

Budapesti Corvinus Egyetem

MATE SELECTION IN ON-LINE DATING

Ph. D. Thesis

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Mate selection in on-line dating

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1. Introduction

When somebody wants to write about the effect of Internet on social networks, it is not evident to choose on-line dating. Hampton and Wellman [2002] for example in their Classic “Netville” study tested the hypothesis, whether Internet use contributes to more contact with distant people. In an other important study Mesch and Talmud [2003] examined Israeli adolescents, and found that 13% of them met their best friends at the Internet. They analyzed differences between friendships formed on the Internet and ones formed face-to-face.

The idea to examine the characteristics and effects of on-line dating came from a previous research of our team.(prof. György Lengyel, Dániel Füleki, Eliza Eranus, Viktória Siklós and myself) .In this study computers and Internet connections were installed to 10 households in a small Hungarian village. Internet usage patterns and effects on the local community was monitored (Lengyel et. al. [2006]). I have noticed that two of our 10 subjects have used the Internet for dating purposes, which suggested that Internet dating is not a marginal phenomenon in Hungarian society.

In this research I would like to answer the following questions: **1. What are the main partner selection strategies; 2. Does heterogeneity of in-line communities effect homogamy? 3.How is partner selection different in the on-line settings from the traditional face-to-face meetings.**

1. As a conceptual departure, I would contrast two theories. One is the **social exchange** mechanism (Thibaut and Kelley [1959], Homans [1961]), the other is the **attraction theory**. Attraction theory claims that people like to interact with similar others more than with different ones (Newcomb [1961], Byrne [1971]). The social exchange theory states that they try to find the best possible partner who would accept them (Kenrick et. al. [1993], Taylor and Glenn [1976]). Both mechanisms predict homogamy (the tendency that similar people marry each other). If social exchange theory is true, people who are most desirable on the market, select each other. Then the remaining can select only among themselves. So my first question is that what is the reason for the homogamy? **Why do people select similar others?** Is it because they

like similar others more, or because they try to find the best partner who would accept them?

2. Homogamy and homophily theory argue that another reason for selecting similar people for friends and partners – beside that people like similar others more than different ones – is that in society people in many situations meet more alike than dissimilar others (Blau and Schwartz [1984], Kalmijn and Flap [2001], McPherson and Smith-Lovin [1987]). This effect is called "the effect of structural opportunities". Is it true that on the Internet people have more opportunities to meet different people? If it is so, **will the Internet decrease the homogamy**? Or does homogamy remain the same, and people simply will have smaller chance to find a partner, where it is difficult to find someone similar?

3. **I would like to answer the question, if partner choices are different online and face-to-face.** It was shown that people base their partner selection on the observable attributes of the other (Murstein, [1971]), and they are attached to existing partners (Rusbult [1980], Collins [2004]). To answer the question, if choices are different on-line and face-to-face, I integrate these theories. The prediction is: if a characteristic is observable earlier and better, the higher the homogamy will be according to that.

Internet may have different effects on relationship formation according to the context where people meet. Because most of the Internet-based relationships are formed in chat rooms and dating sites, I compare these two settings with the face-to face meeting.

For example I expect that – compared to face-to face meetings – people use social-economic status as a selection criteria on dating sites more often, but in chat groups they care about it less. Therefore I expect that relationships formed on dating sites will be more socially homogeneous, and the ones formed on chat groups will be less homogeneous than relationships formed face-to face.

As one can see, the questions I have put about the Internet, but they answer more general, theoretical questions about mate selection. Additionally, the research is supposed to contribute to the research about how the Internet affects social networks and social inequalities, and specifically how Internet affects homogamy. And last but not least, it can provide important data for managers of dating sites and chat groups about what people participating in these communities are interested in, which information they can use for developing their services.

2. Online dating

On-line dating is a quite new and changing phenomenon. The changing element of it is the context of interaction. There were people who got know each other via the Internet for a long time. People formed romantic relationships at different places on the Internet where they interacted: discussion forums, Usenet groups, etc. The recent years chat groups became increasingly popular especially among youngsters. Nowadays dating sites are getting more and more widespread, actually raising attention of public media too. Examples are the German newspaper Die Zeit [2005], or the Hungarian Internet news site Index [2005].

2.1. Prevalence of on-line dating

When writing about the effects of on-line dating, first of all it is necessary to know the prevalence of on-line dating. Fiore and Donath [2005] reported that in 2003 there were 40 million unique users of on-line dating in the U.S, which is half the number of single adults in the States. Brym and Lenton [2001] calculated that 1.2 million Canadians have visited dating sites after excluding double counting. They found that among users, who had met anyone face-to-face, 60% had formed at least one long-term relationship, and 3% had married. Hardie and Buzwell [2006] carried out a telephone survey in Australia. They found that 78% of respondents used Internet and 13% of Internet users had formed social relationships on the Internet. 79% of these respondents used Internet to form friendships, and 21% to form romantic relationships.

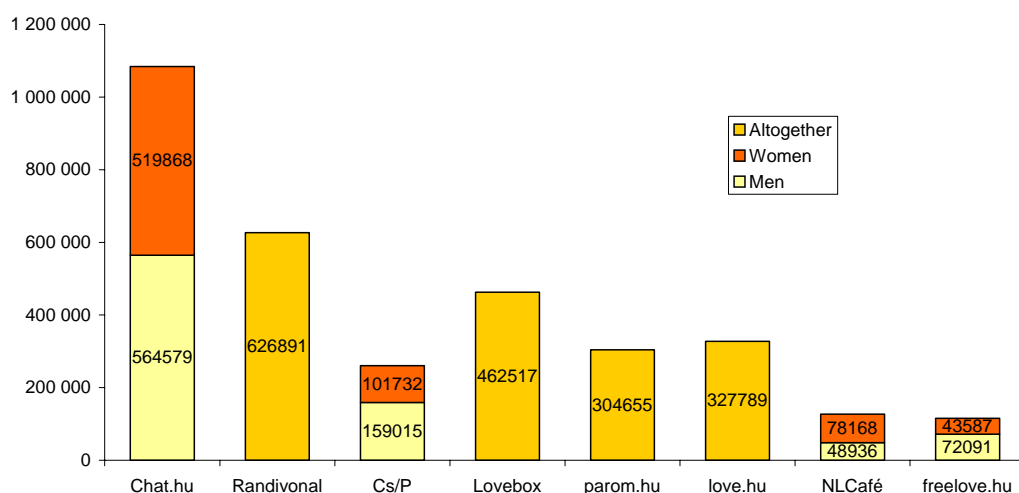
In Hungary there are two popular ways of finding love on-line: using chat groups and joining dating sites. Dating sites are specially designed websites for dating purposes. These are typically commercial websites, which are maintained by advertisement and revenue from membership fees of the users. Beside generating revenue for the site owner, membership fee also functions as a filter: it prevents people without dating intention to join the site for free. Members can create personal accounts by filling in registration forms. They can upload pictures and become able to search among attributes of other members according to categories of the registration forms (such as age, place of residence, height, weight, education, marital status, ect.). They

can contact other users by mail service of the dating site; e-mail addresses usually cannot be used directly. Chat groups (or chat sites) are websites, where people can chat with each other. There are several chat rooms, where multiple users can communicate with each other, but private chat can be also initiated. Chat sites do not ask membership fees from users.

People usually think that chat is mainly used to find friends and chat with existing ones. The truth is that for this purpose people usually use messenger programs, and many chat group users are looking for romantic relationships. This is supported by the fact that the netiquette in chat rooms is that users with same sex rarely initiate private chat. Chatting with the opposite gender can often lead to friendship, but the romantic motive is usually present too. Whitty [2004] found that 23% of chat room users had formed on-line romantic relationships.

One way to measure the magnitude of on-line dating is counting registered users of dating sites and chat groups. Results are presented on Figure 1. If one summarizes these numbers, a total of 3.3 million users are found, which is equal to 73% of the entire Internet using population in Hungary.

Figure 1: Registered users on the largest chat site and the 7 largest dating sites in Hungary



Obviously, this method is subjected to double counting. One kind of double counting is that registrations are usually not deleted from the sites if they become

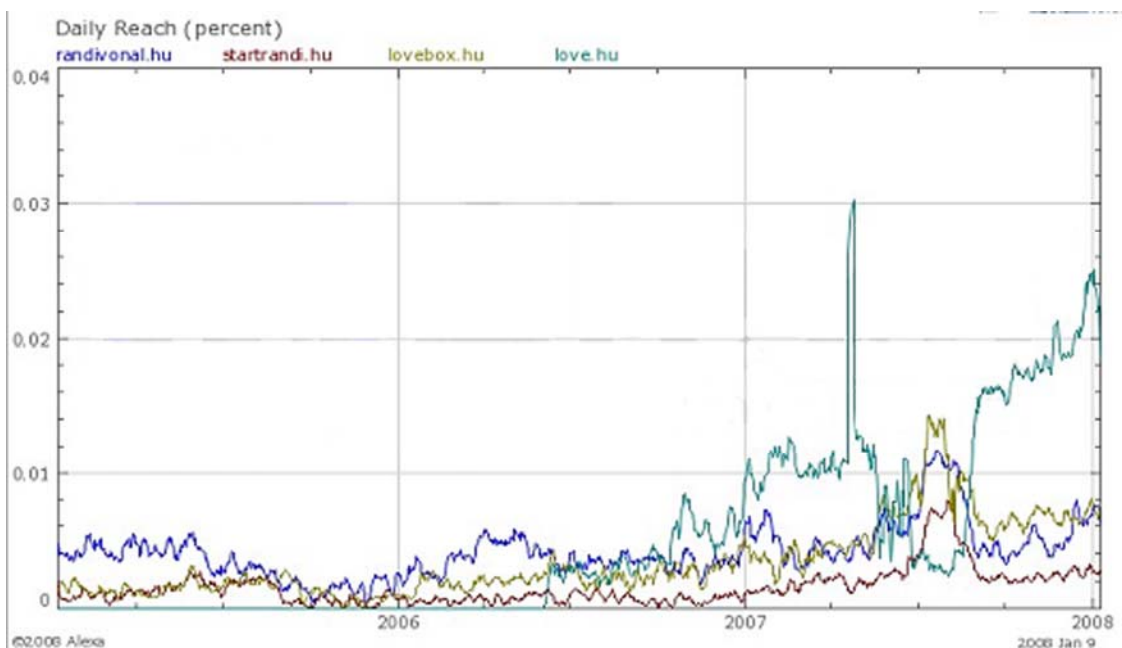
inactive. If someone forgets his/her username, or re-registers to a site for other reasons, he/she is counted twice (or more times) on the same site. Furthermore, people can use more sites at the same time

Another source about the magnitude of on-line dating is the Word Internet Project survey. The 2002 survey showed that in Hungary 19% of Internet users have ever got to know anyone on the Internet. However, this includes both friendships and romantic relationships.

