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ENVIRONMENTAL INFLUENCES ON HUMAN MATE PREFERENCE ACROSS CANADA

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ENVIRONMENTAL INFLUENCES ON HUMAN MATE PREFERENCE ACROSS CANADA

by

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ABSTRACT

Sexual selection and mate preference is dynamic and can be influenced by a number of environmental factors. The purpose of my study was to determine if there is a correlation between environmental factors and human female mate preference in cities across Canada. Environmental, economic, and mate preference data were collected from 26 cities across Canada. Mate preference data was collected by looking at the first 50 online profiles for each city on a popular online dating site. Across the 26 cities, I recorded variation in both environmental (e.g., sex ratio, population density, population size) and mate preference data (resource holding potential, physical attractiveness, emotional appeal and personal activities and interests). I then asked whether the observed variation in stated preferences could be explained by variation in environmental and economic conditions across these cities. Furthermore, because this dating site includes the poster's characteristics, I also examined whether age was correlated to mate preference and if it explained the relationships between mate preference and the environmental influences. I found that preference for resource holding potential was positively related to population density and negatively related to age. In addition, I found that population size was positively related to preference for physical attractiveness and negatively related to preference for personal activities and interests. The findings from this research expand our current knowledge of the influences of environment on female human mate preference. My work also highlights the importance of examining poster characteristics, especially age, as they tend to vary across cities and can have a strong effect on observed patterns of female human mate preferences.

Thesis Supervisor: Assistant Professor Dr. Matthew Reudink

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INTRODUCTION

Sexual selection and mate preferences have been studied extensively across many taxonomic groups (Byers and Kroodsma, 2009; Liu et al., 2009; Beigneux et al.;Winland et al., 2012). It is more common for females to be the choosier sex, due to many factors including anisogamy and differential parental investment (Trivers, 1972, Konijn, 2008). In many species, females invest more in offspring development and in care, with the result that females are typically being choosier than males (Burley, 1977). When sex roles are reversed, males tend to be the choosier sex (Bonduriansky, 2001). Regardless of which sex is choosier, mates are often selected based on the attractiveness of a mate and on resources he or she holds.

Mate preferences are not always absolute, but can vary with environmental conditions (Slabbekoorn and Smith, 2002; Wood et al., 2006), such as the presence or absence of predators (Godin and Briggs, 1996). For example, when there were no predators female guppies preferred more colorful males. However, when the females were able to see a predator, preference for brightly colored males decreased (Godin and Briggs, 1996). This finding suggests that female guppies chose dull coloured males over the more attractive brightly coloured males because of the higher predation risk the brightly coloured males faced.

In many species, resource holding potential can be defined as territory size and quality. Generally, males that hold large, high quality territories are preferred by the opposite sex (Kelly, 2008). Using a meta-analysis on approximately 50 species, Kelly (2008) supported the hypothesis that a male's resource holding potential is positively related to reproductive success. In humans resource holding potential may be defined as financial stability or the ability to acquire financial stability, financial stability of potential mates has been shown to affect mate preferences (Jonason et al., 2012). Jonason et al. (2012) found that in long-term relationships, females prefer a mate that has earned his financial stability over a male who has acquired financial stability through other means (inheritance, embezzlement, and windfall). Jonason et al. (2012) suggest that this finding is likely due to the perception that individuals that earned their financial stability have the skills to continue earning, which is

beneficial in a long-term relationship. Gangestad and Simpson (2000) suggest that there are long-term and short-term mating strategies and that when choosing a mate females face a trade-off. Long-term mating strategies revolve around parental investment. Short-term strategies focus on characteristics of potential mates and beneficial genes that would be passed down to their offspring. Gangestad and Simpson (2000) suggest that females will alter their mating strategy based on environmental factors. If the environment requires substantial bi-parental investment, females will place more emphasis on the parental investment potential of a mate and less on his genetic fitness, therefore adopting the long term mating strategy. Gangestad and Simpson (2000) suggest that if the environment was full of pathogens females would prefer a mate that had good genetic fitness over a mate that offered parental investment. In this type of environment, a large proportion of the women were willing to take part in short term, extra pair mating to gain genetic benefits at the risk of losing parental investment from their primary mate.

In humans, males and females differ with respect to the traits they find most appealing. When describing their preferred mate, males generally place more emphasis on female physical attractiveness, whereas females generally prefer mates that have large resource holding potential and characteristics that determine family commitment (Bereczkei et al., 1997). Not surprisingly, Bereczkei et al. (1997) found that the higher a male's resource holding potential, the more demands he made in his advertisement, with respect to physical attractiveness. Similarly, females that were considered physically attractive made more demands in their advertisements about the resource holding potential of potential mates. Bereczkie et al. concluded that the more desirable characteristics an individual possesses the choosier that individual is able to be when looking for a mate.

