

Greedy for who: unequal networks based on interracial marriage

by

Brett Kenzo Matsushita

B.A., The University of British Columbia, 2019

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

Master of Arts

in

The Faculty of Graduate and Postdoctoral Studies

(Sociology)

The University of British Columbia
(Vancouver)

December 2021

©Brett Kenzo Matsushita, 2021

The following individuals certify that they have read, and recommend to the Faculty of Graduate and Postdoctoral Studies for acceptance, the thesis entitled:

Greedy for who? Unequal networks based on interracial marriage

submitted by Brett Kenzo Matsushita in partial fulfilment of the requirements for

the degree of Master of Arts

in Sociology

Examining Committee:

Carrie Yodanis, Associate Professor, Sociology, University of British Columbia
Supervisor

Sean Lauer, Associate Professor, Sociology, University of British Columbia
Supervisory Committee Member

Abstract

How can race and marriage potentially alter our ethnic friendships? The idea of marriage being related to the construction of interdependent networks have been supported by concepts such as dyadic withdrawal and greedy institutions. After marriage, an individual's personal networks increasingly overlap with their partner. Interracial relationships have unique dynamics which could alter the strength of these relationships (Osuji, 2019). Through the use of the Ethnic Diversity Survey, I examined the relationship between co-ethnic friendship and interethnic marriage. Through the multi-layered analysis, it is revealed that interethnic marriages are related to a decrease in co-ethnic friendship composition. More importantly, visible minorities who are married to non-minorities saw a decrease in likelihood of having a co-ethnic friendship composition when compared to other groups; while non-minorities who are married to visible minorities saw an increase in likelihood of having a co-ethnic friendship composition. These findings reveal how current theoretical approaches such as greedy institutions are insufficient in understanding the interdependence of friendship networks.

Lay Summary

The goal of the study is to examine how marriage, interethnic marriage and interracial marriage are related to a change in ethnic friendships among individuals in Canada. The study adds to the literature by revealing how race and interracial marriage status matter in predicting a change in the distribution of ethnic friendships.

Preface

This dissertation is original, unpublished, independent work by the author, B. Matsushita.

Table of Contents

Abstract	iii
Lay Summary	iv
Preface	v
Table of Contents	vi
List of Tables	vii
1 Introduction	1
1.1 Marriage and ethnic friendship composition.....	2
1.2 Cross ethnic friendships and interethnic marriage.....	3
1.3 Visible minority networks and a tendency towards co-ethnic friendships.....	7
2 Methodology	10
2.1 Analytical Sample 1.....	11
2.2 Analytical Sample 2.....	15
2.3 Analytical Sample 3.....	18
2.4 Analysis.....	20
3 Results	22
3.1 All Individuals.....	22
3.2 Married individuals and ethnic similarity.....	25
3.3 Individuals in interracial marriages.....	30
4 Discussion and Conclusions	33
References.....	36

List of Tables

Table 2.1	Sample descriptive statistics among all individuals.....	11
Table 2.2	Sample descriptive statistics among all married people.....	16
Table 2.3	Sample descriptive statistics among all people in interethnic marriages.....	18
Table 3.1	Distributions of ethnic friendship composition among different groups.....	23
Table 3.2	Marriage and change in co-ethnic friends.....	23
Table 3.3	Logistic regression of co-ethnic friendships among all individuals.....	24
Table 3.4	Ethnic friendship composition among different marriage type.....	26
Table 3.5	Marriage and change in co-ethnic friends.....	27
Table 3.6	Logistic regression among married individuals.....	28
Table 3.7	Logistic regression among all people in interethnic marriages.....	31

1 Introduction

How do marriages affect our friendship networks? Marriage, as an institution, has been examined by academics (Amato, 2004; Cherlin, 2020; Cherlin, 2004; Gerstel & Sarkisian, 2006; Lauer and Yodanis, 2010). The literature on marriage has examined how marriage is associated with a person's social network. The concept of the greedy institution asserts that the individual freedoms are restricted by institutions such as the family (Coser, 1974). Not only do greedy institutions hold power over individual actions, but they are powerful in restricting the networks of individuals. Gerstel & Sarkisian (2006) have restated a case for marriage being a "greedy institution". They claim that married people have lower rates of contact with others. The concept of greedy marriage is supported by literature which observes the relation between marriage and social networks.

Marriage is a strong example of the severance of social ties caused by greedy institutions. A development of an intimate partnership is associated with interdependent networks (Kearns and Leonard, 2004; Milardo, 1987). The concept introduced above is also known as the dyadic withdrawal hypothesis. Through dyadic withdrawal, as couples become more intimate, they pool their resources, which leads to interdependent networks. However, can it be concluded that the same results will be present among interethnic and interracial couples? Is the network overlap among these couples equal? The social elements of race in marriages can affect the power dynamics of a relationship.

The number of interethnic marriages in Canada is increasing year over year. According to the Canadian National Household Survey conducted in 2011, interethnic marriages represent 4.6% of all marriages in Canada; most of which consist of a minority with a non-visible minority (Statistics Canada, 2016). This number is continually growing through each government mandated census, indicating that ethnicity becomes a less significant factor in heterogeneous contact. With the increasing number of interethnic marriages in Canada, it is important to observe how ethnic networks may differ for those who are in interethnic marriages compared to individuals in ethnically homogeneous marriages.

Do both individuals in the marriage have an equal change in ethnic friendship composition? With marriage, individuals are exposed to their partners' activities and networks which alter how everyone in the relationship allocates their time.

Examining the rates of co-ethnic friendship of people in interethnic unions is useful as it could hint at network inequality in the relationship. If one partner retains their co-ethnic friendships while the other partner loses them, it would imply that there is not an equal overlap of networks. By examining co-ethnic network differences among couples, it can reveal how the network outcomes of greedy institutions are a mechanism of inequality in relationships.

The project will examine if minorities and non-minorities friendship networks are associated with interethnic marriage. To assess the relationship between marriage, interethnic marriage and ethnic friendship diversity, I will be using survey data from the Ethnic Diversity Survey (EDS); a national survey that followed the 2001 Canadian census. With the findings of this study, the goal is to display how network outcomes of marriage may not be equal and could be transformed by social identities. Greedy marriages posits that our networks are highly individualized, but the potential shifts in friendship composition among individuals in interethnic marriages may show how friendship networks can be unequal.

1.1 Marriage and ethnic friendship composition

Research has found that marriages are related with increasing interdependent networks between couples; a theory also known as dyadic withdrawal (Kalmjin, 2003; Milardo, 1982; Stein et al., 1992; Sprecher et al., 2002; Johnson and Leslie, 1982). The effect of dyadic withdrawal is also present among non-married couples, indicating that marriage is not a precursor to interdependent networks, but intimate closeness between partners is. Although the dyadic withdrawal hypothesis is supported by existing studies (Kearns and Leonard, 2004), they largely apply to the individuals' strongest ties. This relationship is present among couples who are in the later stages of their life course. Older couples who each ranked their individual closest friends had a higher overlap, but lower ranked friendships remained distinct (Kalmjin, 2003). Indicating that the strength of the dyadic withdrawal hypothesis is based on the strength of the tie and the length of the relationship.

The interdependence of networks does not only relate to the dissolutions of friendships, but the formation of them as well. Through overlapping friendships individuals in intimate relationships lose some friendships but gain some access to their partners networks as well. Homogeneity plays a significant factor in the formation and retention of networks.

Most people's networks consist of individuals who share their social characteristics (McPherson, Smith-Lovin and Cook, 2001). Personal connections are likely to be homogeneous in terms of ethnicity, income and education, and for married individuals'. The homophily principle also suggests that an individuals' intimate partner will likely share the same social characteristics and networks as them. Taking homophily into account, dyadic withdrawal hints that marriage will be associated with a rise in co-ethnic networks.

Among friendships, the ranking of close friends compared to fewer close friendships are determined by homogeneity as well. Individuals ranked people that share the same ethnic ancestry as themselves as being closer friends than those who are of different ethnic groups (Kao and Joyner, 2004; Schneider, Dixon and Udvari, 2007). Following the principle of dyadic withdrawal, an increase in co-ethnic composition among married individuals is expected. Marriage is associated with the dissolution of weak friendships, and cross-ethnic friendships are rated as weaker. The reviewed concepts of ethnic homophily suggest that the relationship between marriage and ethnic friendship diversity is ambiguous. Given the reviewed literature I pose a research question with a hypothesis regarding the relationship between marriage and co-ethnic friendship composition:

Research Question 1

Is marriage associated with a change in ethnic friendship composition?