Important data on on-line dating was reported by NRC market research. In their survey in April 2006 they found that 45% of Internet users have ever used Internet for dating in Hungary. This rate is 50% among Internet users under 30, and 25% among Internet users over 50. When the survey was asked, 10% of Internet users used it for dating purposes actively. These results underline, that online dating is by no means a marginal or exotic phenomenon in today's society.

Increasing popularity of online dating in Hungary can be illustrated by analyzing traffic of dating sites. Figure 2 presents traffic data of the four biggest Hungarian dating sites in the last three years using the web tool of alexa.com.

Figure 2: Traffic of the four biggest Hungarian dating sites in the last 3 years



2.2. Studies on on-line dating

Previous studies on on-line dating mostly came from psychology. The study of McKenna et. al. [2002] examined different aspects of on-line relationships. About self-disclosure in on-line environment the authors argue that "people do not engage in self-disclosure with one another until they are confident that they formed a dyadic boundary ensuring that information disclosed by one is not leaked by the other to mutual acquaintances". And "...the relative anonymity of the Internet greatly reduces the risk of such disclosure, therefore it makes it easier." (p. 10). Moreover, the Internet lacks the gating features like physical appearance that prevent some people to begin friendship or romantic relationship. Additionally, on the Internet it is easy to find people with similar interests, because there are many newsgroups and forums for people with special interest, and common interests help to develop a relationship (p.11). The authors have found that social anxiety and loneliness promotes on-line relationship formation. They also described the development path of relationship formation: first people chat or e-mail to each other, then they make telephone calls, and finally they meet face-to-face. They also analyzed relationship stability and found that Internet relationships are comparable to offline dating relationships in their stability (being together after 2 years). One of the authors' most interesting finding came from experimental setting. They compared whether people like each other more when they were acquainted online or offline. They compared those who met first online then face-to-face with others who met twice face-to-face. It was found that liking each other was higher in the first group. Analyzing the factors, which determine liking, they asked participants about "to what extent they feel that they know the other", "how much they know the attitudes of the other" and "how wide range of topics they discussed". They found that for those participants who had to form acquaintance through a chat environment, liking correlated with these variables. For personal meeting, these did not correlate with liking. They draw the conclusion from this that common interests are more important online, because these variables determined liking on-line. They assigned this effect to the lack of gating features, i.e. that these does not determine liking offline because than physical appearance is what matters. However, they did not measure the effect of physical appearance.

In her studies, Baker [2000, 2002] looked for factors, which make on-line dating successful using qualitative techniques. Successful relationship formation was regarded as developing the online relationship into face-to-face and not to split up. She has found that on sites for specific topics people can meet others with the same interest, which is important for long-term compatibility. It turned out that couples have to come over physical distance, which practically means that one had to move to the other's place (every couple lived far away from each other initially). The author found that spending some time to get know each other before meeting helped successful relationship formation. Partners also had to overcome communication difficulties, because communication style of the other can be easier misunderstood using the Internet.

The study of Whitty and Gavin [2001] has found that dating online is not an end; the natural development of the relationship is towards the offline meeting. They argue that the development of relationship from online to phone and further to personal also includes different trust levels. Whitty [2002] have found, that this kind of trust is more important to woman: they more often lie online in order to prevent men to identify who they are. On the contrary, men more often lie about their social status. Whitty [2003] found that for men in on-line relationship social status is a tool, which they use to flirt with women. On the other hand women more often flirt online by non-verbal signals (the online substitutes of them) and by exaggerating their physical attractiveness. Studies of on-line daters also found that in the online environment rejection is less likely to cause distress (Whitty [2003], Dormán [2005]).

The study of Holme et. al. [2004] analyzed a Swedish dating community from a network perspective. They found that people having more contact are more likely to form relationship with others with more contact. The authors did not examine, if people with similar age or place of residence also tend form relationship with each other.

Homophily in on-line dating was the subject of the study of Fiore and Donath [2005]. They analyzed messages in an on-line dating system, and compared homogeneity of messaging partners according to different characteristics. They found the highest homogeneity according to marital status and willingness to have children. Homogeneity according to education, religion and race was smaller, but still significantly higher than in the case of random interactions.

Partner selection in on-line dating, which is a focal question of this research, was analyzed by Hitsch *et al* [2006]. Authors used the computer log file of a US dating service containing approximately 22.000 members. With the use of the log file, they got

access to profile of users on the dating site, which included their photo, data about their physical attractiveness, their age and social status. Additionally, with the log file, behavior of users was traceable by information about what profiles the user was browsing, and whom did he or she send a message with what content. Authors examined the choices that whom did users send e-mails on the site. They found that physical attractiveness of the photo on the profiles increases the probability of getting first contact e-mail; regardless of the sender's own physical attractiveness. Attractiveness of the photo was the strongest predictor in the preference model. Having a photo on the site itself increased the probability of getting a message. Women also liked taller men, while women higher than 5'8 (170 cm) could expect mails with lower probability. Income was a strong predictor of getting e-mails for men, however it did not have significant effect for women. Analysis of educational attainment have shown that education itself do not have a positive effect. Men with higher education were indifferent about women's education, but lower educated men did not write to highly educated women. Women were less likely to write to men, who are much lesser or more educated than they are. When turning to the effect of race, differences always decreased the probability of writing e-mail, or were insignificant. Authors also computed that to what extent could traits substitute each other. They have estimated that with a large positive surplus in his income, a man can substitute his poor look, lower height or that he has a different race.

3. Theorizing mate selection

The “who marries whom” question is on the agenda of the social sciences since the beginning. Sociological theory usually names two factors, which drives marital selection. The first of these are human **preferences**, and the second are the **social opportunities** (Kalmijn [1998], Bukodi [2002]), or in other words: **mating** and **meeting** (Verbrugge, [1977]). Preferences are important, because they describe whom others will find attractive. There are two theories, which have references to mate preferences: **social exchange theory**, and **attraction theory**. Opportunities define the possible pool where people can select according to their preferences. Studies on the opportunities examine the effect of group properties (heterogeneity, size) on partner selection (homogamy).

3.1. Social exchange

According to the “original” social exchange theory (Thibaut & Kelley [1959], Homans [1961]), in social relationships people are faced with rewards which they can get from the other, and costs which they suffer. On the bases of the theory, people form and dissolve social relationships according to these costs and benefits: one forms a relationship with someone who offers higher rewards and lower costs for him. Possible rewards in the relationships are help and social support; so one reward can be willingness to provide these. For example, Jennings [1950] found, that girls, who have altruistic motivation, were selected as friends more often than girls who appear relatively self-bound and egocentric. Other examples for rewards are traits like generosity, enthusiasm, sociability, punctuality, fairmindedness and dependability (Thibaut and Kelley [1959], p. 37). These are characteristics, which are generally rewarding. However, there are also traits, which are rewarding only for specific people. These are similar interests, similar attitudes or complementary needs. Costs in a relationship include physical distance, which makes it different to maintain the relationship, and possible rejection. According to the theory, people also have a “comparison level” (CL). This is a minimal level of the rewards over the costs, which they expect from a relationship. If no possible relationship offers this minimum level of

rewards-costs difference, it means that the individual's the best choice is to be alone. Moreover, the higher the rewards-costs difference over this CL level is, the more satisfying is the relationship. The authors also define a comparison level for alternatives: CL_{alt} . It represents the rewards from the possible alternative relationships. So if the CL_{alt} will be higher than the rewards-cost difference in the actual relationship, the person will leave the relationship for another one. According to the authors, the higher the difference is between the actual rewards–cost level and the CL_{alt} , the higher will be the commitment to the actual relationship.

Scholars of marriage markets tested social exchange theory the following way. They assume that having more valued attributes on the market gives people greater chance to attract partners with more valued characteristics. This must be true even for two different characteristics. Therefore a correlation should exist between different characteristics of the partners. Studies tested this correlation for different pairs of characteristics.

An implicit assumption in this “applied version” of the theory is that it assumes that there are generally valued traits in society. If people had preference for similarity, no such exchange would be possible.

Several studies compare the relationship between men's and women's **physical attractiveness and education**. A question was put, whether more attractive or more educated women have better chance to get educated husbands. About this question Elder [1969] has found that education is more useful (has higher correlation) than attractiveness for women to get educated husbands. He also found interaction effect between the social background (father's education) and these two variables: for lower status women attractiveness was more useful, than for women with higher origin.