Evolutionary theory suggests that human males attempt to maximize fitness by preferring younger females, who are in their reproductive prime, and who thus have higher reproductive potential (Kenrick and Keefe, 1992, Buss, 1989). Females may increase their fitness by preferring an older male who is more likely to have better resource holding capabilities (Kenrick and Keefe, 1992).

As been shown for other animals, variation in human mate preference is linked to variation in environmental factors. McGraw (2002) found that in the United States, female mate preference in humans depended on local environmental factors such as population density, resource demand, and sex ratio. To quantify the male attributes that females were most interested in for a particular city, McGraw (2002) examined Lonely Heart ads from newspapers ford words used to describe desired characteristics desired in a partner and categorized them as describing: (1) physical attractiveness (e.g., athletic, handsome, tall); (2) resource-holding potential (e.g., financially stable, intelligent, professional); (3) emotional appeal (e.g., compassionate, loving, sincere); and (4) personal activities/interests (e.g., music, the outdoors, theater). In more densely populated cities with high female: male sex ratios, where there was presumably with high competition for resources and mates, McGraw found that females preferred mates with high resource holding potential and placed less emphasis on either emotional attachment or on similarity of interests or hobbies.

Age of the individual seeking a mate also has an influence on their mate preference. In females, their own age determines the age of the mate that they are seeking, regardless if they are seeking a long-term or short-term relationship (Buunk et al., 2001). Kenrick and Keefe (1992) suggest that females often prefer a slightly older male, who is more established and is able to provide for them. Similarly, Buunk et al. (2001) found that females prefer a mate who is older than themselves, but is within 3-4 years of their own age. Conversely, these authours found that in long-term relationships males prefer mates who are younger than themselves although still similar to their own age. In short-term relationships, however, males tend to prefer females that are in their optimal reproductive years. Buunk et al. (2001) also suggest that as a male ages his desired age for a partner increases, the reason why males change their mate preference over their lifetime could be related to attainability of mates and social acceptance of age differences of individuals in a relationship. Some studies have shown that there is also age variation in the mate preference of females (Gil-Burmann et al., 2002). Gil-Burmann et al. found that females under the age of 40 seek mainly physically attractive mates, while females over the age of 40 tend to seek males with high socioeconomic status.

Due to a technological shift, newspapers are no longer a preferred source for finding potential partners. Many people seeking a partner, or selecting a potential mate, advertise on one of the various online dating sites. Although some people still prefer to meet their partner face to face, these online sites are becoming increasingly popular (Valkenburg and Peter, 2007). The majority of people using online dating sites as a way to meet potential partners are 30-50 years of age (Valkenburg and Peter, 2007). Online dating participation was found to be unrelated to income and education level. Online personal ads have been used in recent studies to determine preferred characteristics of potential partners (Morgan et al., 2010). Morgan et al. (2010) examined information from 294 profiles on connectingsingles.com to determine preferences for physical, lifestyle, and personality characteristics. Three characteristics an individual used to describe themselves and preferred traits in a partner were examined for differences based on four predictors: gender, sexual orientation, age, and desired relationship type. In these advertisements, women were more likely to include personality characteristics that they desired in a partner, whereas males frequently offered their own qualities. With respect to sexual orientation, both homosexual men and women expressed more interest in short-term relationships than heterosexual men and women. Physical attributes were important to all age groups; however, the older advertisers, regardless of gender, expressed more interest in personality characteristics in their advertisements. For both their own and preferred characteristics Morgan et al. (2010) discovered advertisers seeking short-term relationships included more physical characteristics in their ads than did advertisers seeking long term relationships, who tended to advertise more personality characteristics.

Anderson and Klofstad's (2012) examined online personal ads across the United States to relate cost of living to the desired income the person placing the advertisement was seeking in a partner. They found a significant positive relationship between these two variables. They also found that if the income of the advertiser is introduced as a factor, the correlation disappears, potentially because the advertiser, regardless of sex, looks for a partner who has an income similar to his or her own.

