nemek szerint. Nemzetiségi adatok [The population by nationality and gender. Nationality data]. http://www.ksh.hu/nepszamlalas/tablak_nemzetiseg

KSH [Hungarian Central Statistical Office] (2015). Statisztikai Tükör. A hazai nemzetiségek demográfiai jellemzői [Statistical Outlook. Demographic characteristics of domestic nationalities]. https://www.ksh.hu/docs/hun/xftp/stattukor/nemzetiseg_demografia.pdf

KSH [Hungarian Central Statistical Office] (2016). Mikrocenzus 2016. 12. Nemzetiségi adatok [Microcensus 2016. 12. Nationality data]. https://www.ksh.hu/docs/hun/xftp/idoszaki/mikrocenzus2016/mikrocenzus_2016_12.pdf

KSH [Hungarian Central Statistical Office] (2019). Munkaerőpiaci folyamatok, 2019. I–IV. negyedév [Labor market processes, 2019. I–IV. quarter] http://www.ksh.hu/docs/hun/xftp/idoszaki/mpf/mpf194/index.html

KSH [Hungarian Central Statistical Office] (2020). Egyedi adatkérés a nemzetiségi szempontból vegyes párkapcsolatokról, házasságokról [Individual data request on mixed relationships and marriages from the point of view of nationality] (20200420-89604)

Ladányi, J. & Szelényi, I. (2001). A roma etnicitás 'társadalmi konstrukciója' Bulgáriában, Magyarországon és Romániában a piaci átmenet korszakában [The 'social construction' of Roma ethnicity in Bulgaria, Hungary and Romania in the era of market transition]. *Szociológiai Szemle, 11*(4), 85–95.

Liang, Z. & Ito, N. (1999). Intermarriage of Asian Americans in the New York City Region: Contemporary Patterns and Future Prospects. *International Migration Rewiew, 33*(4), 876–900. https://doi.org/10.2307/2547356

Lichter, D. T., Qian, Z. & Tumin D. (2015). Whom Do Immigrants Marry? Emerging Patterns of Intermarriage and Integration in the United States. *The Annals of the American Academy of Political and Social Science, 662*(1), 57–78. https://doi.org/10.1177/0002716215594614

Lieberson, S. & Waters, M. C. (1988). *From Many Stands: Ethnic and Racial Groups in Contemporary America*. Russel Sage Foundation.

Lőrincz, L (2006). A vonzás szabályai. Hogyan választanak társat az emberek? [The rules of attraction: How do people choose a mate?] *Szociológiai Szemle,* (2), 96–110.

Meng, X. & Gregory, R. G. (2005). Intermarriage and Economic Assimilation of Immigrants. *Journal of Labor Economics, 23*(1), 135–176. https://doi.org/10.1086/425436

Messing, V. & Árendás, Zs. (2022). 'I was told the position has already been filled': Barriers to mobility and coping strategies of highly qualified Roma youth on their way to the business sector in Hungary. *Intersections. East European Journal of Society and Politics, 8*(2), 41–58. https://doi.org/10.17356/ieejsp.v8i2.863

Merton, R. K. (1941). Intermarriage and the Social Structure: Fact and Theory. *Psychiatry, 4*(3), 361–374. https://doi.org/10.1080/00332747.1941.11022354

Pári, A. & Komolafe, C. (2017). Afrikai apa és magyar anya – egy 2015-ös félvér kutatás ered-ményei [African father and Hungarian mother – results of a 2015 'half-blood' research]. *Kapocs, 16*(4), 17–26.

Pénzes, J., Tátrai, P. & Pásztor I. Z. (2018). A roma népesség területi megoszlásának változása Magyarországon az elmúlt évtizedekben [Changes in the Spatial Distribution of the Roma Population in Hungary During the Last Decades]. *Területi Statisztika, 58*(1), 3–26. https://doi.org/10.15196/TS580101

Rosenfeld, M. J. (2005). A Critique of Exchange Theory in Mate Selection. *American Journal of Sociology, 110*(5), 1284–1325. https://doi.org/10.1086/428441

Song, M. (2009). Is Intermarriage a Good Indicator of Integration? *Journal of Ethnic and Migration Studies, 35*(2), 331–348. https://doi.org/10.1080/13691830802586476

Song, M. (2016). Multiracial people and their partners in Britain: Extending the link between intermarriage and integration? *Ethnicities, 16*(4), 631–648. https://doi.org/10.1177/1468796816638399