Taylor & Glenn [1976] reproduced most findings of Elder [1969]. They found small but statistically significant correlation between the women's physical attractiveness and their husband's education controlled by the women's education, but they found that education is more important than attractiveness. They also found the mediating effect of the social background.

The idea of Stephens et. al. [1990] was that previous studies found correlation between women's physical attractiveness and men's education because they did not control for the men's education. Controlling for this they found only small statistically significant correlation between men's education and women's attractiveness using zero-order correlations. Using regression models they found attractiveness statistically non-

significant as a predictor of the spouse's education. They also did not find statistically significant sex differences in the importance the physical attractiveness as predictor of the spouse's education. But they did find that physical attractiveness is a statistically significant predictor of the spouse's attractiveness.

Another group of studies investigated the relationship between **race and education**.

Kalmijn [1993] calculated odds ratios of marrying up (marrying someone more educated) divided by marrying down. He found that a white woman who marries a black man has higher probability to marry up than a black woman who marries a black man. Also a black woman has lower probability to marry up if he marries a white man, than a white woman who marries a white man. On the other hand a white women do not have higher probability to marry up if they marry a black men than if they marry a white men. This is so simply because the distribution of the race and education. White men in average are more educated than black men. The general conclusion is that there is an interaction between marrying out and marrying up, but it is sometimes overwhelmed by the effects of the population distribution.

Schoen and Wooldredge [1989] found similar interaction effects using regression models. They have found that 23-25 old black men are more likely to marry white women if their own education is one category higher. However, the other age groups did not show this difference. Actually, they have found stronger interactions between age and education. For almost all age groups for females under 32 years they have found that females are much more likely to marry more than 10 years older men if the men are two or more categories more educated than themselves.

The impressive study of Rosenfeld [2005] reviews existing evidence on this status-race exchange, and shows that it is only due to inappropriate methodological approach. He points out that the fact that among black people the higher education predicts higher probability of outmarriage cannot be regarded as status-race exchange, since black people are lower educated in general. Therefore preference for same education itself can lead to this result (confer the results of Kalmijn, [1993]). One can call exchange only that situation, when the white partner actually have lower education, than her or his black mate. Additionally, he re-analyzed the US census data, using log-linear models. He has shown, that status-race exchange becomes insignificant, if differences of outmarriage rates across races are included in the model.

DiMaggio and Mohr [1985] examined the relationship between **cultural capital and education**. They measured cultural capital as interest and participation in high culture activities. The variable they used was a result of a factor analysis, and it includes variables like attending symphony concerts, having experience in stage performance, attending art events and having “cultivated self-image” (p.1237). The authors found significant relationship between the cultural capital and the spouse’s education, controlled by the respondent’s own education, their general ability score, their father’s education, and his occupational prestige. Besides the small but significant direct relationship, they have found larger indirect relationship through respondents’ own educational attainment.

Concerning **differences in the preferences of men and women**, Buss and Barnes [1986] have found that men rated physical attractiveness higher than women, and women rated higher social status variables (“College graduate” and “good earning capacity”) than men. Sprecher et. al [1994] reported that men were more likely than women to marry younger others, someone with lower education and earning capacity, and other race than women, and women were more likely to accept older others or unattractive others as a mate than men. Li et. al [2002] have found that the most necessary characteristics for men were on physical attractiveness, followed by intelligence. In case of women it was intelligence, followed by yearly income.

3.2. Historical and cross-cultural perspective

Studies presented above presume that participants on the marriage market have some kind of preference about what is a good what is a bad trait concerning their possible partners. However, the traits regarded as good by the general wisdom in modern western societies (having a beautiful/handsome, educated, kind, wealthy etc. partner), may not be the same in other societies, and was possibly different fifty or a hundred years ago. Moreover, old and the new approaches can be present in the same society at the same time.

In their historical-anthropological work about the British family, Young and Willmott [1973] describe this process as

“a marching column with the people at the head of it usually being the first to wheel in a new direction. The last rank keeps its distance from the first, and the distance between them does not lessen.

But as the column advances, the last rank eventually reach and pass the point which the first rank had passed some time before”.

(p. 20)

The authors interpret this development of the family as a movement towards symmetry. Among others, they identified the following changes. Compared to the end of the 19th century, when working class women married in their teens, on the average experienced ten pregnancies, spent fifteen years at home nursing the children, the fertility rate for the 1970s decreased dramatically, which made possible for many women to have paid jobs instead of staying at home. In the 1890s men worked longer hours, and typically the wife's mother helped at home raising the children. In the 1970s machines helped a lot in housework, and men worked somewhat less in their jobs, and participated in the housework as well. More importantly, the homes became more suitable for leisure (it became less crowded, TV became widespread, etc.) and men spent their leisure time at home together with their family instead of spending it in the pub, which was typical for the 1890s.

I can assume that this move towards a more symmetric family has at least two effects on marital preferences. The spread of paid work among women may have increased the preference for women having good earning power, and the leisure time spent together may have increased the preference for women, who are good company: who have good cultural background and are not less educated than their partners. Thus, the progress towards more symmetric family roles may result in more symmetric partner selection preferences.

Desired characteristics of a potential partner are also different between cultures. Buss et al. [1989] examined mate preferences across 37 cultures. They found high cultural differences: culture itself explained 14% of the variance across the examined 31 mate characteristics. The greatest difference was found about traditional traits (chastity, good housekeeper, desire for a home and children). Traditional vs. modern dimension proved to be the most important dimension in the multi-dimensional scaling results as well. Most traditional countries in the sample were China, India, Iran, Zambia and Nigeria, while modern preferences were found in Western-European countries (Netherlands, Great Britain, Finland, Sweden, Italy). Preference orderings of men and women have shown strong similarity ($r=0.9$). Interestingly, the highest difference between men and women was found in Zambia and Nigeria, where polygyny is present.

Hatfield and Sprecher [1995] examined cross-cultural variations in male-female differences in mate preferences in the United States, Russia and Japan. They found the highest differences in Japan. They also presented differences in preferences among the three countries. For example physical attractiveness, money and status was less important in Japan than in the other two countries, while for the traits intelligence and potential for success was more important in the U.S. than the other two cultures.

3.3 Attachment to partners

The investment model Rusbult [1980, 1983] is a special version of the social exchange theory considering the operationalization of the interpersonal attraction. The author extended the theory with one element. She assumed that beside costs and rewards, investments also determine attraction and commitment to a relationship. She tested the effect of different investments. She called extrinsic investments the resources, which are exogenous to the relationship, but one can loose with dissolving the relationship. Examples are home, if two people live together, or friends, if they have common friends. She called intrinsic investments the resources, which have been invested directly into the relationship, such as time, money and emotional involvement. She found that both kinds of investments increase commitment to a romantic relationship.

Investment theory about positive effect of material and emotional investments on commitment is actually an empirical finding, but it lacks the explanation on the micro level. There are several explanations possible depending on the theoretical perspective. From an economic point of view, it can be explained by the risk-aversion in human behavior: people *ceteris paribus* tend not to change certainty for uncertainty. (Kahneman and Tversky [1979]) However, when considering intimate relationships, pure economic argumentation may not be suitable, probably emotional explanation should be used instead of economic ones.

Emotions are rarely used in sociology as predictors (Thoits [1989]); however, there are sociological theories about emotional interactions. The microsociological theory of Scheff [1990] proposes the maintenance of social bonds as the crucial human motive, instead of traditional approaches of motivations for money, power or prestige. The motivation of maintaining social bonds originates from Bowen's family system theory,

where optimal differentiation, a balance between closeness (conformity) and distance (independence) was examined. Optimal differentiation requires conformity to understand the other's point of view, but also distance to be able to accept the other's independence. Another important base of the theory is Goffman's symbolic interactionism. The interaction ritual theory of Collins [2004] also builds on symbolic interactionism. In his mutual focus / emotional entertainment model Collins identifies a self-enforcing mechanism of interactions (mutual focus of attention and shared mood), which generate emotional energy for the individual and group solidarity. This mechanism can be applied to the smallest group of two partners, and explains solidarity. He analyzes sexual interaction in detail (Chapter 6), and describes, how sex produces intimate solidarity, which in the case of two partners is called love. Generation of identification with each other, as a couple, symbols as memorials of the relationship, and the feeling of possession of the other's body is considered. Using Collins' theory, attachment to partners can be understood, when sexual interaction is included, but also in the case when it is not.

3.4. Attraction theory and similarity

Beside or instead of social exchange, similarity might be the crucial mechanism driving mate selection. The fact that similar people attract each other is a cornerstone of social psychology, and also the homophily theory in sociology. The psychological explanation for this is that rejection of some basic values means rejection of the self, and acceptance means validation of the self, a feeling that one is right (Festinger [1950]). Originally, the effect of similarity was tested about friendship, not about marriage.

In his experiment of Newcomb [1961] and his colleagues observed college students living together in a dormitory building for a year. Newcomb measured attitudes of the students about different issues. He has found that attitude similarity measured in the beginning of the year well predicted attraction between students at the end of the year, but it did not predict it in the beginning when they have not known each other yet (p.81.). However, he also found that people even in the beginning of their acquaintance tend to estimate values of the other similar to their own if he is attracted to the other. (p.53). Newcomb also examined the role of similarity in five "objective" measures: age,

field of study, religion, urban-rural background and room assignment. He found that in one of the two study groups these characteristics predict attraction in the beginning of the year, and vanish as people get to know each other, but he could not reproduce this finding in the second study group (p.95).