Hypothesis 1: Individuals in marriages will report more co-ethnic friendships compared to individuals who are not married.

1.2 Cross-ethnic friendships and interethnic marriage.

Are social identities related to a shift in the composition of ethnic friendships? Interethnic marriages are conceptualized as a sign of eroding perceived differences among ethnic groups; the number of interethnic marriages has also increased over time (Qian & Lichter, 2007). Close interethnic contact among individuals is theorized as signs of harmony among ethnic groups, thus reducing racism and its effects in a society (Qian & Lichter, 2007). Although the rates of interethnic marriages are increasing, it does not mean that the couple becomes *colourless*. Social elements such as differences in race and culture affect the dynamic of intimate interethnic relationships (Osuji, 2019).

Although the assumption behind interethnic marriage is ethnic and racial harmony, the dynamics of interethnic unions are still shaped by the salience of racial and ethnic differences. The salience of racial difference is felt by those in interethnic unions as well, as individuals in interracial marriages report that they feel that others perceive their relationship negatively (Lewis, 2014); which support the assertion that ethnicity affects the dynamics of intimate relationships. Literature which examines the relationship between marriage and friendship networks has failed to investigate how race and ethnicity influence the association.

Individuals in interethnic marriages are important to observe due to the heterogeneous nature of the union. People in intimate interethnic partnerships bring a set of norms, traditions and practices that differ from their partner (Yodanis and Lauer, 2017). Individuals tend to seek out homogeneous networks, whether it be expressed in racial/ethnic similarities, or educational similarities. Interethnic marriages in contrast to co-ethnic marriages break down the traditional homogeneous networks by having individuals from two different cultural belongings and networks, to join in an intimate partnership.

Scholarly work that examines interethnic marriages show conflicting results on the relationship between ethnic friendship composition and marriage. There are studies that support the argument people in interethnic marriages have an interest in exploring cross-ethnic networks (Bystydzieński, 2011; Yodanis and Lauer, 2017). The attractions to the differences in cultures are one of the key motivators towards exploring cross-ethnic friendships. Yodanis and Lauer (2017) found that individuals who are in interethnic marriages found partners not based on cultural similarities but based cultural differences. Interethnic marriages are a way to express cultural identities that are not their own. Meaning that interethnic relationships act as mechanisms which allow for the exploration of other ethnic cultures by way of intimate partnerships. Individuals in interethnic relationships could be more inclined to participate in activities that are outside of their own ethnic ancestry. Couples that come from different cultures give an opportunity for their partner to express “hybrid” identities which allow individuals to explore their partners' cultures (Bystydzieński, 2011). Although these articles reveal the interest that interethnic couples have in participating in their partners' culture, it does not explain how these affect their ethnic friendship composition.

The construction of interethnic friendships is not only determined by the desire to explore different cultures.

Factors such as structural availability can construct an environment where individuals are more prone to have interethnic friendships. Currani, Matheson and Vega-Redono (2016) found that minorities in areas that did not have many individuals who shared the same ethnic ancestry tended to intermingle with other ethnic groups. Demographic factors such as the population size of a specific ethnic group can stream individuals towards a diverse ethnic friendship composition. Prior interethnic contact is also a strong predictor of entering an interethnic marriage (Clark-Ibanez and Felmler, 2004; Levin et al., 2007). The access to ethnic minority network development that low population minority groups have effects on who they choose to marry, and the levels of their ethnic friendship composition as well.

Ethnic homophily suggests that most individuals will marry someone who shares the same ethnic ancestry; and through dyadic withdrawal, their friendships will become more co-ethnic. How well do these theories apply to interethnic couples? Interethnic couples represent a level of heterogeneity and do not resemble the level of homogeneity present in co-ethnic intimate partnerships. Homophily is not applicable and thus forces us to reconsider how the ethnic friendship composition might be changed through interethnic marriage.

Individuals in ethnically non-homogamous marriages are more likely to have ethnically diverse networks. Individuals who are in intimate interethnic unions had friendships that were considered to be ethnically diverse (Clark-Ibanez and Felmler, 2004; Levin, Taylor and Caudle, 2007; Van Zantvliet and Kalmjin, 2013). Interethnic contact prior to marriage was important in facilitating post-marriage ethnic friendship diversity. With the use of longitudinal studies, scholars have found that having diverse cross-ethnic friendships during youth and adolescence were correlated with entering an interethnic union (Van Zantvliet and Kalmjin, 2003). The findings suggest that those who are interested in interethnic unions, have pre-established cross-ethnic friendships. Although the listed studies have found a relationship between ethnic friendship diversity and interethnic union, their studies focused on how previous cross-ethnic ties influenced the odds that an individual will enter an intimate interethnic union. Previous studies have failed to examine how intimate relationships are related to a change in ethnic friendship composition.

Studies which measure the ethnic diversity of friendships encounter a few issues.

The main issue being that the samples in the studies on ethnic friendship diversity, primarily represent individuals of school aged and college age youth (Clark-Ibanez and Felmler, 2004; Kao and Joyner, 2004). Although effective in capturing ethnic friendship diversity at youth, they are not an exact predictor of friends at present time among adults. Many individuals in these age ranges are often unmarried, nor are in long term committed partnerships. Literature shows that the ethnic diversity of friendships are prone to shifting overtime, when observing structural variables (Lauer and Yan, 2021). They also suggest that visible minorities who are in interethnic unions already have established diverse ethnic friendship networks. Networks become highly interdependent and change individual networks over the course of the marriage (Milardo, 1982). Is it possible for individuals to lose co-ethnic friendships after entering an interethnic marriage? These questions have not been addressed in the literature on interethnic unions and cross-ethnic friendships.

Interethnic identity may be a spurious variable which relates to the propensity of individuals to seek out interethnic contact. Leszczensky and Pink (2019) reveal that ethnic identity is key in shaping interethnic networks. Those who place a strong importance on their ethnic identity seek others who have a strong sense of ethnic identity. Ethnic homophily in this case is driven by the importance one holds in their ethnic identity. Considering how interethnic couples are driven by a desire of exploring other cultures (Yodanis, Lauer and Ota, 2012; Yodanis and Lauer, 2017), those who are in interethnic marriages place a lower value on their own ethnic identity and are more open to exploring cross-ethnic friendships. Given the implication that interethnic marriages are associated with a diversity in cross-ethnic exploration I pose a research question and hypothesis in relation to the reviewed literature:

Research Question 2

Are individuals in interethnic marriages more or less likely to have co-ethnic friendships compared to individuals in co-ethnic marriages?*Hypothesis 2a:* Individuals in ethnically homogenous marriages will report more co-ethnic friendships compared to individuals who are in interethnic marriage.

Hypothesis 2b.: Individuals in ethnically homogenous marriages will report more co-ethnic friendships compared to individuals who have partners they share some ethnic ancestry with.

1.3 Visible minority networks and a tendency towards co-ethnic friendships

With the discussion of interethnic couples focusing on the differences of cultures between people, the question as to whether racial differences matter arise. The importance of networks, and the diversity of networks among visible minorities differ from non-minorities. The strength and importance of co-ethnic friendships and ties seem to especially matter for visible minorities. Individuals who are visible minorities identified their closest friends as those who shared their ethnicity more often than non-visible minority groups (Kao and Joyner, 2004). Not only are co-ethnic ties the closest, but they tend to be the most secure. Friendships that are categorized as co-ethnic are likely to survive through time compared to ethnically diverse friendships (Aboud, Mendelson and Purdy, 2003). The value of co-ethnic ties also extends beyond friendships. Co-ethnic friendships are associated with the well-being of visible minorities and are buffers of stress that come from racial discrimination (Tegegne and Glanville, 2019; Arat and Bigili, 2021). The strength of co-ethnic ties and the value brought to them to visible minorities indicate how important they are to visible minority well-being.

The seeking of the same background groups among racial minorities are present even in settings where the proportion of individuals who share the same ethnicity is low (Mollica, Gray and Trevino, 2003). Even when controlled for social and cultural factors, individuals still tended to congregate based on ethnic similarity (Smith, Maas and van Tubergen, 2014). These findings display that visible minorities flock to co-ethnic groupings even in ethnically diverse spaces. Suggesting that it could be less likely for new immigrant visible minority groups (especially migrants) to marry outside of their ethnic groups due to low opportunities of contact. Not only do visible minorities seek out others who share the same ethnic group as them, but they have stronger connections with individuals who share the same ethnicity. The findings above suggest that visible minorities actively seek out ethnically homogeneous networks.