Sut, N. & Simsek, O. (2011). Comparison of regression tree data mining methods for prediction of mortality in head injury. *Expert Systems with Applications, 38*(12), 15534–15539. https://doi.org/10.1016/j.eswa.2011.06.006

Szabó, L. (2022). Roma–nem roma vegyes párkapcsolatok és etnikai reprodukció a roma nemzetiségű nők körében Magyarországon, 1990, 2011. *Demográfia, 65*(2–3), 235–278. https://doi.org/10.21543/Dem.65.2-3.6

Szabóné Kármán, J. (2009). "Én olyan okos leszek, hogy nevemen szólítanak majd!" ['I will be so smart that they will call me by my name!'] In H. Andl & J. Boros (Eds.), *„Oktatás és Társadalom" Neveléstudományi Doktori Iskola Évkönyve 2009* (pp. 405–415). Pécsi Tudomány-egyetem.

Szabóné Kármán, J. (2020). A cigány/roma gyerekek, családok [Gypsy/Roma children and families]. In O. Endrődy, B. Svraka. & F. Lassú Zs. (Eds.), *Sokszínű pedagógia* (pp. 191–209). ELTE Eötvös Kiadó.

Szuhay, P. (1995). A magyarországi cigány etnikai csoportok kulturális integrációjáról és a nemzeti kultúra megalkotásáról [About the cultural integration of the Gypsy ethnic groups in Hungary and the creation of national culture]. *BUKSZ, 7*(3), 329–341.

Szuhay, P. (2005). The self-definition of Roma ethnic groups and their perception of other Roma groups, In I. Kemény (Ed.), *Roma of Hungary* (pp. 237–246). Atlantic Research and Publications, Inc.

Tóth, Á. & Vékás, J. (2008). Család és identitás. A vegyes házasság szerepe a magyarországi kisebbségi közösségek reprodukciójában [Family and identity: The role of mixed marriage in the reproduction of minority communities in Hungary]. *Demográfia, 51*(4), 329–355.

Vajda, M. (2015). *Változások az első generációs budapesti oláh cigányok kultúrájában – Romanipe ando baro foro [Changes in the culture of the first-generation Olah Gypsies in Budapest].* MA Thesis, Eötvös Loránd Tudományegyetem. http://hdl.handle.net/10831/58870

Wang, W. (2015, June 12). Interracial marriage: Who is 'marrying out'? *Pew Research Center,* http://pewrsr.ch/1C2VmlJ

Appendix

Table 2 Socio-demographic characteristics of respondents

		Amount	Percent
Gender	Men	249	46.5
	Women	286	53.5
Age	18–29	132	24.7
	30–39	111	20.7
	40–49	112	20.9
	50–59	85	15.9
	60 and above	95	17.8
Roma community	Hungarian Gypsy/Romungro	187	35.2
	Olah Gypsy/Vlach Roma	183	34.5
	Boyash	161	30.3
Marital status	Unmarried	115	21.6
	Married	205	38.5
	Lives in a cohabitation relationship	128	24.0
	Widow, widower	47	8.8
	Divorced	38	7.1
Actual relationship situation	Lives with spouse	203	38.2
	Lives with a partner	190	35.8
	Has a partner but does not live with them	18	3.4
	Has no partner	120	22.6
Educational attainment	Under 8 years of elementary	63	11.8
	8 years of elementary	295	55.1
	Secondary education, without high school diploma (vocational diploma)	140	26.2
	At least high school diploma	37	6.9

Table 2 *(contiued)*

		Amount	Percent
Economic activity	Active	300	57.4
	Inactive	175	33.5
	Unemployed	39	7.5
	Student	9	1.7
Occupation[1]	Intellectual	19	6.5
	Skilled	86	29.5
	Semi-skilled, unskilled	143	49.0
	Communal worker	44	15.1
Mobility by educational attainment [2]	Downward	23	4.6
	None	288	57.8
	Upward	187	37.6
Settlement types	Capital	17	3.2
	County seat, city with county rights	124	23.2
	City	195	36.4
	Town, village	199	37.2
Born in the settlement where they currently live?	Yes	274	51.2
	No	261	48.8

[1] among active respondents

[2] By comparing the educational attainment of respondents and their parents, we created a "Mobility by educational attainment" variable. Those with higher education than their parents were upwardly mobile, those with lower education than both parents were downwardly mobile, and those with the same education as one of their parents were stagnant (None).