Byrne [1971] also found attitude similarity an important predictor of attraction. His respondents filled out an attitude questionnaire. After they were given a filled in questionnaires. Byrne has found that attraction towards the stranger who filled in the questionnaire was a linear function of the proportion of the similar attitudes (p.58).

Laumann [1965] examined the personal preferences in establishing social relationships. He tested two effects: the “like me hypothesis, which means that people prefer similar others, versus the “prestige” hypothesis, suggesting that the higher status someone has, the more people prefer to contact him or her. The main assumption of the study was that “occupation is one of the most important determinants of stratification in the American urban community” (p.26); therefore preferences for different occupations were analyzed. The author used social distance measurement to test the hypotheses: he asked, whether one would like [a carpenter] to have as a son-in-law, friend, neighbor, etc. Results have shown that every people prefer others with higher status compared to lower status ones. However, this difference was higher for higher status respondents than for lower status ones. This means that the prestige principle was the major determinant of preference for contacts, but there was some effect of the „like me” principle too.

Although it was not in their theoretical focus, some studies found the effect of similarity about mate selection too.

A group of scholars have done research on the question that what attribute of the other is important for partner selection, and how is it different between men and women (Buss & Barnes [1986], Kenrick et. al. [1993], Sprecher et. al. [1994], Li et. al. [2002]). Since the authors mostly came from psychology, they mostly examined personality traits.

Based on the study of Buss & Barnes [1986], Kenrick et. al. [1993] created 8 composite measures of attributes, which determine partner selection: dominance, status, attractiveness, family orientation, agreeableness, extraversion, intellect, and emotional stability. They asked the participants, that at least in which percentile would someone be, to be acceptable as a (dating, marriage, or sexual) partner. They compared the self-ratings and the preferences according to these measures, and found considerable

correlation (usually 0.3-0.6) about marriage and also about dating. Although they interpreted this result as one supporting social exchange, the results can be better explained by attraction to similarity.

Sprecher et. al. [1994] examined the importance of 12 factors, asking how willing participants would be to marry someone with these characteristics. These included “being more than 5 years older”, “being more than 5 years younger”, “earn less than the you”, “earn more”, “having more education”, “having less education” having “different religion” and “different race”. The results show that importance of similarity is different across these characteristics. People were more likely to marry someone with different earning or education, than to marry someone with more than 5 years age difference. They were less likely to marry someone with different religion, and least to marry someone with different race. On the other hand, the data also support the social exchange-type preferences, because people were more likely to marry someone with more education or more earning than theirs compared to having less than theirs.

3.5. Difference of selection from acquaintance to marriage

Stimulus – value – role (SVR) theory (Murstein [1971, 1987]) considers dating as a sequential order of three steps. According to the theory in the first step (*stimulus*), people choose others according to characteristics, which they can observe before beginning a relationship. Examples for these characteristics are physical attractiveness, voice, dress, etc. (Murstein [1987], p.929.) When selecting others, people also take into account the same characteristics of their own, which would be valuable for others, because they do not want to be rejected. Then in second (*value*) stage, they check if their basic values are compatible. As mentioned before, compatible values are important, because rejection of some basic values means rejection of the self, and acceptance means validation of the self, a feeling that one is right. Before marriage, couples also need to consider their views on living together. This third stage is called the *role* stage, and includes consideration of perceived role fit, personal adequacy and sexual compatibility (Murstein [1971], p. 118). A serious methodological problem of the theory was to define when the value phase ends and the role phase begins. In his later article Murstein ([1987], p.930) define this boundary as "dating some" should be regarded as the value phase, and dating extensively as role phase. Of course, "going

steady" and "being engaged" means also to be in the role phase. To validate the theory, Murstein [1971] has shown, that premarital couples have higher similarity in physical attractiveness and greater similarity of values than randomly paired people. Another test of the theory would have been to test the chronological order of the stages. The author has shown that selection criteria of the stimulus and value phase do not matter any more in the third (role) phase. He has done it by showing, that neither value similarity, nor similarity in the aspect of physical attractiveness affects satisfaction with the relationship in the role phase. However, he did not test the sequence of the stimulus and the value stage, which is my central interest.

Murstein's SVR theory was highly debated in the '80s. (Surra [1990]) One of the critics were Stephen's [1984, 1985], who argued that people in their later phase of relationship are not more similar because people continuously filter out those who are not compatible with themselves, but because "the development of a relationship involves partners' constructing a shared world view, or set of common assumptions about the way things are". Stephen [1984,1985] have proven this assumption using longitudinal data showing that values of the couple are getting more similar during the dating process. However, these findings did not prove that Murstein's theory is wrong; it can be true that the two effects (filtering partners and convergence of values) exist parallel.

Blackwell and Lichter [2004] tested the winnowing hypothesis for dating, cohabiting and marriage. According to the hypothesis, "heterogeneous dating and cohabiting relationships end, while homogeneous partners progress towards marriage" (p. 719-720). Another hypothesis is that people have different goals about dating and marriage. Marriage is about founding family; therefore social status is more important for marriage. Thus, homogamy of married couples should be higher than homogamy for dating, especially according to social status. However, none of these hypotheses were supported by the data.

About the differences between preferences for dating and marriage partners, the study of Kenrick et. al. [1993] is interesting too. As previously described, the authors computed correlations between self-rating and minimum level for accepting someone as dating and marriage partners (and for sexual relations and a single date). The correlations do not differ too much between dating and marriage, which shows that people do not prefer more similar others for dating and marriage (in the examined 8 characteristics including attractiveness, status and 6 personality traits), and neither is the

case that some kind of similarity is more important for dating, some of them for marriage. If we examine the preferences themselves, we see that family orientation is somewhat more important for marriage. If we compare preferences for a single date with dating and marriage, we see that correlations are lower, therefore similarity is not as important, and that thresholds of acceptance are generally lower for a single date.

3.6. The effect of opportunity structure

The relationship between group properties and homogamy was examined by Blau and Schwartz [1984]. They analyzed aggregate data of 125 American metropolitan areas. Their first hypothesis concerned size distributions. They assumed that if a group is smaller in a metropolitan area, members of it are more likely to marry different people, because the ratio of different people in the group will be higher. Groups defined included ethnicity (nonwhites, natives or foreigners), birth regions (born in the region or not), industry (manufacturing and other) and occupation (3 categories). So they tested the correlations across the metropolitan areas that if the ratio of whites is higher in the area, they will be more likely to marry whites, if the ratio of foreigners is higher, they will be less likely to marry Americans, and so on. They found these correlations significant for all groups mentioned above, as expected (p.37). An even more interesting result of the authors concerned group heterogeneity. They assumed, that if heterogeneity in a metropolitan area is higher, heterogamy will be also higher, because in more heterogeneous areas people have greater chance to meet different people, so they actually will form more relationships with unlike people, and the heterogeneity in marriage increases. They tested the correlations for race, national origin, mother tongue, ethnic background, birth region, industry and occupation. They found significant positive correlation for all these characteristics. For example, the heterogeneity of ethnic background and the ethnical outmarriage rates correlated across regions, the same for industry, and so on.

Kalmijn and Flap [2001] analyze the effect of shared social settings of couples on homogamy. They take into account five organized settings: whether the couple were in the same school (14,5% of couples), whether their family knew each other (14,4%), if they grew up in the same neighborhood (11,5%), if they are members of the same voluntary organizations (10,7%), and if they have the same workplace (8,8%). Overlap

was possible among these settings – altogether 42,3% of the couples shared one of these. The authors also asked about non-organized settings, and found among couples having common organized settings that 42% visited the same bars or places to go out, and 52% had common friends. Among those who did not share organized setting, these ratios were 45 and 42%. The authors supposed that couples who shared a setting, which is more homogeneous according to a special characteristic, tend to be more often similar in that aspect. The only problem was that they did not have data about the homogeneity level of the different settings, so they could build their hypotheses only on “educated guesses”. They supposed that in school people meet more often someone with the same age and they will have the same education. Therefore couples that met at school will be more homogeneous according to education and age. They also put forward that the higher level of school they meet, they would be more homogeneous educationally. Another hypotheses were that sharing workplace promotes class homogeneity and that sharing neighborhood, school or family ties will result in religious homogamy. All of these hypotheses were supported by the data. The point of reference was always having no common organized setting. However, proposition that sharing workplace result in higher educational homogamy and that voluntary organizations promote age homogamy were not supported by the data.

The problem of not knowing the homogeneity level at the group level was overcome by McPherson and Smith-Lovin [1987] by choosing voluntary organizations as groups. They found that voluntary organizations are most homogeneous according to sex, than according to age, than according to occupation, than according to education. The homogeneity level of the organization was related to the community's homogeneity. Their data also supports that heterogeneity of the groups promotes more heterogeneous friendships. They also found that in larger groups friendships would be more homogeneous. Their hypothesis that correlated variables cause higher homogeneity was not supported. (This hypothesis also came from Blau's works).

The three studies define differently the level of opportunities: as metropolitan areas, as organized settings and as voluntary organizations. However, each support that more heterogeneous selection pools promote heterogeneous friendship or marriage choices.

This relationship between group heterogeneity and homogamy in the work of Blau and Schwartz [1984] is a macro level one. In the theory they did not analyze micro mechanisms behind this correlation. When setting this hypothesis, they argue that:

“(s)ince growing heterogeneity entails more fortuitous contacts between members of different groups, much heterogeneity reduces the opportunities for ingroup associations and increases the probability of intergroup relations. Of course, most random meetings do not lead to lasting social relations, let alone marriage. Yet casual contacts are a necessary, though not a sufficient condition for more initiate relations to develop...” (p.41)

An important micro mechanism, which supports these findings, was found by social psychologists. It was shown that people who see each other more often will like each other more, in their terms: **proximity promotes attraction**. These studies examined friendships, and not marriages.