Interethnic couples that consist of a minority and a non-minority often have dimensions of racial power which alter the shape of the relationships. Decision and the allocation of chores in the relationship among interracial couples are affected by the racial status of the couples (Sweeney, 2008; Grossbard, Nadal and Modina, 2014). Often paired with social dynamics such as ethnicity, heterosexual interracial relationships that involve a White individual have imbalances in their relationships. Steinbugler (2012) shows that the dynamics of their relationships cannot be separated from their racial identities.

Couples engage in “race work” in which they manage their racial differences through colour-blind ideologies and racially conscious attitudes. These attempts at negotiating realities of race do not seem to lead to racial equality in intimate relationships. Experiences of racism and the nature of racialized desire among minority and non-minority couples at times shaped the interest in cultural boundary crossing in relationships (Nemoto, 2009; Osuji, 2019). The apathetic attitude towards their partners' culture and friendships are present among relationships that involve Asian-White relationships as well (Nemoto, 2009). Among couples that consisted of a White man and Asian woman, these relationships formed not as a basis of racial progress and multiculturalism, but by conceptualizing of Asian women as representing hyper femininity. In Black-White interracial relationships, Black individuals were subjected to racism from the family members of their white partner (Osuji, 2019). Unlike the picture of acceptance and integration which scholars paint as being a benefit of interethnic marriage, inequalities of race still prevail in interethnic marriages.

The lack of ethnic network diversity among interracial couples are not always related to conflict. Osuji's (2019) study on Black-White couples' found that Black partners of these relationships emphasized the importance of maintaining their own ethnic networks. Ethnic networks are maintained as a form of maintaining cultural identity. The importance of preserving one's culture is present among other minority groups in interethnic relationships as well. Rather than integrating and mixing each other's cultures, some couples would use cultural markers such as language to define their respectful differences in their relationships (Yodanis and Lauer, 2017). The power imbalances enacted in interethnic and interracial relationships, paired with the desire for individuals to maintain their culture may conflict in the production of ethnic friendship diversity. The research on the dynamics of interethnic relationships suggest that individual networks do not automatically diversify after entering an interethnic marriage.

Co-ethnic ties are beneficial, especially among visible minorities. Visible minority networks are important in disseminating information which may not be available otherwise (Larson and Lewis, 2017). Close ethnic ties also act as buffers which help against discrimination among visible minorities (Tegegne and Glanville, 2018; Arat and Bigili, 2021). Having fewer co-ethnic ties for individuals is problematic as they could potentially lose support systems and ways to deal with ethnic discrimination. Meaning that the interdependence of networks through marriage may be harmful for visible minorities.

Interestingly, even when co-ethnic friendships experienced a form of conflict, they were more likely to survive a friendship when compared to interethnic friendships (Schneider, Dixon and Udvari, 2007); indicating shared ethnicity is key to maintaining established networks.

Within interethnic marriages and relationships, race cannot be ignored as a category of analysis due to its association with power. The direction of the literature suggests that dimensions of power in interracial relationships shape an individual's ethnic friendship composition. How ethnic networks are shaped among visible minorities are different compared to non-minorities as well. Visible minorities are more likely to have ethnic friendships that are largely co-ethnic. Visible minorities married to non-minorities are especially interesting to examine as they break the traditional lines of homophily. The research on networks among visible minorities is also examined through the lens of immigration. However, in Canada there are many visible minorities who are not immigrants but were born in Canada. Analysis of immigrant network development does not work and may hide the effects of how racialized status in general affects ethnic friendship networks. To observe the possible racial dimensions of networks in interethnic marriages I present the last research question and hypothesis:

Research Question 3: Is interracial marriage associated with a change in likelihood of having co-ethnic friendships?

Through asking this research question, I aim to investigate how the salience of racial differences in intimate relationships may be associated with a change in ethnic friendship composition.

Through the literature, it is suggested that visible minorities to non-minority interracial marriages are associated with unequal relations. These findings inform the final hypothesis of the study.

Hypothesis 3: Visible minorities married to a non-minority will have a lower likelihood of reporting co-ethnic friendships compared to other interethnic marriage pairings.

2 Methodology

For this study, I will be analyzing survey data from the Ethnic Diversity Survey (EDS). The EDS is a survey administered during the months of April 2002- August 2002, by Statistics Canada. Respondents of the EDS were chosen from respondents of the 2001 Canadian census (Statistics Canada, 2003). The goal of the EDS is to understand how people's ethnic background affects "their participation in the social, economic and cultural life of Canada." And "better understand how Canadians of different ethnic backgrounds interpret and report their ethnicity." (Statistics Canada, 2003, pg.5). The exploration of the topics provides the necessary variables to measure and examine an individual's friendship network diversity, and how it is affected by their ethnicity.

The themes that the EDS covered in their survey is relevant to the proposed study. A key theme covered in the EDS "Family background and social networks". This theme in the EDS explores the individual's ethnic social networks, family background and an individual's ethnic identity. The key dependent variable of the study is co-ethnic friendship composition. The unit of analysis for this study are all individuals, all married people and all people in an interethnic marriage. Analyzing these groups is the appropriate method for the study as I am looking for the relations between one's marriage, marriage type and network size.

The analysis will be separated into three sets of models. Each set of models will be used to explore the three research questions and hypotheses which arose from the literature review. First a logistic regression which includes all individuals will be utilized to determine if marriage is related to a change in odds of having a co-ethnic friendship group. The second set of models will examine how a respondents level of similarity in ethnic ancestry to their spouse is related to their odds of having a co-ethnic friendship composition. The final set of models will measure how different interracial marriage pairing types are related with the odds of having a co-ethnic friendship composition. The survey I will be using for the study is a public use micro file (PUMF) version of the EDS. The analytical sample of all individuals included an n of 34,189. The 2nd analysis which includes all married individuals has an n of 18,744. The final analysis which has all people in interethnic marriages has an n of 14,405.

2.1 Analytical Sample 1

The first analytical sample includes all individuals. After listwise deletion, the total analytical sample for the first analysis is 33,946 respondents. Below (Table 2.1), is a table which describes some descriptive statistics among the sample.

Table 2.1

Sample descriptive statistics among all individuals

(N=34,189)

Variable Name	Definition/Coding	Proportion/Mean
<i>Marriage</i>		
Married/cohabiting	Dummy variable (1=yes, 0=no)	.576
<i>Friendship Diversity</i>		
Same ancestry friends	Ordinal scale in 5 levels 1= all, ... 5= none	3.385
Same ancestry friends at age 15	Ordinal scale in 5 levels 1= all, ... 5= none	3.077
Co-ethnic friendship group	Dummy variable (1= yes, 0=no)	0.29
<i>Visible Minority</i>		
Visible Minority	Dummy variable (1=yes, 0=no)	0.218
<i>Other Control Variables</i>		
Ethnic Identity	Dummy variable (1=yes, 0=no)	0.527

Variable Name	Definition/Coding	Proportion/Mean
Location		
Non-CMA's	Reference category	0.274
Montreal	Dummy variable (1= yes, 0=no)	0.099
Toronto	Dummy variable (1=yes, 0=no)	0.217
Vancouver	Dummy variable (1=yes, 0=no)	0.091
Other CMA's (census metropolitan area)	Dummy variable (1=yes, 0=no)	.319
Education		
Less than high school	Reference category	0.222
Highschool	Dummy variable (1= yes, 0=no)	0.215
Some college	Dummy variable (1=yes, 0=no)	0.141
College/University Degree	Dummy variable (1=yes, 0=no)	0.421
Gender	Dummy variable (1= male, 0= female)	0.525
Age	Ordinal scale (1= 18-24, 2=25-29, 3= 30-34, 7= 65+).	4.82

Measures

Co-ethnic friendships

The key variable of interest measures the diversity of a respondent's friendship composition at the time of the survey. The EDS specifically examines the level of ethnic friendship diversity that an individual holds.

The EDS asks respondents, “What was the ethnic or cultural background of your ancestors?” followed by the question, “As far as you know, how many of your friends have [respondent ancestry]?” Possible responses included (1) all of them, (2) most of them, (3) about half of them, (4) a few of them, and (5) none of them. Lower scores indicate more co-ethnic friendship networks. For the purpose of modeling, I also created a dummy variable where the results “all of them” and “most of them” are defined as co-ethnic. Referencing other literature which examine co-ethnic friendships, it seemed to be the best conceptual fit (Lauer and Yan, 2021). The newly coded variable of co-ethnic friendships codes having co-ethnic friendships as 1, while not having a co-ethnic friendship composition will be coded as 0.