Looking at online dating site profiles of the advertiser along with profile characteristics can present challenges because of the possibility that advertisers or responders may misrepresent themselves. Individuals using online dating sites are more likely to lie about their physical appearance (e.g., their height, weight) and age than they are about characteristics unrelated to how they look (Toma and Hancock, 2010). Similarly, profile picture characteristics are not always fair representations of the individuals involved. Hancock and Toma (2009) examined whether an individual's profile picture was an accurate representation of the individual by comparing the person's self-reported accuracy and an independent judge's perception of the accuracy of the profile picture. While the self-reported accuracy of their profile picture was very high, the independent judges identified only one in three profile pictures as accurate. This result gives an indication of the importance individuals place on representing their appearance in the best possible way.

My study aims extend the study of whether environmental factors influence female mate preferences among Canadian cities. Over ten years ago, McGraw (2002) examined newspaper Lonely Heart advertisements to determine whether geographic variables influenced female human mate preference in the United States. McGraw (2002) discovered that in cities with high density, high cost of living and female biased sex ratios, females emphasized the importance resource holding potential and were less concerned emotional appeal and similarity of personal activities and interests. Over the past decade there has been a shift away from newspaper classified ads towards online dating sites, which provide detailed personal profiles of the advertiser. For example, these profiles provide the age of the female placing the advertisement, this can be used to examine the age of the advertiser is an important predictor of what females prefer in mates. In this study I aim to 1) test for variation in female mate preference among Canadian cities, 2) determine if environmental factors predict variation in female mate preference, and 3) determine if the age of a female determines her mate preference.

RESEARCH METHODOLOGY

Socioeconomic data was collected primarily from the most current Canadian census in 2011. When there was lacking information on some variables from the 2011 census the 2006 census was used. Mate Preference data was collected from personal profiles from a popular online dating site, match.com following Morgan et al. (2010).

After consultation with the human ethics committee at TRU, my supervisor and I were informed that because I was not collecting information that could be used to identify individuals, human ethics approval was not required. In addition, reading the match.com privacy policy and terms and conditions, there appeared to be no conflicts with user privacy in using online profiles for research.

Economic and Geographic Data

At the time of the study, population information has been released for the 2011 census allowing 2011 population data such as population size (both sexes, male and female), population density, and sex ratio to be used (Government of Canada, 2011). Median total income (both sexes, male and female) was not available for the 2011 census at the time of the study; therefore, income data was taken from 2006 community profiles (Government of Canada, 2006). From this information I was able to create a snapshot of the economic status of the Canadian cities chosen for this study.

Mate Preference Data Collection

Female mate preferences were quantified in a similar manner as McGraw's (2002) study of human mate preferences across the United States. He examined archived Lonely Heart advertisements in newspapers of 23 cities across the United States. I used the same four male

attributes identified by McGraw (2002) to classify female preferences: (1) physical attractiveness (e.g., athletic, handsome, tall); (2) resource-holding potential (e.g., financially stable, intelligent, professional); (3) emotional appeal (e.g., compassionate, loving, sincere); and (4) personal activities/interests (e.g., music, the outdoors, theater). The descriptive words were taken from each of the match.com profile descriptions, in which an individual would explain what characteristics they would like in a potential partner. The words from all categories for each individual were summed to find the total number of descriptive words each individual had used in their advertisement. The number of words used by the "advertiser" that fell into each of the 4 categories was then divided by the total number of descriptive words to find the proportion of the overall description representing each of the four categories of male attributes.

Economic and mate preference data was collected for 26 cities throughout Canada. The cities were chosen based on the availability of economic and geographic data and to ensure a range of city sizes and geographic locations. Fifty personal advertisements written by heterosexual female were examined for each city with the exception of, Summerside, P.E.I., and Yellowknife, North West Territories, for which there were only 42 and 33 such advertisements available. In cases where there were over 50 personal advertisements available, the first 50 that appeared on match.com were used. This was considered to be a random sample because there was no apparent order to the profiles on the website

Age Analysis of individuals placing advertisements

I examined whether age of the individual posting the ad was an important driver of mate preference patterns by using an online dating site (match.com) as my source of mate preference data. Ages of the individuals were recorded from their profiles on match.com.