Festinger et. al. [1950] have found that among students in a university dormitory the best predictor of friendship formation was the place of their rooms in the building. The study of Segal [1974] according to a myth found the highest correlation in social sciences. It was found between friendship formation and the alphabet in a police academy. The reason for this was that classes and groups for students were created according to their name. On the other hand, Newcomb’s [1961] experiment did not support the hypothesis of proximity and attraction. He did not find that between floor mates attraction would be higher, and between roommates he found it only in one of the two experimental years. This may be the consequence that he had a small community in the experiment (N=17), living in one building, where it was easy to know quite well all the others.

It must be stressed that Blau and Schwartz [1984] did not consider this mechanism, since their work was a macrosociological one. Additionally, this social psychological “proximity hypothesis”, where proximity means physical closeness, should not be mixed by term proximity as used by sociologists Blau and Schwartz [1984] and Verbrugge [1977], when arguing that social associations are more frequent among people in proximate social positions, since in this case proximity means closeness of social status.

3.7 An overview on concepts and definitions

On the bases of the overview of the partner selection literature, one may notice, that several terms and concepts exist in different approaches, which describe similar

phenomena, or phenomena close to each other. Therefore, before setting hypotheses, an overview and clarification of the used terms is necessary, to avoid ambiguity of the conclusions drawn. First, expressions about preferences, than terms describing social outcomes are defined.

In sociology and social psychology a widely used approach about preferences is social exchange. The original **social exchange theory** (Thibaut and Kelley, [1959]) defined preferences as the aspiration of people to form a relationship with someone who offers higher rewards and lower costs. Lindenberg [1997] notices that the model of preferences is only a part of the original social exchange theory: "...neither Thibaut and Kelley's nor Homans's sophisticated notions of cohesiveness have received much attention in the literature. Instead, most authors keep referring to the older operationalizations in terms of interpersonal attraction." Taken into account Lindenberg's remark, I will call these kinds of preferences **social exchange preferences** to distinguish it from social exchange theory.

Social exchange in the original approach includes every kinds of interaction, not only romantic partners. An important feature of social exchange preferences is that they are defined over potential partners, not over an attribute of the partner. People have different attributes (for example sociability, dependability or similarity of attitudes), which determine their "value" as possible partners, and social exchange theory predicts that one will select the better partners overall.

Social exchange approach is often applied to mate selection. In this form it usually includes two different phenomena. First, the social exchange preference, as defined above. Second, a mechanism, describing, how couples are formed from people with given preferences in society, which can be called **social exchange mechanism**

"every individual seeks the best value in a mate, individuals of approximately equal value will tend to pair up. In this manner, individuals can be said to »exchange« their assets for those in a partner"

(Kenrick et al [1993] p.951), or

"...these theories posit a marriage market somewhat analogous to the market in which economic goods and services are exchanged, in which females offer characteristics desired by males in exchange for the characteristics and the status they desire from males."

(Taylor and Glenn [1976], p.484).

In contrast to social exchange, the term **attraction to similarity**, which was used previously to illustrate the finding of social psychologists that people with similar values and social background are more willing to form social relationships (Newcomb [1961], Byrne [1971]).

A close concept to the presented social exchange and similarity approaches are Laumann's 1. **"like me"** and 2. **"prestige" principle**. They are defined as:

1. "Persons prefer intimate social relations with others of comparable occupational status" and

2. "Regardless of their own occupational status, persons prefer intimate social relations with others in occupations of higher status."

(Laumann, [1965], p. 26)

The use of the terms prestige and like me principles did not gain as high popularity in social research, as social exchange. These concepts are mostly used in social network literature, for example by Lin et al [1981], in the original meaning.

Social exchange preferences were used for the phenomenon that people prefer the candidate, which is the most attractive, taken into account all of his or her attributes. For setting the hypotheses, I need a general term describing this tendency over attributes themselves, for example that persons prefer the most attractive, most educated, etc. partner, regardless their own physical attractiveness, education, etc. I will call this kind of preference **preference for the best value**.

Differentiation between preferences over attributes of partners and preferences over partners can be illustrated by the following example: a person may show attraction to similarity in case of cultural interests, and preference for the best value over education. Social exchange preferences predict that one choose the best possible partner taken into account both attributes.

Another important relationship is that for social exchange mechanism to work, preferences for the best value are necessary. Unless people have this kind of preferences, exchanging different characteristics would not be possible.

After the short overview on terms of preferences, it is necessary to define the expressions regarding the effect of opportunity structure.

Group heterogeneity is a macro level phenomenon. Blau and Schwartz [1984] differentiate heterogeneity (differentiation of a population among nominal groups) from inequality (populations differentiation in terms of status graduation). For simplicity, I understand both of these phenomena under the term group heterogeneity. As the

antonym of group heterogeneity, group homogeneity will be used. McPherson and Smith-Lovin [1987] uses the term “status difference of organizations/populations” similarly as I use group heterogeneity, and McPherson et al [2001] uses the expression “baseline homophily” as I use group homogeneity.

Beside group heterogeneity, I use other group properties as predictors. In this case the stress is not on the social composition of people at a specific place, but on the type of interaction, which is specific to that setting. I will use the term “**effect of context**” for this analysis. Under the word “context” I mean organized settings, where people interact, similarly as Kalmijn and Flap [2001] uses the terms “context” and “organized setting”. I distinguish three contexts: face-to-face interactions, Internet dating sites and web-based chat groups.

Preferences and opportunities affect outcomes of partner selection. These outcomes are properties of a group (organization or society) and describe patterns of partner selection.

An important and a generally used term about outcomes is **homophily**. This word was created by Lazarsfeld and Merton [1954], who realized that there is no word in English language for the term “a tendency for friendships to form between those, who are alike in some designated aspect”. It is important that homophily refers to a group, and not to an individual. This distinguishes it from attraction to similarity. Since 1954, hundreds of studies were carried out on homophily, and the use of the term is often different from the original definition. McPherson et al. [2001] in their overview on homophily research define it as “contact between similar people occurs at a higher rate than among dissimilar people.” This definition includes every kind of contacts, even marriages, not only friendships, as the original one. In sociological literature for similarity of married partners a special word, **homogamy** exists. It existed even before the creation of homophily. The word origins from biology (the condition in a flowering plant species of having only one type of flower). Lazarsfeld and Merton [1954] refer it originates from works of mathematician/statistician Karl Pearson and medical doctor Havelock Ellis. They also report the study Burgess and Wallin [1943] for the use of the term homogamy in sociology. For the antonym of homogamy (tendency of married couples to be dissimilar) the word **heterogamy** is used in sociology.

According to the definitions it is still ambiguous, which term should be used for **dating and cohabiting couples: homophily, homogamy, or none**. Blackwell and Lichter [2004], for example, used the term homogamy, and Fiore and Donath [2005]

used homophily. In the subsequent analysis, I will use the more general word **homophily**, to avoid the misunderstanding, when dating, cohabiting and marriage partners are considered altogether, or when their similarity are compared.

4. Hypotheses

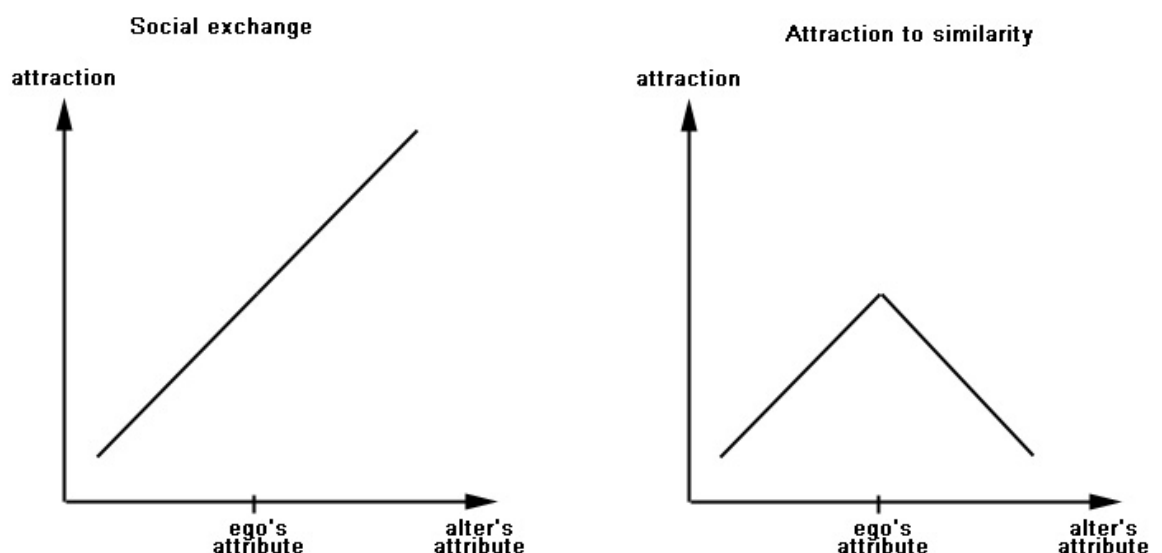
4.1. The question of the preferences: similarity or exchange

Studies cited above agreed on that similar values and attitudes promote interpersonal attraction. (Newcomb 1961, Byrne [1971]). On the other hand, Newcomb [1961] could not prove the positive effect of similarity according to age, field of study, religion, and urban-rural background. Actually the authors have shown this effect only about attitudes and values. A further limitation of these studies is that they are about friendship, not marriage. Some studies about marital preferences presented the effect of similarity, although it was not their central focus (Kenrick et. al. [1993], Sprecher et. al. [1994]).