Ethnic friendship composition at age 15

A question similar to the ethnic friendship composition asks, “Up until you were age 15, how many of your friends had [respondent ancestry]?” using the same response set as above. Possible responses included (1) all of them, (2) most of them, (3) about half of them, (4) a few of them, and (5) none of them. The variable will be used as a means of robustness check in the analysis. Literature which examines ethnic friendship composition among individuals posits that ethnic friendship diversity at youth can explain for respondents current ethnic friendship composition (Clark-Ibanez and Felmler, 2014; Lauer and Yan, 2021). Through adding this control variable, it can be observed how much of current ethnic friendship composition can be attributed through interethnic marriage.

Marriage

This variable is used to measure the intimate relationships of respondents. The variable which measures marital status examines whether respondents fit into one of several categories which include: *married, cohabiting, single, divorced and widowed*. To distinguish those who are currently in intimate relationships from those who are not a dichotomous variable which measures whether the respondent is married and/or cohabiting (not married=0, married =1). As cohabiting individuals are legally recognized as married in Canada, I grouped these respondents into the *married* category.

Visible minority group

Another variable of interest measures whether an individual identifies as a visible minority or not.

One of the research questions of the study examines how visible minorities' friendship diversity are related to ethnic networks. Visible minorities in the EDS survey are defined “as ‘persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour’”. Possible responses to the question included: (1) Not in a visible minority, (2) Chinese, (3) South Asian, (4) Black, (5) Filipino etc. For my analysis I broke down the visible minority variable into a dummy variable. With (0) not a visible minority, (1) A visible minority.

Importance of Ethnic Identity

The importance respondents placed on ethnic identity has been identified in the literature as a key variable. Importance of ethnic identity affects the formation of ethnically homogeneous friendships. The variable is measured in an ordinal scale: (1) Not important at all, (2) Somewhat important, (3) Neutral, (4) Important (5) Very important. I separate the variable into a dummy variable, where low identifiers (responses which are neutral and below) are categorized as low identifiers, and respondents who answered with (important and very important) are categorized into high identifiers.

Other Control Variables

The following variables that are identified as control variables are gender, age, education. Gender is measured dichotomously, age is measured through an ordinal scale in small uneven increments: (1) 15-17 years, (2) 18-24 years, (3) 25-29 years, (4) 30-34 years, (5) 35-44 years, (6) 45-54 years, (7) 55-64 years, (8) 65+ years. Education is measured in nominal ways I created multiple dummy variables with no education as a referent variable. Lastly, Urbanity measures whether a respondent lives in what is defined as a census metropolitan area. Table 1 displays the distribution of the variables used.

2.2 Analytical Sample 2

The second analytical sample includes all individuals in interethnic marriages (cohabiting couples are included in this sample as well). Below (Table 2.2), is a table which displays the descriptive statistics among the sample. In the 2nd analytical sample, the variable which measures the respondents ethnic similarity to their spouse is added in.

Interethnic marriage

The secondary key variable of the dissertation observes the ethnic homogeneity of the respondent's spouse. The survey question from the EDS asks the similarity of ethnicity the respondent has to their spouse. Possible responses included (1) Ethnic ancestry or ancestry completely the same, (2) Ethnic ancestry or ethnic ancestries partly the same, (3) Ethnic ancestry or ancestries different. As the responses contain nominal differences, I changed the former variables to three separate dummy variables.

Table 2.2

Sample descriptive statistics among all married people
(N=18,744)

Variable Name	Definition/Coding	Proportion/Mean
<i>Friendship Diversity</i>		
Same ancestry friends	Ordinal scale in 5 levels 1= all, ... 5= none	3.308
Same ancestry friends at age 15	Ordinal scale in 5 levels 1= all, ... 5= none	2.900
Co-ethnic friendship group	Dummy variable (1= yes, 0=no)	0.318
<i>Marriage Type</i>		
Ethnic ancestry same as spouse	Dummy variable (1=yes, 0=no)	0.282
Some ethnic ancestry shared with spouse	Dummy variable (1=yes, 0=no)	0.213
Ethnic ancestry different from spouse	Dummy variable (1=yes, 0=no)	0.506

Variable Name	Definition/Coding	Proportion/Mean
<i>Spouse visible minority status</i>		
Spouse vismin status	Dummy variable (1=yes, 0=no)	0.157
<i>Other Control Variables</i>		
Location		
Non-CMA's	Reference category	.305
Montreal	Dummy variable (1= yes, 0=no)	0.0882
Toronto	Dummy variable (1=yes, 0=no)	0.204
Vancouver	Dummy variable (1=yes, 0=no)	0.084
Other CMA's (census metropolitan area)	Dummy variable (1=yes, 0=no)	.319
Education		
Less than high school	Reference category	0.177
Highschool	Dummy variable (1= yes, 0=no)	0.225
Some college	Dummy variable (1=yes, 0=no)	0.112
Business degree or vocational degree	Dummy variable (1=yes, 0=no)	0.212
College/University Degree	Dummy variable (1=yes, 0=no)	0.274

Variable Name	Definition/Coding	Proportion/Mean
Gender	Dummy variable (1= male, 0= female)	0.527
Age	Ordinal scale (1= 18-24, 2=25-29, 3= 30-34, 7= 65+).	5.69

2.3 Analytical Sample 3

The final analytical sample includes all individuals in interethnic marriages. Below (Table 2.3), is a table which describes some descriptive statistics of the final analytical sample. In the final analytical sample, I remove the ethnic similarity to the spouse and replace it with a variable which observes the interethnic pairing type.

Interethnic pairing type

Distinct from the interethnic marriage variable, I aim to use this variable to compare the types of interethnic pairings. These are separated through the respondents' visible minority status, and the respondents' spouses' minority status. This variable with four categories will be separated through dummy variables, where 1= if conditions are met. (1) Non-visible respondent married to a non-visible (2) Non-visible respondent married to a visible minority (3) Visible minority respondent married to a non-visible. (4) Visible minority respondent married to a visible minority. For the logistic regression, I used the first value as the referent variable, and organized other cases as dummy variables. I used the variables of respondent visible minority status and spouse's visible minority status to construct the variable.

Table 2.3

Sample descriptive statistics among all people in interethnic marriages
(N=13,331)

Variable Name	Definition/Coding	Proportion/Mean
<i>Friendship Diversity</i>		

Variable Name	Definition/Coding	Proportion/Mean
Same ancestry friends	Ordinal scale in 5 levels 1= all, ... 5= none	3.648
Same ancestry friends at age 15	Ordinal scale in 5 levels 1= all, ... 5= none	3.320
Co-ethnic friendship group	Dummy variable (1= yes, 0=no)	.205
<i>Marriage Type</i>		
Some ethnic ancestry shared with spouse	Dummy variable (1=yes, 0=no)	0.297
Ethnic ancestry different from spouse	Dummy variable (1=yes, 0=no)	0.703
<i>Spouse visible minority status</i>		
Spouse vismin status	Dummy variable (1=yes, 0=no)	0.069
<i>Other Control Variables</i>		
Location		
Non-CMA's	Reference category	.348
Montreal	Dummy variable (1= yes, 0=no)	0.077
Toronto	Dummy variable (1=yes, 0=no)	.161
Vancouver	Dummy variable (1=yes, 0=no)	.0713
Other CMA's (census metropolitan area)	Dummy variable (1=yes, 0=no)	.343

Variable Name	Definition/Coding	Proportion/Mean
Education		
Less than high school	Reference category	0.153
Highschool	Dummy variable (1= yes, 0=no)	0.226
Some college	Dummy variable (1=yes, 0=no)	.121
Business degree or vocational degree	Dummy variable (1=yes, 0=no)	0.225
College/University Degree	Dummy variable (1=yes, 0=no)	0.274
Gender	Dummy variable (1= male, 0= female)	.514
Age	Ordinal scale (1= 18-24, 2=25-29, 3= 30-34, 7= 65+).	5.623

2.4 Analysis

The analysis examines the relationship between current friendship composition and the type of marriage that an individual is in. First, I examine the bivariate relationship of respondents' ethnic ancestry compared to their spouse and current ethnic friendship composition. Then I generated multivariate models which examine co-ethnic friendships while controlling for other factors such as respondent ethnic ancestry compared to spouse, visible minority status, and friendship composition at the age of 15 and demographic variables. I use logistic regression to examine the odds of a respondents' co-ethnic friendship with an equation of the form:

$$\log(p'/1-p'i) = B + B_1X_{1i} + B_2X_{2i}$$

Where p' represents a co-ethnic friendship group for the person i , X_{1i} represents the control variables for the i th person, X_{2i} represents the marriage related variables for the i th person.