Statistical Analysis

All variables were tested to see if they were normally distributed using goodness of fit tests. Because both population size and population density were not normal, I transformed the data using natural log transformation. In the complete data set all mate preference categories had a non-normal distribution, therefore in order to do correlation and regression analyses all variables across profiles were averaged for each city to ensure independence of data. Exceptions where the complete data set were used were to examine variation in mate preference data among the 26 cities and when comparing mate preference categories to one another. Due to the non-normal distribution of mate preference data in the complete data set a Kruskal Wallace test was used to examine whether there were differences in trait preference among cities. The complete data set was also used to reveal correlations among mate preference categories. Due to the non-normal distribution of mate preference data in the complete data set a Spearman's ρ analyses was used to determine whether there were correlations among preferences. Using the average data form each city I examined the correlation between the average number of descriptive words used in each category and the total number of descriptive words. A Pearson correlation was used to examine whether there was a relationship between the total number of descriptive words and female preference. Age information, in the complete data set, had a normal distribution throughout the 26 cities, therefore an ANOVA was used to determine if the mean age of advertisers varied among the 26 Canadian cities. Correlations were then tested for to examine if age was correlated to any of the environmental predictor variables. Backwards stepwise multiple regressions were used to determine the degree to which economic variables (median total income) and environmental variables (sex ratio, population size, population density, and age) predicted variability in the emphasis that females placed on each of the four male traits.

RESULTS

I examined variation in the emphasis females placed on the four categories of male characteristics in potential mates across 26 cities. A non-parametric Kruskal Wallace test was used on the complete data set and revealed that preference for physical attractiveness varied significantly across cities ($n = 1111$, $\chi^2 = 42.68$, $p = 0.02$), whereas resource holding potential ($n = 1111$, $\chi^2 = 25.53$, $p = 0.43$), personal activities and interests ($n = 1111$, $\chi^2 = 27.61$, $p = 0.33$), and emotional appeal ($n = 1111$, $\chi^2 = 18.12$, $p = 0.83$) did not.

The complete data set was used to compare the four mate preference categories, Spearman's ρ revealed that the importance that a female placed on personal activities and interests was negatively correlated with the emphasis she placed on other categories (physical attractiveness, resource holding potential, and emotional appeal) (Table 1). Preference for males with emotional appeal was also significantly negatively correlated with preference physically attractive males and preference for males with resource holding potential (Table 1). Although only marginally significant, preference for resource holding potential seemed to be weakly correlated with physical attractiveness (Table 1).

Table 1. Comparing the four female mate preference categories using Spearman's ρ. (n = 1111)

Female Mate Preference Category	By Female Mate Preference Category	Spearman's ρ	Probability p
Personal activities and interests	Physical attractiveness	-0.14	< 0.0001*
Personal activities and interests	Resource holding potential	-0.36	< 0.0001*
Personal activities and interests	Emotional appeal	-0.64	< 0.0001*
Emotional appeal	Resource holding potential	-0.23	< 0.0001*
Emotional appeal	Physical attractiveness	-0.15	< 0.0001*
Resource holding potential	Physical attractiveness	0.06	0.06

Using the average data from each city Pearson correlations were conducted to determine if the four mate preference categories were correlated with the total number of descriptive words used by the individual in their profile. Both average physical attractiveness ($n = 26$, $r = 0.59$, $p = 0.002$) and average resource holding potential ($n = 26$, $r = 0.40$, $p = 0.04$) had a significant positive correlation with the total number of descriptive words used. Average personal activities and interest ($n = 26$, $r = 0.51$, $p = 0.008$) was significantly negatively correlated to the total number of descriptive words used. Average emotional appeal was not correlated with the total number of descriptive words used ($n = 26$, $r = 0.03$ $p = 0.90$).

An ANOVA test was conducted using the complete data set to examine if the average age of females varied among the 26 Canadian cities. The test revealed that there was significant variation among cities ($n = 1275$, $F = 3.31$, $p < 0.0001$). Further analysis of average data for each city revealed that age was significantly correlated with population size ($n = 26$, $r = 0.79$, $p < 0.0001$) and sex ratio ($n = 26$, $r = 0.41$, $p = 0.039$) (Figure 1). There was no correlation between age and population density ($n = 26$, $r = 0.33$, $p = 0.09$) or median total income ($n = 26$, $r = 0.15$, $p = 0.47$).