Evidence for social exchange mechanism in the studies presented earlier is also limited. Stephens' [1990] findings contradict with the theory, Schoen and Wooldredge [1989] found significant only some of the interaction effects and Kalmijn's [1993] results can be interpreted in different ways. Furthermore, they examined only a limited number of pairs of characteristics, mostly physical attractiveness – education, and race – education.

So it seems, that although many studies have been done, the basic question of marital selection is still unanswered.

Figure 3: Examples for preferences with preference for the best value (social exchange mechanism) and attraction to similarity



The first question of this research is about the preferences: whether people prefer similar others (**attraction of similarity**), or there are some attributes, which have a **best value**. Obviously it is possible that in some aspects people prefer similarity and in another ones they prefer a best value.

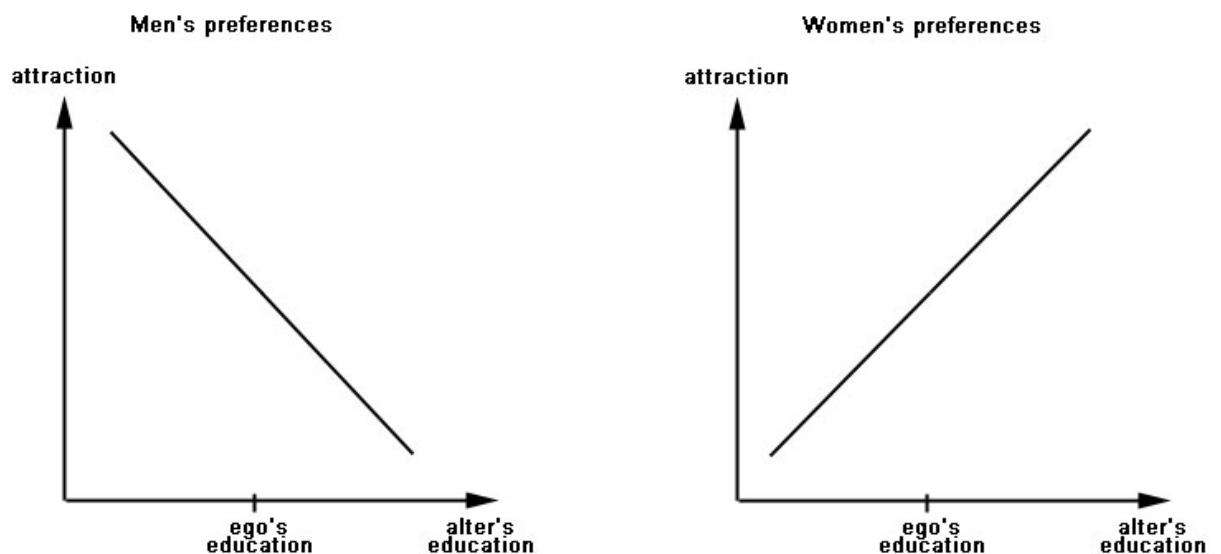
The interesting properties of these two options about the preferences that both explains homogamy. In the case of attraction to similarity this explanation is trivial: people like more similar others, therefore similar people are likely to marry. In the case of the social exchange mechanism, there are people who can offer higher level of rewards to others and there are others who only lower. The ones who can provide higher rewards will find each other and select each other. Therefore, those who can provide only lower levels of rewards can choose only among themselves. This will result in homogamy in the relationships. Therefore the basic question can also formulated as: why is that people select similar others: **why homogamy occurs in society?**

One could ask if it is not a contradiction that social exchange mechanism explains the exchange situation, when someone, who is better in some aspect and worse in the other, exchanges her good and bad traits and marries someone, who is just the opposite, which is definitely not a homogamy, and the same social exchange mechanism explains homogamy too. The answer is no. The reason for this is that in the case of social exchange mechanism both situation emerges more often, than in the case of random selection. Let us take the example, when people have two characteristics, which can have two values, low (L) and high (H) and they are equally distributed across the four possible values (thus the characteristics are uncorrelated). Take the people with the first low and the second high characteristics (LH). In case of random selection, they marry LL, LH, HL and HH people with equal chance. Therefore homogamy (LH-LH couples) will occur with 25% probability. In case of social exchange mechanism, everyone prefers HH people, but they will only marry HH. Therefore the LH people will find partners from LH and HL with equal chance, among which they are indifferent. Therefore homogamy will be 50%, and the remaining 50% will “exchange” their good and bad attributes (LH-HL couples). In the case of attraction to similarity, LH people will marry only LH people, thus, homogamy will be 100%. One can see that social exchange mechanism does predict homogamy (compared to random selection). It is true that attraction to similarity predicts higher homogamy than social exchange mechanism. However one cannot test the two alternative preferences on the bases of this, because no one can tell a threshold, which differentiates the two mechanisms in the reality.

The remark must be added that for social exchange mechanism to result in homogamy it is necessary that men and women value the same characteristics. However there are differences in valuation the importance of some characteristics between men and women (see Section 3.1), it was not found that some characteristics are not valued at all by one sex, and is valued highly by the other.

Beside exchange and similarity, it is possible that a third kind of preference exists. It is preference for asymmetry. Historical studies (Bott [1957], Young and Wilmott [1973]) describe evolution of family from asymmetry to symmetry, and I argued that symmetrical roles in the family might have resulted in symmetrical partner preferences. However it is possible that asymmetric roles are still present in societies, which maintain asymmetric preferences. This may be relevant about status and educational differences, since according to the traditional roles men work and women are responsible for the household and nursing the children, therefore men need to have good earning capacity and women do not. If asymmetric preferences are present, preferences of men and women on education and status are different. These kinds of preferences are illustrated on Figure 4. An interesting property of these preferences is, that they do not predict homogamy, but heterogamy.

Figure 4: Asymmetric preferences



These kind of asymmetric preferences are not documented in sociological or social psychological literature of partner selection. Studies only consider sex differences in importance of different characteristics (for example Buss and Barnes [1986], Buss et. al. [1989], Sprecher et. al, [1994], Li et. al. [2002], see Section 3.1. for details).

These kinds of asymmetric preferences are assumed to be present in traditional societies (or traditional layers of modern societies); I do not expect to find these in the data of on-line daters.

My question was, whether social exchange or attraction to similarity is the main mechanism explaining homogamy. It is a plausible assumption that both mechanisms work, but about different characteristics. Bukodi [2002] assumes that there a market mechanism (social exchange) works about social-economic characteristics, and about cultural traits similarity is dominant.

Hypothesis:

H1. Social exchange mechanism works about education, age, race, social status, physical attractiveness, and about them similarity is not relevant.

The **alternative hypothesis of H1** is that similarity explains homogamy about the first set of variables.

4.2. The effect of group heterogeneity

After revealing preferences, which are responsible for homogamy, I would like to answer the question that to what extent is the homophily of couples different, and why is it different according to the context where couples meet. Specially, what is the reason, if it is different on the Internet and in real life?

According to previous studies (Blau & Schwartz [1984], Kalmijn & Flap [2001], McPherson & Smith-Lovin [1987]), the more homogeneous the context where people interact, the higher the homogamy will be.

My hypothesis is that higher heterogeneity on dating sites *does not* promote lower homophily of couples.

For the reasoning, I need to examine the underlying micro mechanisms behind the group heterogeneity hypothesis. The group heterogeneity hypothesis says that with increasing heterogeneity, people meet more unlike people and less similar people. Social psychologists found that if people meet others often, they probably will like them. It is a reasonable argument, however, it does not explain another important finding about context effects. Specially, the fact that groups size itself decreases heterogeneity (McPherson and Smith-Lovin [1987]). This may be related to specialization in bigger groups (the study examined voluntary organizations). Bigger

organizations may be fragmented to smaller units, which are more homogeneous. Additionally, homogeneous friendship choice can be informal: bigger groups provide more opportunity to find similar friends, even from other organizational units, and exclude the unlike others from the network.

Dating sites are different from face-to-face meeting in an important aspect, which may result in that these mechanisms do not work. People on dating sites do not interact each other randomly – users contact only those, who they select. Therefore, unintentional encounters do not induce attraction. Furthermore, it is easy to exclude unlike others from the interactions (similarly to bigger organizations).

Hypothesis:

H2: Group heterogeneity do not decrease homophily of couples on dating sites

Naturally, H2 is only valid to characteristics, which are directly observable on the dating sites. These are the ones, which can be used for search, which is used to avoid random interactions and exclude dispreferred others.

4.3. The effect of context on selection

Until now I examined how people select others on the bases of given characteristics (age, status, attractiveness, etc.). In this section, I will argue that the importance of characteristics of the self and the other vary in different contexts (face-to-face, chat, dating sites. This predicts different homophily levels by context and it will be possible to draw conclusions about how Internet dating affects homophily of couples and homogamy. The effect of context on the characteristics, which drive the selection, was not studied empirically before.

For setting hypotheses, I am using ideas from three existing theories: the investment theory (Rusbult [1980, 1983]), the Stimulus-value-role theory (Murstien [1971, 1987]) and Collins' interaction ritual theory [2004].

If I combine these approaches, I got interesting implication about the different characteristics, which drive selection in different contexts. SVR theory states that dating is a continuous filtering process, and this filtering is done according to those characteristics, which are observable. First on the bases of physical attractiveness, then values, then role complementarities. Investment theory and interaction ritual theory

predicts that efforts (investments) put in the relationship have a positive effect on commitment.