Longitudinal Robustness Test

To check for robustness of my findings I use the *change variable* strategy and *regressor variable* strategy as outlined by Allison (1990). The change variable approach uses a form of fixed effects modelling to incorporate friendship diversity at age 15 into a standard OLS regression form.

$$\Delta Y' = B + B_1 X_{1i} + B_2 X_{2i} + B_3 X_{3i}$$

Where $\Delta Y'$ represents the change in ethnic friendship composition since age 15 for person i , X_{1i} represents the control variables for the i th person, X_{2i} represents the marriage related variables for the i th person, X_{3i} represents the transition related variables for the i th person. A three-step approach is taken for the analysis. First, I ran a logistic regression among all individuals who took the survey after listwise deletion ($n=33,946$). The purpose of the first model is to observe the relationship between marriage and ethnic friendship composition. Then I distill the analysis to a population which only includes married individuals. Through separating key variable groups by their ethnicity compared to their spouse, this allows for the 2nd research question to be observed, whether being in an interethnic marriage can affect the odds of one having co-ethnic friendships ($n=18,634$). Then through the final model I will distill the sample down to all individuals in an interethnic marriage ($n=11,842$). In the final sample I aim to compare across different forms of interethnic unions (non-minority pairings against: (1) minority non-minority pairings (2) minority to minority pairing (3) non-minority to minority pairing). The purpose of the final models is to discern whether the *interracial* aspect of white vs. non-white relationships affect the dynamics of ethnic friendship composition among individuals.

3 Results

3.1 All Individuals

Table 3.1 displays the distribution of ethnic friendship composition among all individuals and all married people. Of non-married individuals, 6.7 percent reported that all of their friends were of the same ethnic ancestry, and 19.5 percent reported that none of their friends shared the same ethnic ancestry. The most common response across all groups was that they reported “a few” friends who shared the same ethnic ancestry. Most individuals answer either “a few” or “most” on the question which measures their ethnic friendship diversity; this suggests that most respondents either saw their friendship networks as being cross-ethnic or co-ethnic. To capture this binary, a dummy variable which measures if a respondent network is categorized as co-ethnic network or not was created. Responses to the question on friendship ethnic network diversity which included “a few” or “none” were categorized as co-ethnic.

The distribution of married individuals’ ethnic friendship composition was similar to non-married individuals (married people make up half of the total sample). The current results from Table 4 reject the hypothesis that marriage is not related to a change in co-ethnic friendships. Hypothesis 1 posits that: *The likelihood of an individual having more or less co-ethnic friendship composition will not be associated with marriage.* The rejection of hypothesis 1 suggests that marriage is not associated with a change in ethnic friendship composition. Distributions of co-ethnic friendship composition are consistent across all marital status groups when a cross-tabulation was done.

To assess the robustness of findings, I compared the levels of change in co-ethnic friendship composition across different groups (refer to Table 3.2). This was accomplished by subtracting the means of current ethnic friendships composition to reported ethnic friendship composition at the age of 15 for all individuals, non-married people and married individuals. After accounting for youth co-ethnic friendships married individuals had a .437 negative change in co-ethnic friendships, while non-married individuals had change in co-ethnic friendships which was .191. These results show that marriage is associated with a decrease in fostering of co-ethnic friendships.

Although the level of strength in change of reported ethnic friendship composition differs, the direction of change is consistent among both groups, adding further evidence to reject hypothesis 1.

Table 3.1
Distributions of ethnic friendship composition among different group
(N=33,946)

	All	Most	Half	A Few	None	Mean	Co-Ethnic
All people	.116	.251	.148	.330	.156	3.158	.367
Non-Married People	.102	.229	.149	.350	.171	3.26	.331
All Married People	.126	.266	.147	.316	.146	3.091	.391

Table 3.2
Marriage and change in co-ethnic friends
(N=33,946)

	Age 15	Current	Within-group change
All people	2.816	3.158	+0.342
Non-married people	3.003	3.257	+0.254
All married people	2.691	3.091	+0.400

Through the multivariate model, the strength and significance of the previous two tables were assessed. In Model 1 (Refer to Table 3.3), a logistic regression is run (co-ethnic friendships as the dependent variable) with control variables; which include education, location, age and gender. All control variables had a significant relationship with the likelihood of having a co-ethnic friendship composition. In Model 2 the key independent variable of marriage is introduced. Being married increases the likelihood that a respondent would have an ethnic friendship composition that is categorized as co-ethnic (odds ratio of 1.193). The relationship is statistically significant in Model 2. Although the findings of the relationship between marriage and co-ethnic friendship composition are statistically significant, when robustness checks are introduced, the association loses its significance.

The variable which measures ethnic friendship composition at age 15 is measured in Model 3 as a form of a robustness check, which is an application of Allison's (1990) regressor strategy. When the control variable in Model 3 is added, the association of marriage with the likelihood of having a co-ethnic friendship loses statistical significance. The coefficient of the logit also decreases to near 0. The loss of significance of the marriage variable paired with the high strength and statistical significance of the variable: ethnic friendship composition at the age of 15 (odds ratio of .275) implies that it explains most of the co-ethnic friendship change. The findings of Model 3 are supported by the inclusion of the change variable strategy in Model 4. With the addition of the latter two models, hypothesis 1: (The likelihood of an individual having co-ethnic friendship composition will not be associated with marriage) is supported.

Table 3.3
Logistic regression of co-ethnic friendships among all individuals
(N=33,946)

	Model 1	Model 2	Model 3	Model 4
Gender	0	0	.045	0
	(.035)	(.035)	(.043)	(.008)
Education				
Less than high school (referent)				
Education				
Less than high school (referent)				
Highschool diploma	-.293***	-.293***	-.215***	-.067***
	(.051)	(.051)	(.064)	(.011)
Some college or university	-.423***	-.423***	-.309***	-.094***
	(.063)	(.063)	(.076)	(.013)
Business or vocational degree	-.244***	-.244***	-.253***	-.056***
	(.054)	(.054)	(.064)	(.012)
4 year college or university degree	-.4***	-.4***	-.478***	-.09***
	(.052)	(.052)	(.063)	(.011)
Census Metropolitan Area (CMA)				
Non-CMA Area (referent)				

	Model 1	Model 2	Model 3	Model 4
Toronto	-.095**	-.095**	-.502***	-.021**
	(.045)	(.045)	(.059)	(.01)
Montreal	.656***	.656***	.236***	.154***
	(.059)	(.059)	(.073)	(.014)
Vancouver	-.111*	-.111*	-.359***	-.025*
	(.061)	(.061)	(.083)	(.013)
CMA Other	-.314***	-.314***	-.328***	-.067***
	(.045)	(.045)	(.057)	(.01)
Age	.07***	.07***	-.074***	.015***
	(.01)	(.01)	(.012)	(.002)
Ethnic importance	.755***	.755***	.255***	.166***
	(.038)	(.038)	(.046)	(.008)
Marriage	.176***	.176***	.058	.037***
	(.043)	(.043)	(.051)	(.009)
Ethnic friendships at age 15			-1.289***	
_cons	-1.143***	-1.143***	3.246***	.244***
	(.073)	(.073)	(.114)	(.015)
Observations	34189	34189	34189	34189
R-squared	.z	.z	.z	.067
<i>Standard errors are in parentheses</i>				
*** $p < .01$, ** $p < .05$, * $p < .1$				

3.2 Married individuals and ethnic similarity

If marriage is not associated with having a co-ethnic friendship composition, does the ethnic similarity to an individual's partner matter? The literature suggests that having a partner who is of different ethnic ancestry is positively associated with a diverse ethnic friendship composition (Clark-Ibanez and Felmler, 2004). To measure this the following tables and models include only married people. The respondents' ethnic similarity to their spouse was added as the key independent variable for the following models. Table 2.2 shows the descriptive statistics among the sample (n=18,744). Notably, married individuals have a lower level of co-ethnic friendships compared to all individuals. The average age among this group is higher, and their level of education on average is also higher.