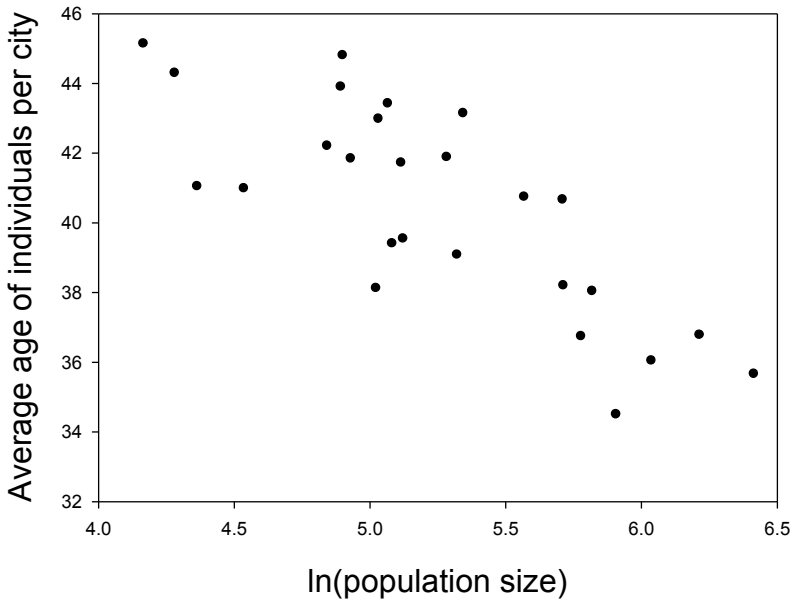

Figure 1. The average age of the females in each city who placed advertisements was negatively correlated with the population size.

Population size, population density, sex ratio, median income, and age were used to represent the environmental and economic conditions of cities. Using these predictor variables, a backwards-stepwise regression revealed that environmental factors are associated with female mate choice preferences. The importance a female placed on resource holding potential was associated with both age and population density. Specifically, age and preference for males with high resource holding potential were negatively related ($n = 26$, $r^2 = 0.26$, $p = 0.008$), suggesting that as females age they place less emphasis on resource holding potential (Figure 2). Conversely, female preference for resource holding potential was positively related to population density ($n = 26$, $r^2 = 0.25$, $p = 0.008$), indicating that females in densely populated cities place a greater emphasis on the resource holding capabilities of a potential mate (Figure 2). Using age and population density, a model was created revealing that both together, ($n = 26$, $r^2 = 0.38$, $p = 0.004$) and individually, age ($n = 26$, $r = 0.62$ $p = 0.04$) and population density ($n = 26$, $r = 0.62$, $p = 0.04$) significantly predict the degree of emphasis that females place on the resource holding potential of males.

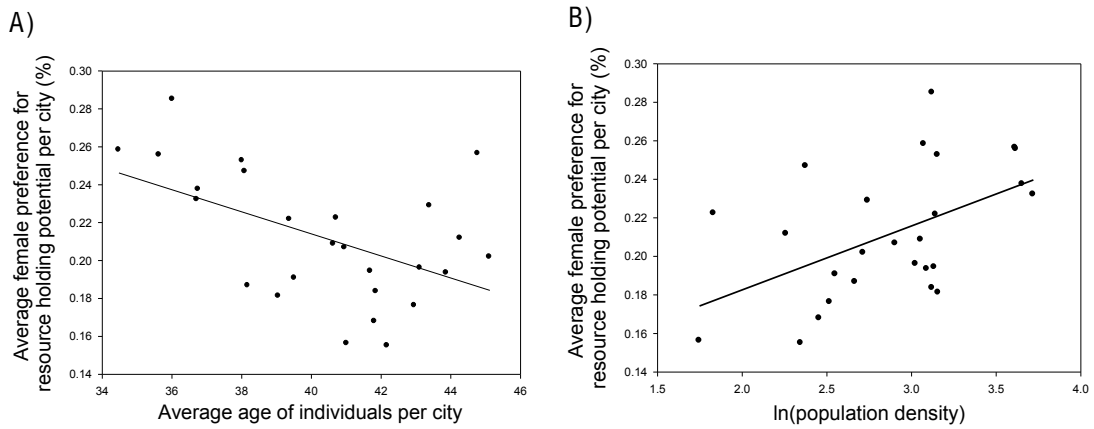

Figure 2. Examined over 26 cities average female preference for resource holding potential was A) negatively related with the average age of the individual displaying the profile and B) positively related with the ln(population density) of the city

A backwards-stepwise regression model revealed that population size was also a predictor of the extent to which females were concerned with the physical attractiveness and the personal activities and interests of a male. Female preference for physical attractiveness was positively related to population size ($n = 26$, $r^2 = 0.31$, $p = 0.01$) (Figure 3). Conversely, emphasis on personal activities and interests was negatively related to the population size ($n = 26$, $r^2 = 0.23$, $p = 0.01$) (Figure 3).