Putting together these findings I have the following prediction:

1. The earlier an attribute is observable in a context, the more people will use it as a selection criterion.
2. Both attraction to similarity and the social exchange mechanism predict that people tend to choose someone similar. Therefore the earlier a characteristic is observable, more similar choices will be made according to that.
3. If people interact each other, they do not change for someone even if the new one looks to be slightly better on the bases of other characteristics.

Therefore the earlier an attribute is observable in a given context, the higher the homophily of couples will be in that aspect. Additionally, the better a characteristic observable in the context, the higher the homophily of couples will be according to the characteristic.

To take an example: someone dates with someone else on the chat. After a while they turn out to be compatible in values, they really enjoy the company of each other, and they become emotionally attached. Then it turns out that the other is not exactly ideal for example in the aspect of age. Because of this minor difference, they will probably not break up. But if they were dating on a dating site, where thousand acceptable candidates are available, they would not even begin a relationship. Someone would have written only to those, who are ideal in the aspect of age, because he/she cannot contact thousand persons. So in the first example I can observe lower age-homogeneity of the couples than in the second (assuming that people like to date same-aged others).

If I consider search costs, I get similar prediction. Borrowing from labor market research (see Bartus, [2001]), I can distinguish two types of characteristics: which are observable easily, and which are not. People carry out extensive search (compare many subjects) according to the first ones, and they examine the subject for longer time for observing the second-type characteristics (intensive search). If extensive search becomes easier, for example on a dating site with the search tool, people can find better matches on the base of those characteristics with same effort. Because people prefer similarity, homophily will be higher according to those.

If I apply these simple rules to different dating environments, I get the following hypotheses.

Hypothesis 3.1.

In chat environments before the first contact people usually don't know where the other lives. This is also true for discussion forums and Usenet groups. On the other hand in dating sites the location is known before contacting the other (in the stimulus stage). Therefore, I expect higher **spatial homophily** on dating sites than in chat groups, and also in discussion forums and Usenet groups. This could explain, why all the studied couples in Baker's [2002] study lived far away from each other: all of the couples she selected have met in chat groups, discussion forums and similar environments, but not in dating sites.

Hypothesis 3.2.

On the other hand, I expect that **common interests** will show just the opposite pattern: similarity of couples in this aspect will be the higher in chat environment. This can be so because chat groups are often organized according to topics, so common interest may be granted even before forming the relationship. Dating sites provide only limited information about interests in the user profile.

Hypothesis 3.3.

On the bases of **social-economic status**, dating sites provide easy to search mechanism. Chat groups on the other hand provide only a limited, or no information about status. During face-to-face contact people have some limited signals showing status, but many offline contexts, where people meet their mate candidates (schools, workplaces) are socially homogenous. On the bases of that I expect, that social status will be most important selection criterion on dating sites, it will play the smallest role in chat groups and its importance will be in the middle in traditional face-to-face interaction. Therefore the status homophily will evolve accordingly.

Hypothesis 3.4.

About **social background** dating sites usually do not provide information. Signals of it are also limited face-to-face, but some off-line meeting places, where people meet their mates are homogeneous by the social background. Neighborhoods, where people grow up are one example for this, but social networks of parents and the family is another possibility to search for partners. In these cases social background of the candidate is known in advance, before asking for a date. Thus, homophily of couples in this aspect would be lower in on-line dating (either on chat or dating sites) than for face-to-face dating.

Table 1: Hypotheses about effect of context on selection:

Homophily of couples...					
...according to ...	who have met in				
...place of residence			dating sites	>	chat groups
...common interests			chat groups	>	dating sites
...social-economic status	dating sites	>	face-to-face	>	chat groups
...social background	dating sites, chat groups	>	face-to-face		

5. Methods

5.1. Research design

Hypothesis 1 concerned partner selection preferences. It was set to test whether there is preference for the bet value, or people prefer similar others in case of age, education, social background, race, physical attractiveness and cultural or subcultural interests.

Hypothesis 2 predicted that homogeneity of a dating site do not increase homophily of couples. Hypotheses 3.1-3.4 considered homophily of couples, which have met in different places. Face-to-face meetings, and two on-line contexts (dating sites and chat groups) were planned to be compared.

To test Hypothesis 2, samples from dating sites with different homogeneity levels are necessary. Therefore, beside general ones, dating sites designed for special groups should be examined. In the original research proposal, a sample of 20 dating sites (Dutch and Hungarian ones) was suggested for this purpose. After presenting the proposal, the committee accepted it with the condition of decreasing this sample. The suggestion was made to promote feasibility of the research.

For Hypotheses 3.1-3.4, data on homophily of couples from face-to-face meetings, dating sites and chat groups are necessary. Homophily data on couples from dating sites are also necessary for testing Hypothesis 2. Homophily data was collected by asking users of dating sites about their and their latest partners' attributes, and the place they met. Since among on-line daters a higher frequency of on-line met couples can be found, compared to a very low rate in the general population; with this method it became possible to compare homophily of couples, who met on-line and face-to-face.

Given the assumption that Hypothesis 2 and Hypotheses 3.1. -3.4 can be tested with data from dating sites; it was economical to test Hypothesis 1 on members of dating sites as well. This decision has the disadvantage that results would not be representative for the entire population.

The next step was to estimate the necessary sample sizes of the groups (number of couples in each group). For this, I needed an assumption about the effect sizes. (Cohen 2001). My estimate about Hypothesis 2 is, that because the significant difference

between the groups in homogamy, I expect at least medium effect size (at least the difference of 0.5 std. deviation between group means). For this, Cohen (2001) suggests $n=64$ cases in each groups at a 0.05 level. Using e-mail recruiting, a success rate of 30% was assumed. Additionally, it is necessary that some of the respondents have already had a partner, who they met on the dating site. A ratio of 20% was assumed in this aspect. Calculating sample size on the bases of this, a sample of $64/(0.2*0.3)=1067$ active user was necessary on the dating sites as minimal requirement. To test Hypothesis 1, I intended to use multivariable regression models. As a rule of thumb, a sample of 1.000 respondents was planned for this reason. Given 30% response rate, this assumes altogether 3.333 e-mails sent on the selected dating sites.

When examining potential dating sites, it became visible that specific dating sites, which are based locally, or on religious base, are usually smaller, which risk that sample size will not be sufficient. Therefore bigger dating sites were selected. The six major Hungarian and six Dutch ones were contacted with a request to do the research. For participating in the study (sending questionnaire their members) a research report was offered them on market positions and user preferences for services of the site, which would have been included in the questionnaire. Two Hungarian dating sites, Csajozas/Pasizas and Randivonal agreed to participate in the research; the other Hungarians and the Dutch ones have refused to do so.

The refusal of participation of the Dutch dating sites excluded the possibility to examine race heterogeneity about Hypothesis 2, and the inclusion of the race variable in testing Hypothesis 1, since the Hungarian population is racially homogeneous. (Only a significant gipsy minority can be found in Hungary, which can be considered as an ethnic minority, not a different race). Among the bigger Hungarian dating sites there are no major differences in social position of the members: each of them are for the general public, and naturally the non-Internet users are excluded from every ones. However, there are differences in age focus of the sites: some of them are more popular among the younger, others among the older population.

5.2. Market position and characteristics of the dating sites in the research

Fortunately, one of the two participating sites (Randivonal) focuses on wider population, and the other (Cs/P) on younger users. This can be illustrated by age

composition of the two sites. For this purpose, number active users (who logged in during the last 30 days) were collected for four age groups, as a sample.

Figure 5: User composition at Randivonal

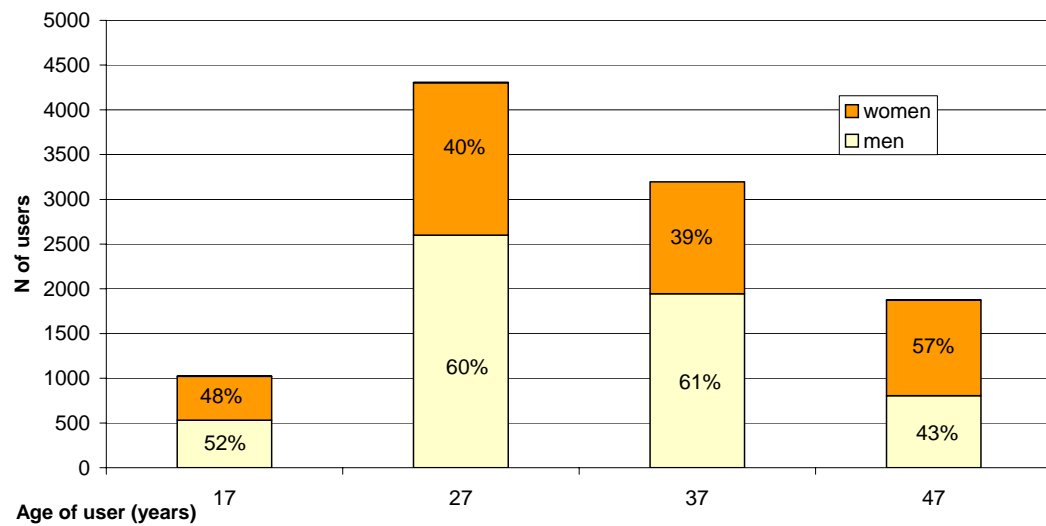
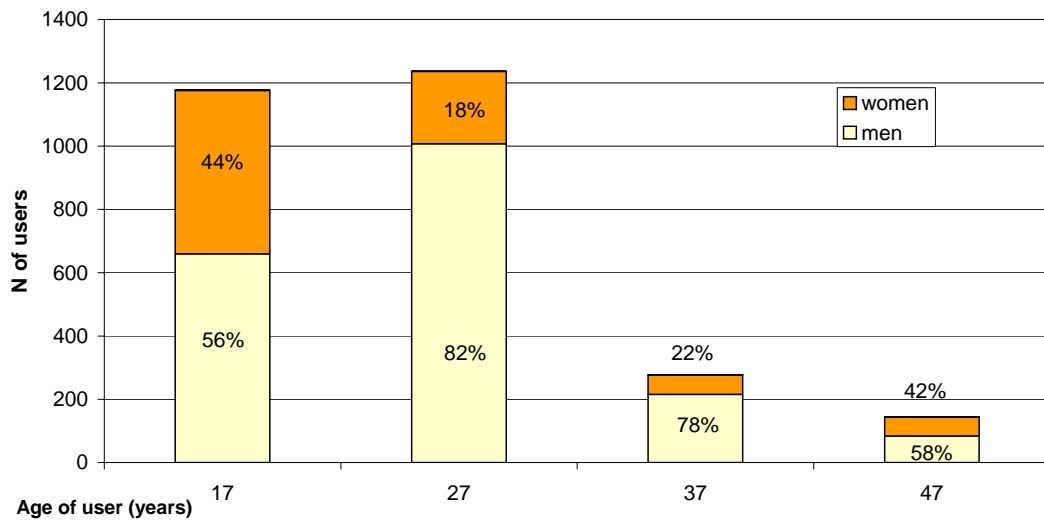