Table 3.4 displays the distribution of ethnic friendship composition among different marriage types. Individuals who reported that they were in ethnically homogamous marriages had a co-ethnic friendship level of 0.596. This level of co-ethnic friendships was notable when compared to individuals who reported that their ethnic ancestry is somewhat similar to their spouse (0.273 coefficient). The contrast was the largest for individuals who reported that they did not share any ethnic ancestry at all with their spouse (0.171 coefficient). Results from Table 7 show a support for the hypothesis 2 of the study: *Individuals in ethnically homogenous marriages will report more co-ethnic friendships compared to individuals who are in interethnic marriages.* I also compare the means of co-ethnic friendships at age 15 and at the current time of reporting (Table 3.5). All groups had a positive shift in means of having co-ethnic friendships (larger values suggest more diverse ethnic friendships). Individuals who report being in ethnically homogamous marriages report a low level of co-ethnic friendships at the age of 15 (1.826) and end off with higher levels of co-ethnic friendships (2.455). Comparatively, individuals in different forms of interethnic marriages (whether their spouse had some ethnic similarity or none) reported higher levels of co-ethnic friendships at the age of 15 and reported higher levels of co-ethnic friendships at the time of taking the survey. These results come into contrast with the literature, which suggests that diverse ethnic friendship composition is a strong predictor in determining who will enter interethnic relationships. Interethnic relationships themselves hold an association with co-ethnic friendship composition. Individuals in interethnic relationships reported lower levels of co-ethnic friendship. The strongest change happened among respondents in ethnically homogamous marriages. Although the results from the table show support for hypothesis 2, the differences in ethnic friendship composition at the age of 15 is significantly different among respondents in interethnic and ethnically homogenous marriages.

Table 3.4
Ethnic friendship composition among different marriage types
(N=18,744)

	All	Most	Half	A Few	None	Mean	Co-Ethnic
Ethnic ancestry same as spouse	.179	.417	.204	.169	.038	2.454	.596

	All	Most	Half	A Few	None	Mean	Co-Ethnic
Some ethnic ancestry shared with spouse	.052	.221	.163	.398	.166	3.403	.273
Ethnic ancestry different from spouse	.045	.130	.121	.435	.270	3.76	.175
All Married people	.087	.230	.150	.350	.181	3.31	.318

Table 3.5
Marriage and change in co-ethnic friends
(N=18,744)

	Age 15	Current	Within-group change
Ethnic ancestry same as spouse	1.826	2.455	+0.596
	Age 15	Current	Within-group change
Some ethnic ancestry shared with spouse	3.205	3.406	+.201
Ethnic ancestry different from spouse	3.359	3.758	+0.399
All married people	2.875	3.300	+0.425

Table 3.6 displays the results of the multivariate regressions. Model 1 displays how controls such as ethnic identity, gender and education are associated with the likelihood of having a co-ethnic friendship composition among married individuals. Among the control variables, strength of ethnic identity was associated with a higher likelihood of having a co-ethnic friendship (odds ratio of 2.359). As one received more educational attainment, their likelihood of having a co-ethnic friendship composition decreased.

Model 2 introduces the variable which measures the respondents ethnic similarity to their spouse. Using ethnically homogenous marriages (where the respondent shared the same ethnic ancestry as their spouse) as the referent, I examined the difference in logits from ethnically homogamous marriages to interethnic marriages.

Respondents who shared some ethnic ancestry with their partner were less likely to have a co-ethnic friendship composition compared to a respondent in a co-ethnic marriage (0.302 odds ratio). The association was further negative among respondents who married an individual who they did not share any ethnic ancestry with (odds ratio 0.187). Both relationships were statistically significant ($p < .01$) and had small standard error values.

As with the previous models, the robustness checks were added in with the introduction of the variable which measures ethnic friendship composition at 15 years old. Model 3 displays how the relationships of ethnic similarity and ethnic networks shift with the introduction of the control variable. Ethnic friendship composition at the age of 15 had a negative likelihood with having a co-ethnic friendship composition among married individuals (odds ratio of 0.317). The strength of having some ethnic similarity to a spouse had lost most of its likelihood (odds ratio of 0.744). The negative likelihood also shrunk among individuals who reported that their spouse did not share any ethnic ancestry as them (odds ratio of 0.417). These results show how earlier ethnic friendship composition can partially explain the likelihood of having co-ethnic friendship compositions of those in marriages. But the associations remain statistically significant among the interethnic marriages, and respondents who reported that their spouse did not share the same ethnic ancestry as they remained a strong negative association. These findings are especially strong when considering the effects of the pre-marriage variable (ethnic friendship diversity at age of 15). The low standard errors of the coefficient reaffirm support for hypothesis 2a and 2b.

To check for robustness, I apply a change variable approach in model 4. Model 4 incorporates ethnic friendship composition at the age of 15. In this model, instead of a logistic regression, an OLS (Ordinary Least Squares) regression was applied to all the input variables in the model. When applying the change variable approach for robustness, the previous model's strengths claims were supported. Results from the 2nd set of models show support for the 2nd hypothesis: *Individuals in ethnically homogenous marriages will report more co-ethnic friendships compared to individuals who are in interethnic marriages.*

Table 3.6
Logistic regression among married individuals
(N=18,744)

	Model 1	Model 2	Model 3	Model 4
Gender	.011	.014	.026	.003

	Model 1	Model 2	Model 3	Model 4
	(.047)	(.05)	(.056)	(.01)
Education				
Less than high school (referent)				
Highschool diploma	-.4***	-.312***	-.281***	-.064***
	(.067)	(.072)	(.082)	(.015)
Some college or university	-.515***	-.379***	-.225**	-.077***
	(.092)	(.099)	(.11)	(.019)
Business or vocational degree	-.397***	-.308***	-.305***	-.063***
	(.076)	(.082)	(.09)	(.016)
4-year college or university degree	-.498***	-.43***	-.518***	-.087***
	(.069)	(.073)	(.085)	(.015)
Census Metropolitan Area (CMA)				
Non-CMA Area (referent)				
Vancouver	.109*	-.243***	-.434***	-.047***
	(.061)	(.068)	(.08)	(.013)
Montreal	.741***	.539***	.253***	.112***
	(.083)	(.087)	(.096)	(.018)
Toronto	.131	-.163*	-.275**	-.031*
	(.082)	(.088)	(.109)	(.017)
CMA Other	-.207***	-.294***	-.245***	-.056***
	(.059)	(.062)	(.073)	(.012)
Age	.045***	.033**	-.068***	.007**
	(.016)	(.016)	(.019)	(.003)
Ethnic importance	.858***	.662***	.256***	.133***
	(.045)	(.048)	(.056)	(.01)
Ethnic similarity to spouse				
Shared ethnicity with spouse (referent)				

	Model 1	Model 2	Model 3	Model 4
Some ethnic ancestry shared		-1.197***	-.295***	-.281***
Ethnic ancestries different		-1.676***	-.874***	-.375***
		(.06)	(.067)	(.012)
Ethnic friendships at age 15			-1.147***	
			(.025)	
_cons	-.893***	.375***	3.385***	.595***
	(.127)	(.137)	(.172)	(.027)
Observations	18744	18744	18744	18744
R-squared	.z	.z	.z	.175
<i>Standard errors are in parentheses</i>				
*** $p < .01$, ** $p < .05$, * $p < .1$				

3.3 Individuals in interracial marriages

The last set of tables (Table 3.7) include individuals only in interethnic marriages (n=14,405). I follow a similar analytic strategy in these models as I have in the previous two analyses. In this case, the main variable of interest observes the respondents racial identity (whether or not they identify as a visible minority) and the respondents' racial identity. The referent group in the set of models will be non-minorities married to other non-minorities. Model 1 shows the relationships among the controls and the likelihood of having a co-ethnic friendship composition among interethnic individuals. The relationships are expected and similar to the previous two sets of analysis.

Model 2 introduces the variables which measure the respondents' and the respondents' spouses' visible minority status. Among non-minority respondents who are married to a visible minority they had a small likelihood of having a co-ethnic friendship composition (odds ratio of 0.827); however, the relationship is not statistically significant. Visible minority respondents who are married to visible minorities had a slight increase in likelihood of having a co-ethnic friendship composition (odds ratio of 2.184). The strongest relationship arose from visible minority respondents who are married to non-visible minorities (odds ratio of 0.563). Responses which included a visible minority as the respondent among the variables mentioned above are all statistically significant.

To check for the robustness of the findings ethnic friendship composition at the age of 15 was added as a form of control in Models 3 and 4.