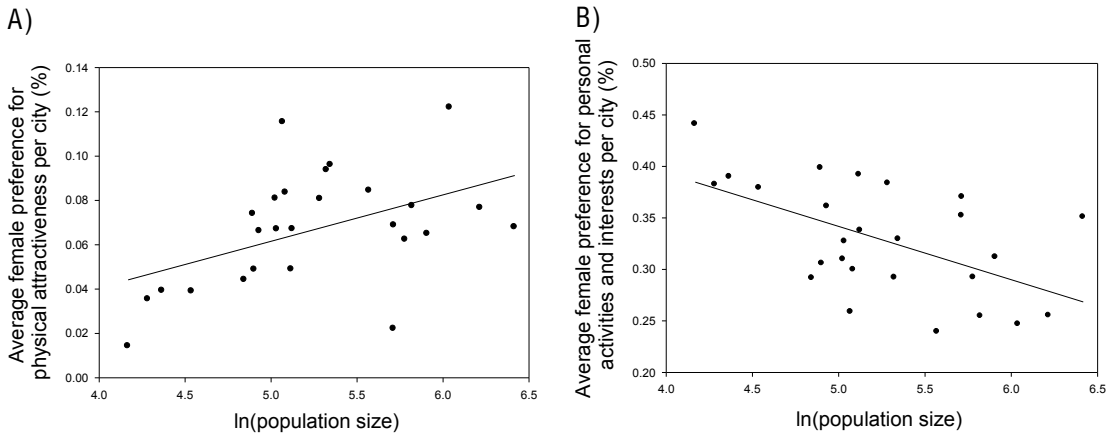

Figure 3. A) Average female preference for physical attractiveness per city was positively related with ln(population size). B) Average female preference for personal activities and interests per city was negatively related with ln(population size).

DISCUSSION

In this study, I found that across 26 Canadian cities environmental factors predicted the stated preferences in online advertisements. More specifically, population size predicted how much emphasis female placed on both the physical attractiveness and the personal activities and interests of potential mates. In addition, a preference for males with high resource holding potential was positively related to population density and negatively related to age. My study provides support for the hypothesis that female mate preference may be influenced by environmental factors. In addition, I examined the influence of age on mate preference and found that age is a significant predictor of expressed mate preference, with a negative relationship with preference for resource holding potential, indicating that age should be taken into account when examining variation in mate preference.

Using ages of individuals placing the advertisements, available through online dating profiles, I was able to examine variation in ages among the 26 Canadian cities. Age was negatively correlated with population size and sex ratio. Thus, more populated cities may have a younger population, or at least more young people placing advertisements for males, compared to smaller cities.

Female preference for males with high resource holding potential was associated with both variation in environmental factors and variation in the age of females placing advertisements. Preference for males with high resource holding potential was positively related to population density and negatively related to age. These results suggest that in densely populated cities, where more young females place advertisements, these females may place more emphasis on resource holding potential. The positive relationship between population density and preference for resource holding potential are consistent with findings of McGraw (2002), who showed that highly dense cities with a high cost of living and a female biased sex ratio were environments in which there was an increased demand for mates and resources. In this environment, females placed more emphasis on resource-holding traits in a mate and less on emotional appeal and personal activities and interests. There are two possible explanations for the negative relationship I observed between age and female

preference for males with high resource holding potential. First, as females age they tend to have higher incomes potentially resulting in more financial stability (Government of Canada, 2006). More financially stable females may require fewer resources from their mates and thus place less emphasis on resource holding potential in their online dating profiles. A second hypothesis is that as a female passes her reproductive prime she is less desirable to the opposite sex and therefore is unable to expect the same amount of resource holding potential, in a mate, compared to when she was younger (Waynforth and Dunbar, 1995, Bereczkei et al., 1997). For example, Bereczkei et al. (1997) found that females in better physical condition (young, physically attractive and fertile) were able to expect more resource holding potential in a mate.

Female preference for physical attractiveness was positively related to population size, suggesting that as the population of a city increases, females place more emphasis on physical attractiveness in a potential mate. This finding could be partially explained by the larger number of human interactions that take place in a city with a larger population (Loo, 1974). With more interactions, a female would have a larger selection of potential mates and therefore may be more selective when choosing a mate. Population size was also negatively correlated to the age of females placing the advertisement, suggesting that cities with larger populations tend to have more young individuals placing advertisements. These finding indicate that physical attractiveness may be preferred by females in large populations, which tend to have more young people placing advertisements. These findings support those of Gil-Burmann et al. (2002), who found that females under the age of 40 tended to seek physically attractive males, whereas females over the age of 40 were more interested in males who could increase their social status. Findings of Gil-Burmann and colleagues support my findings for female preference for physical attractiveness in a partner, however they also contradict the relationship I found between age and preferences for resource holding potential.

Female preference for personal activities and interests was negatively related to population size, suggesting that as the population increases females place less emphasis on the personal activities and interests of potential mates. Possible explanations for these findings could be

that sharing personal activities or interest may be more important in smaller cities where individuals are more limited in choices of activities, or that larger cities provide ample activities and interests for individuals, making it less important to find a mate to share activities and interests with. These findings suggest that in cities with small populations, females prefer personal activities and interests, reducing the emphasis placed on the remaining mate choice categories. These findings are supported by Rudzitis (1999), who suggested that employment alone is not sufficient to dictate where a person resides. Rudzitis (1999) found that the second most important reason for moving to a rural area was outdoor recreation, which may explain why individual who live in rural areas place a large emphasis on activities.

CONCLUSION AND FUTURE WORK

I observed variation in female mate preference across Canada, which correlated with variation in environmental variables such as population size, and population density and age. Broadly, my findings suggest that females that reside in small towns are more likely to prefer a mate that has similar interests and place less emphasis on preference for resources and physical attractiveness. In contrast, females residing in large cities tend to prefer a physically attractive mate with high resource holding potential, and place less emphasis on a males interests. Age was correlated to environmental variables such as population size and sex ratio as well as female preference for resource holding potential. My findings suggest that older females place less emphasis on resource holding potential than younger females. This result is consistent with findings suggesting that more young advertisers reside in cities with large populations and more older female advertisers tend to live in small cities (Government of Canada, 2011). However, the effects of population size on mate preferences remained significant after controlling for variation in age, suggesting that population size acts as an independent predictor variable for the emphasis females place on the resource holding potential of a male.

There are many avenues for further study in this field as there is a lack of research on environmental influences on mate preference in Canada. One opportunity would be to examine more of the information provided in the online profiles. For example, we could examine marital status, income and number of children to determine if females with children and low incomes would prefer a mate with high resource holding potential. Another more intensive option would be to expand the study to include judging panels to rate attractiveness of profile pictures and compare the rating to mate preference data to examine how physical attractiveness of a female influences the emphasis she places on characteristics of a potential mate.

My research provides evidence that human female mate preference in Canada is dynamic and is influenced by both environmental factors and the age of the individual. Although this study expands our knowledge of female mate preference, there is still a need for additional research to fully understand the complexity of human mate choice.

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APPENDIX 1
ENVIRONMENTAL DATA

City	Median total income (city)	population (both sexes city)	ln(population city)	Sex ratio (city)	Population density per square km (city)	ln(population density)	Average age
Vancouver, B.C.	23682	603502	5.78	0.96	5249	3.72	36.72
Calgary, Alberta	30542	1096833	6.04	1.03	1329	3.12	36.02
Saskatoon, Saskatchewan	25868	222189	5.35	0.96	1060	3.03	43.12
Winnipeg, Manitoba	26015	663617	5.82	0.94	1430	3.16	38.02
Toronto, Ontario	24544	2615060	6.42	0.92	4150	3.62	35.64
Montréal, Quebec	21459	1649519	6.22	0.94	4518	3.65	36.76
Halifax, Nova Scotia	27198	372679	5.57	0.92	68	1.83	40.72
St. John's, Newfoundland and Labrador	22852	106172	5.03	0.91	238	2.38	38.10
Victoria, British Columbia	24651	80017	4.90	0.89	4109	3.61	44.78
Edmonton, Alberta	27734	812201	5.91	0.99	1187	3.07	34.48
Regina, Saskatchewan	29100	193100	5.29	0.95	1328	3.12	41.86
Thunder Bay, Ontario	27395	108359	5.03	0.94	330	2.52	42.96
Québec, Quebec	26178	516622	5.71	0.93	1138	3.06	40.64
Kamloops, B.C.	26075	85678	4.93	0.96	286	2.46	41.82
Windsor, Ontario	25443	210891	5.32	0.94	1441	3.16	39.06
Guelph, Ontario	30078	121688	5.09	0.94	1395	3.14	39.38
Kelowna, British Columbia	25134	117312	5.07	0.92	554	2.74	43.40
St. Catharines-Niagara, Ontario	25114	131400	5.12	0.91	1367	3.14	41.70
Hamilton, Ontario	26267.36	519949	5.72	0.95	465	2.67	38.18
Peterborough, Ontario	24212	78698	4.90	0.89	1234	3.09	43.88
Summerside, P.E.I.	22382	14751	4.17	0.87	520	2.72	45.12
Charlottetown P.E.I.	22229.5	34586.5	4.54	0.86	804.5	2.91	40.96
Whitehorse, Yukon	34337	23276	4.37	0.98	56	1.75	41.02
Yellowknife, North West Teritories	44567	19234	4.28	1.02	182	2.26	44.27
Abbotsford-Mission, British Columbia	22990	133497	5.13	0.97	356	2.55	39.52
Saint John, New Brunswick	22510	70063	4.85	0.89	222	2.35	42.18