As shown with previous sets of models, ethnic friendship composition at the age of 15, has a relatively strong association with current ethnic friendship composition. When observing how they affect the relationships of the other variables of interest, a non-minority respondent married to a minority gains statistical significance, and strength in its likelihood (odds ratio of 0.810) of having a co-ethnic friendship composition. Visible minority pairings lost their statistical significance through the addition of ethnic friendship at youth; the strength of association was reduced with the introduction of the variable as well (odds ratio of 0.953). Lastly, visible minority to non-visible minority pairings gained further statistical significance, but they also had a stronger likelihood of not having a co-ethnic friendship, when controlled for ethnic friendships at youth (odds ratio of 0.293). This comes into stark contrast to previous sets of models, as ethnic friendship composition at youth was previously associated with a diminishment of strength likelihoods and statistical significance among marriage related variables.

The second robustness check of the change variable approach altered some of the association of respondent racial identity and pairing types. Respondent non-minority to minority pairing loses its statistical significance through the robustness check and respondent minority pairings gained statistical significance (did not have any statistical significance in Model 3). The only minority pairing related marriage related variable that retained its statistical significance was among visible minorities who are married to non-visible minorities. The findings from the last models suggest that visible minorities who are married to non-visible minorities are less likely to have co-ethnic friendships. This supports the statement of hypothesis 3: Visible minorities married to a non-minority will have a lower likelihood of reporting co-ethnic friendships compared to other interethnic marriage pairings.

Table 3.7

Logistic regression among all people in interethnic marriages
(n=14,405)

	Model 1	Model 2	Model 3	Model 4
Gender	.025 (.062)	.028 (.061)	.027 (.07)	.006 (.012)
Education				
Less than high school (referent)				

	Model 1	Model 2	Model 3	Model 4
Highschool diploma	-.252*** (.086)	-.255*** (.086)	-.283*** (.106)	-.052*** (.017)
Some college or university	-.392*** (.118)	-.377*** (.119)	-.27** (.137)	-.075*** (.022)
Business or vocational degree	-.192** (.095)	-.171* (.096)	-.211* (.114)	-.037* (.019)
	Model 1	Model 2	Model 3	Model 4
4 year college or university degree	-.348*** (.092)	-.333*** (.092)	-.447*** (.113)	-.067*** (.018)
Census Metropolitan Area (CMA)				
Non-CMA Area (referent)				
Vancouver	-.267*** (.085)	-.393*** (.089)	-.59*** (.117)	-.074*** (.016)
Toronto	.632*** (.103)	.612*** (.104)	.295** (.131)	.136*** (.024)
	Model 1	Model 2	Model 3	Model 4
Montreal	-.382*** (.127)	-.465*** (.13)	-.329* (.174)	-.083*** (.022)
CMA Other	-.322*** (.074)	-.342*** (.075)	-.204** (.085)	-.063*** (.014)
Age	.073*** (.02)	.074*** (.021)	-.052** (.026)	.014*** (.004)
Ethnic importance	.753*** (.06)	.726*** (.062)	.188** (.074)	.141*** (.012)
Interethnic pairing type				
Two non-visible minorities (referent)				
Non-minority with a visible minority		-.19 (.231)	-.211 (.287)	-.033 (.038)
Visible minority with a non-minority		-.575*** (.172)	-1.229*** (.226)	-.096*** (.024)
Two visible minorities together		.781*** (.117)	-.048 (.152)	.167*** (.026)
Ethnic friendship at age 15			-1.282*** (.032)	
_cons	-1.435*** (.16)	-1.431*** (.16)	2.993*** (.229)	.196*** (.03)
Observations	14405	14405	14405	14405
R-squared	.z	.z	.z	.06
<i>Standard errors are in parentheses</i>				
*** $p < .01$, ** $p < .05$, * $p < .1$				

4 Discussion and Conclusions

Through the analysis, I found that marriage is not associated with a change in co-ethnic friendship composition. McPherson et al.'s concept of (2001) homophily suggests that married people would be more likely to have friends who are co-ethnic friendship. Although initially it seemed that marriage was related to having more co-ethnic friends, when for ethnic friendships at youth were accounted for, the relationship lost its significance. This reveals how each partner's ethnicity is associated with a change in ethnic friendship composition. This provides support for the argument that an individual's ethnic similarity to their spouse is related to a change in ethnic friendship composition.

Diverse ethnic friendships were found when analyzing interethnic marriages. Studies which examine ethnic friendship diversity concluded that prior ethnic friendship diversity is linked to interethnic marriages (Van Zantvliet and Kalmjin, 2003; Clark-Ibanez and Felmler, 2004). However, the results show that individuals in interethnic marriages have less co-ethnic friendships than individuals in ethnically homogamous marriages; even when prior interethnic friends were accounted for. This indicates that interethnic intimate unions do create overlapping, interdependent networks. A possible explanation is that individuals in interethnic partnerships are open to exploring their partners' cultures (Bystydzieński, 2011; Yodanis, Lauer and Ota, 2012). This implies that couples in interethnic marriages share their networks equally. The interdependence of networks between the couples show support for dyadic withdrawal. However, when interethnic marriages are separated by the partners visible minority status, changes in co-ethnic friendship composition were discovered. Interracial marriages between a visible minority and a non-minority challenge the concept of marriage being a “greedy” institution. According to the theoretical framework, married people in general should lose their co-ethnic friendships. However, when interracial marriages were analyzed, only the visible minority of the couple lost their co-ethnic friendships. Why does this occur? I propose that the difference of ethnic friendship network distribution among interracial couples is a manifestation of racial inequality. Visible minorities conform to their partner's culture and lose co-ethnic friendships, while the non-minority partner retains their ethnic friendship composition. Literature on interracial relationships state that dimensions of racial inequality are present among non-minority to minority pairings (Nemoto, 2003; Osuji, 2019).

A loss of co-ethnic friendships for visible minorities in interracial marriages means that they lose out on important social connections, lose some of their closest friendships and have less social support systems (Tegegne and Glanville, 2019; Arat and Bigili, 2021). Interracial pairings which include a non-minority person have a unique dynamic which is not present among other interracial pairing types. While it could be argued that the loss of co-ethnic friendships may be a form of cultural exploration among interracial couples (Yodanis, Lauer and Ota, 2012; Yodanis and Lauer, 2017), the unidirectional change in ethnic friendship composition challenge the claim. The concept of *greedy* institutions alone is insufficient in conceptualizing how marriages are related to network shifts among individuals. Social identities such as race are involved in the distribution of networks. Concepts such as greedy institutions and dyadic withdrawal have operated on assumed equality between partners, which are not present among interracial pairings.

Future research on ethnic networks and marriage has some pathways. First is to consider longitudinal survey research as a way of investigating ethnic friendship and network development over time. Rather than having to rely on secondary variables such as friendship composition at the age of 15, more accurate data can be tracked using longitudinal data. Second, is to consider the use of additional variables to measure the level of friendship network interdependence among each partner in the relationship. Questions that measure how much one's friends overlap with their partner will be an improved measure to assess how intimate partnerships are associated with a change in ethnic friendship networks. Exploration on the racial aspects of intimate relationships and how they affect networks are useful in challenging and understanding more about network interdependence and how applicable dyadic withdrawal is for ethnically non-homogamous couples.

Current theoretical understandings on the association of ethnic friendship composition and interracial marriage are lacking. This study has shown fragmented support for the dyadic withdrawal hypothesis. Through the analyses, I show that changes in ethnic friendship composition exist which are not related to youth ethnic friendship composition. Possible explanations in change of ethnic friendship composition among racial minorities in interracial marriages is the unequal nature of interracial relationships. The article illuminates how ethnic similarity to a partner is associated with ethnic friendship compositions and how the shift in ethnic friendship composition varies by visible minority status.

Race has been conceptualized an equalizing force in the context of racial equality (Qian and Lechter, 2007), but the presented findings display how network inequality is present in interracial intimate partnerships. The inequality in changes of co-ethnic friendships among interracial couples also hint to unequal intercultural participation. The loss of co-ethnic friendships through marriage may be detrimental for visible minorities, as co-ethnic friendships are found to be the strongest and most secure ties which provide support (Kao and Joyner, 2004). Although the interracial marriages among visible minorities and non-minorities are rising in Canada (Statistics Canada, 2016), they are not a signal of a racially progressive society. The unidirectional change of ethnic friendships among interracial marriages hint that visible minorities lose their co-ethnic friendships rather than gaining diverse ethnic friendships.