APPENDIX 2
MATE PREFERENCE DATA

City	Average physical attractiveness category (%)	Physical attractiveness category standard deviation	Average resource holding potential category (%)	Resource holding potential category standard deviation	Average emotional appeal category (%)	Emotional appeal category standard deviation	Average personal activities/interests (%)	Personal activities/ interests standard deviation	Average total key words
Vancouver, B.C.	0.06	0.11	0.23	0.23	0.41	0.31	0.29	0.28	6.98
Calgary, Alberta	0.12	0.16	0.28	0.27	0.35	0.28	0.25	0.26	7.34
Saskatoon, Saskatchewan	0.10	0.15	0.20	0.18	0.38	0.25	0.33	0.27	5.26
Winnipeg, Manitoba	0.08	0.18	0.25	0.28	0.42	0.35	0.25	0.32	5.18
Toronto, Ontario	0.07	0.11	0.26	0.24	0.33	0.25	0.35	0.29	7.04
Montréal, Quebec	0.08	0.16	0.24	0.24	0.43	0.32	0.25	0.29	5.78
Halifax, Nova Scotia	0.08	0.13	0.22	0.22	0.45	0.29	0.24	0.27	6.58
St. John's, Newfoundland and Labrador	0.08	0.17	0.25	0.25	0.36	0.30	0.31	0.31	6.00
Victoria, British Columbia	0.05	0.09	0.26	0.25	0.39	0.33	0.31	0.28	5.88
Edmonton, Alberta	0.06	0.12	0.26	0.23	0.37	0.28	0.31	0.27	5.76
Regina, Saskatchewan	0.08	0.16	0.18	0.20	0.35	0.30	0.38	0.37	5.10
Thunder Bay, Ontario	0.07	0.17	0.18	0.19	0.43	0.30	0.33	0.28	6.36
Québec, Quebec	0.02	0.06	0.21	0.30	0.42	0.35	0.35	0.35	3.72
Kamloops, B.C.	0.07	0.13	0.17	0.25	0.41	0.37	0.36	0.40	4.32
Windsor, Ontario	0.09	0.14	0.18	0.20	0.43	0.30	0.29	0.31	5.64
Guelph, Ontario	0.08	0.16	0.22	0.20	0.40	0.27	0.30	0.31	5.68
Kelowna, British Columbia	0.12	0.14	0.23	0.24	0.40	0.27	0.26	0.27	6.10
St. Catharines-Niagara, Ontario	0.05	0.10	0.19	0.22	0.37	0.27	0.39	0.32	5.18
Hamilton, Ontario	0.07	0.13	0.19	0.19	0.37	0.30	0.37	0.34	4.94
Peterborough, Ontario	0.07	0.12	0.19	0.18	0.33	0.25	0.40	0.30	7.06
Summerside, P.E.I.	0.01	0.04	0.20	0.28	0.34	0.32	0.44	0.38	4.02
Charlottetown P.E.I.	0.04	0.10	0.21	0.25	0.38	0.36	0.38	0.37	3.32
Whitehorse, Yukon	0.04	0.08	0.16	0.20	0.42	0.33	0.39	0.36	4.40
Yellowknife, North West Teritories	0.04	0.10	0.21	0.25	0.37	0.30	0.38	0.35	5.15
Abbotsford-Mission, British Columbia	0.07	0.11	0.19	0.21	0.40	0.30	0.34	0.32	6.78
Saint John, New Brunswick	0.04	0.09	0.15	0.16	0.51	0.32	0.29	0.30	5.86

APPENDIX 3
DESCRIPTIVE WORDS

Physical attractiveness	Resource holding potential	Emotional appeal	Personal activities and interests
attractive	educated	compassionate	music
handsome	financially stable	loving	outdoors
great smile	well off	sincere	theater
tall	intelligent	caring	hiking
athletic	professional	sincere	biking
in good shape	smart	honest	swimming
beautiful eyes	income (high)	trustworthy	dancing
muscular	competent	genuine	camping
strong	good job	affectionate	reading
physically fit	employed	passionate	night out (clubs and bars)

APPENDIX 4
EXAMPLE ONLINE PROFILE