References

- Allison, P. D. (1990). Change scores as dependent variables in regression analysis. *Sociological methodology*, 93-114.
- Arat, E., & Bilgili, Ö. (2021). Transnational and local co-ethnic social ties as coping mechanisms against perceived discrimination-A study on the life satisfaction of Turkish and Moroccan minorities in the Netherlands. *Frontiers in sociology*, 6, 129.
- Bystydzienski, J. M. (2011). *Intercultural couples: Crossing boundaries, negotiating difference*. New York: New York University Press.
- Cherlin, A. J. (2004). The deinstitutionalization of American marriage. *Journal of marriage and family*, 66(4), 848-861.
- Cherlin, A. J. (2020). Degrees of change: An assessment of the deinstitutionalization of marriage thesis. *Journal of Marriage and Family*, 82(1), 62-80.
- Clark-Ibáñez, M., & Felmler, D. (2004). Interethnic relationships: The role of social network diversity. *Journal of Marriage and Family*, 66(2), 293-305. doi:10.1111/j.1741-3737.2004.00021.x
- Coser, L. (1974) *Greedy Institutions: Patterns of Undivided Commitment*. New York: FreePress.
- Cornwell, B. (2012). Spousal network overlap as a basis for spousal support. *Journal of Marriage and Family*, 74(2), 229-238.
- Currarini, S., Matheson, J., & Vega-Redondo, F. (2016). A simple model of homophily in social networks. *European Economic Review*, 90, 18-39.
- Dainton, M. (2015). An interdependence approach to relationship maintenance in interracial marriage. *Journal of Social Issues*, 71(4), 772-787.
- Fu, X. (2006). Impact of socioeconomic status on inter-racial mate selection and divorce. *The Social Science Journal*, 43(2), 239-258.
- Gerstel, N., & Sarkisian, N. (2006). Marriage: The good, the bad, and the greedy. *Contexts*, 5(4), 16-21.
- Grossbard, S. A., Gimenez-Nadal, J. I., & Molina, J. A. (2014). Racial intermarriage and household production. *Review of Behavioral Economics*, 1(4), 295-347.
- Jiménez, T. R. (2010). Affiliative ethnic identity: A more elastic link between ethnic ancestry and culture. *Ethnic and Racial Studies*, 33(10), 1756-1775.
- Lewis, R. (2014). Status of interracial marriage in the United States: A qualitative analysis of interracial spouse perceptions. *Int'l J. Soc. Sci. Stud.*, 2, 16.
- Hohmann-Marriott, B. E., & Amato, P. (2008). Relationship quality in interethnic marriages and cohabitations. *Social Forces*, 87(2), 825-855.
- Ikram, U. Z., Snijder, M. B., de Wit, M. A., Schene, A. H., Stronks, K., & Kunst, A. E. (2016). Perceived ethnic discrimination and depressive symptoms: the buffering effects of ethnic identity, religion and ethnic social network. *Social psychiatry and psychiatric epidemiology*, 51(5), 679-688.
- Johnson, M. P., & Leslie, L. (1982). Couple involvement and network structure: A test of the dyadic withdrawal hypothesis. *Social Psychology Quarterly*, 34-43.
- Kalmijn, M. (1998). Intermarriage and homogamy: Causes, patterns, trends. *Annual review of sociology*, 24(1), 395-421.
- Kalmijn, M. (2003). Shared friendship networks and the life course: An analysis of survey data on married and cohabiting couples. *Social Networks*, 25(3), 231-249.

- Kao, G., & Joyner, K. (2004). Do race and ethnicity matter among friends? Activities among interracial, interethnic, and intraethnic adolescent friends. *Sociological quarterly*, 45(3), 557-573.
- Kearns, J. N., & Leonard, K. E. (2004). Social networks, structural interdependence, and marital quality over the transition to marriage: A prospective analysis. *Journal of Family Psychology*, 18(2), 383.
- Lauer, S. & Yan, M. C., Lam, (2014). Return migrant or diaspora: An exploratory study of new-generation Chinese–Canadian youth working in Hong Kong. *Journal of International Migration and Integration*, 15(2), 179-196.
- Lauer, S., & Yan, M. C. (2021). Canadian immigrant youth and co-ethnic friendship group change. *Ethnic and Racial Studies*, 44(4), 639-658.
- Leszczensky, Lars, and Sebastian Pink. What drives ethnic homophily? A relational approach on how ethnic identification moderates preferences for same-ethnic friends. *American Sociological Review* 84.3 (2019): 394-419.
- Larson, J. M., & Lewis, J. I. (2017). Ethnic networks. *American Journal of Political Science*, 61(2), 350-364.
- Levin, S., Taylor, P. L., & Caudle, E. (2007). Interethnic and interracial dating in college: A longitudinal study. *Journal of Social and Personal Relationships*, 24(3), 323-341. doi:10.1177/0265407507077225
- Leszczensky, L., & Pink, S. (2019). What drives ethnic homophily? A relational approach on how ethnic identification moderates preferences for same-ethnic friends. *American Sociological Review*, 84(3), 394-419.
- Martinovic, B., van Tubergen, F., & Maas, I. (2011). Acquisition of cross-ethnic friends by recent immigrants in Canada: A longitudinal approach. *International Migration Review*, 45(2), 460-488.
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual review of sociology*, 27(1), 415-444.
- Milardo, R. M. (1982). Friendship networks in developing relationships: Converging and diverging social environments. *Social psychology quarterly*, 162-172.
- Milardo R. M. (1987). Changes in social networks of women and men following divorce: A review. *Journal of Family Issues*, 8(1), 78-96. doi:10.1177/019251387008001004
- Mollica, K. A., Gray, B., & Trevino, L. K. (2003). Racial homophily and its persistence in newcomers' social networks. *Organization Science*, 14(2), 123-136.
- Nemoto, K. (2009). *Racing romance: Love, power, and desire among Asian American/white couples*. New Brunswick, N.J: Rutgers University Press.
- Osuji, C. K. (2019). *Boundaries of Love Interracial Marriage and the Meaning of Race*. New York: New York University Press.
- Qian, Z., & Lichter, D. T. (2007). Social boundaries and marital assimilation: Interpreting trends in racial and ethnic intermarriage. *American Sociological Review*, 72(1), 68-94.
- Rose, S. M. (1984). How friendships end: Patterns among young adults. *Journal of Social and Personal Relationships*, 1(3), 267-277.
- Schneider, B. H., Dixon, K., & Udvari, S. (2007). Closeness and competition in the inter-ethnic and co-ethnic friendships of early adolescents in Toronto and Montreal. *The Journal of Early Adolescence*, 27(1), 115-138.
- Schutte, J. G., & Light, J. M. (1978). The relative importance of proximity and status for friendship choices in social hierarchies. *Social psychology*, 260-264.
- Smith, S., Maas, I., & van Tubergen, F. (2012). Irreconcilable differences? Ethnic intermarriage and divorce in the Netherlands, 1995–2008. *Social science research*, 41(5), 1126-1137.
- Smith, S., Maas, I., & Van Tubergen, F. (2014). Ethnic ingroup friendships in schools: Testing the by-product hypothesis in England, Germany, the Netherlands and Sweden. *Social Networks*, 39, 33-45

Statistics Canada (2016). *Mixed Unions in Canada*. https://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99-010-x2011003_3-eng.cfm

Stein, C. H., Bush, E. G., Ross, R. R., & Ward, M. (1992). Mine, yours and ours: A configural analysis of the networks of married couples in relation to marital satisfaction and individual well-being. *Journal of Social and Personal Relationships*, 9(3), 365-383.

Steinbugler, A. C. (2012). *Beyond loving: Intimate race work in lesbian, gay, and straight interracial relationships*. New York: Oxford University Press.

Sprecher, S., Felmlee, D., Orbuch, T. L., & Willetts, M. C. (2002). *Social networks and change in personal relationships*. (pp. 257-284) Cambridge University Press.

Sweeney, K. A. (2008). Exercising social power: The case of marriage. (pp. 125-148). *Emerald Group Publishing Limited*.

Tegegne, M. A., & Glanville, J. L. (2019). The immigrant-native gap in subjective well-being in Western European countries: Assessing the role of social capital. *International Migration Review*, 53(2), 458-485.

Widmer, E., Kellerhals, J., & Levy, R. (2004). Types of conjugal networks, conjugal conflict and conjugal quality. *European Sociological Review*, 20(1), 63-77.

Yodanis, C. & Lauer, S. (2017). Multiculturalism in inter-ethnic intimate relationships. *Families, Relationships, and Societies*, 6, 1, pp125-140.

Yodanis, C., Lauer, S., & Ota, R. (2012). Interethnic romantic relationships: Enacting affiliative ethnic identities. *Journal of Marriage and Family*, 74(5), 1021-1037.

Van Zantvliet, P. I., & Kalmijn, M. (2013). Friendship networks and interethnic union formation: An analysis of immigrant children. *Journal of Social and Personal Relationships*, 30(7), 953-973.