Figure 6: User composition at Csajozas/Pasizas



Additionally, when comparing Figure 5 and Figure 6, further differences can be noticed between the two sites. First, Randivonal is more balanced by gender composition, while on Csajozas/Pasizas a significant male majority is present in the middle age groups. Furthermore, it is visible that Randivonal is bigger than Cs/P. Based on number of registered users, Randivonal is the first and Cs/P is the fifth bigger dating site in Hungary (Figure 1. in Section 2.1).

A further difference between the two sites, which may have effect on the research, is the information available about users. These are the data, users can use as search terms, when looking for partners, and therefore it may have effect on homophily of couples.

Table 2: List of data available about users on the two dating sites

	Randivonal	Csajozas/Pasizas
Place of residence	+	+
Purpose on the dating site	+	+
Zodiac	+	+
Age	+	+
Hair color	+	
Eye Color	+	
Physical look	+	+
Height	+	
Weight	+	
Language	+	
Religion	+	
Drinking alcohol	+	
Smoking	+	+
Marital status	+	+
Has children	+	+
Wants children	+	
Education	+	
Income	+	
Job status	+	
Vegetarian	+	
Has photo	+	
Music style		+

An important difference from the point of view of the research is the presence of status/education/income data on Randivonal, and the lack of these on Cs/P.

5.3. Study 1.

The study on Csajozas.hu/Pasizas.hu, a mid-sized Hungarian on-line dating site, was conducted between 10th and 30th of March 2006. Participants were recruited by a banner, which was put on the members' only area of the site. 410 respondents have begun filling in the questionnaire. 372 have completed the first page asking socio-demographic questions, of which 293 have reached the last page of the questionnaire. In

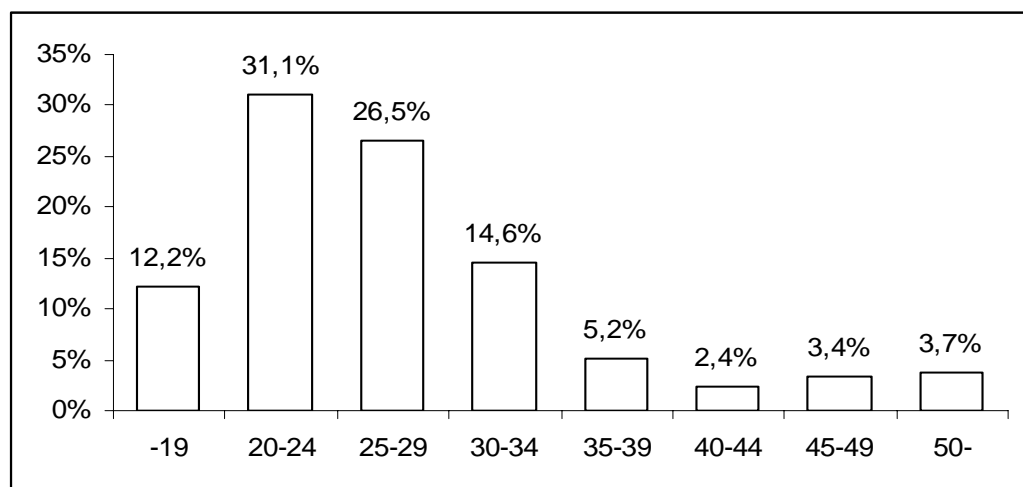
summary, 62% of the respondents have begun the questionnaire, of which 71% have completed it. It took an average of 11 minutes to complete the questionnaire. During the study period around 18.000 members have logged in to the site, which shows that the banner was not an effective way of recruiting participants.

36% of respondents were women, and 64% men. 27% of them had college degree (BA or MA), 61% had high school or skilled worker education and 12% elementary school. Age composition shows a relatively high proportion of younger generations (Figure 7). Thus, lower education is often due to the fact that respondents are still students: 82% of respondents with elementary education and 46% of respondents with secondary education are students.

Comparing the age composition of sample to the Internet user population of Hungary (data from World Internet Project, see Appendix 1), it is visible that youngest generations are overrepresented, and the middle and older ones are underrepresented in the sample. In Hungary, 40% of Internet users are between 30-49 years, in the in the sample only 26%. Among Internet users, 15% are over 50 years, which is only 4% in the sample.

Comparing education distribution of the sample to the Internet users (data from World Internet Project, see Appendix 2), frequency of college graduates is higher in the sample (37% vs. 23%), indicating, that dating site users are more educated in the average, than general Internet user population.

Figure 7: Age compositions of respondents on Csajozas/Pasizas



(N=328)

In the questionnaire it was asked, if the respondents have got known anyone from that dating site, with whom they have also met at least two times face-to-face. I used the condition of two personal meetings, since the first face-to-face date is the critical point, when it is decided if the couple will date or not. (This fact was revealed by the four interviews, which were carried out with users of dating sites to test the relevance of the preliminary research questions.) Therefore those, who have met at least two times, I can regard as dating couples. Education level, status, and age of the partner were asked from the respondents. N=106 respondents suited the criterion of two or more dates; their data was used to calculate homophily of couples.

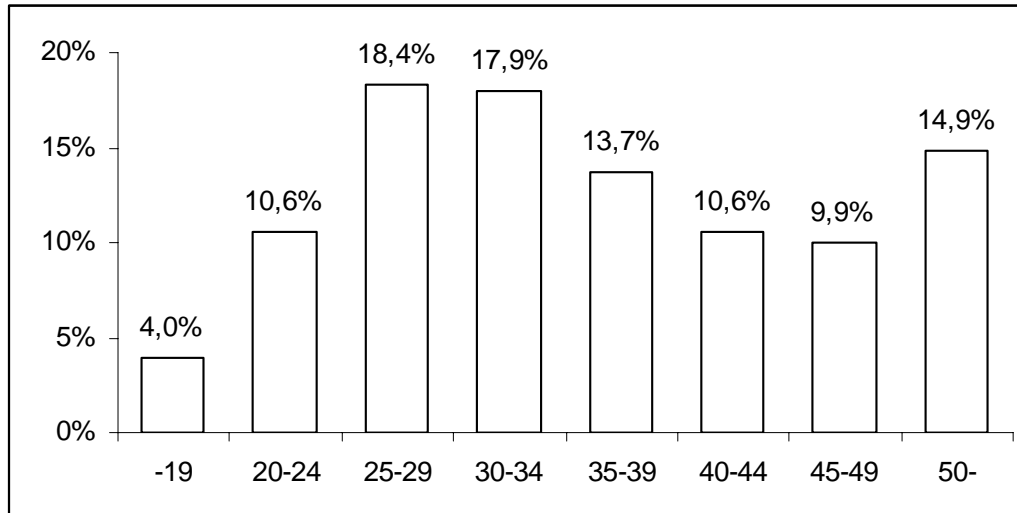
5.4. Study 2.

A questionnaire was presented to the members and former members of Randivonal, the second largest Hungarian dating site, between March 20th and 27th 2007. Participants were recruited by e-mail sent by the management of the dating site to the e-mail addresses users gave at the registration. During the one-week period 12,203 respondents answered the questionnaire, of which 2045 were subscribers, 5825 non-subscribing users, and 4333 former users. 73% of all respondents have fulfilled the whole questionnaire, 27% have dropped out before the end. It took in average 14 minutes to complete the questionnaire for former members, and 22 minutes for subscribers and non-subscribing users. Response to the questionnaire was concentrated at the beginning of the survey period: 55% of respondents have filled in the questionnaire on the first day, 85% within the first two days.

There were 48% women and 52% men in the sample. Concerning education, 54% of respondents had college degree (BA or MA), 45% high school or skilled worker education, and 1% elementary school. Comparing education to the Internet user population of Hungary, where frequency of college degree is 23%, it is visible that users of this dating site are significantly more educated, than the general Internet user population. Age composition of the sample shows a more even distribution than on Cs/P (Figure 8). Due to the lower proportion of younger generations in the sample, there were significantly less students in the sample: only 7% of the respondents were still in school, and 84% worked. Comparing age distribution of the sample to age distribution of the Hungarian Internet users (Appendix 1), it is visible, that middle age groups (30-

49 years) are somewhat overrepresented, and youngest generation (under 30 years) are slightly underrepresented in the sample.

Figure 8: Age composition of respondents on Randivonal



(N=6416)

Given the higher number of respondents in this study, this was used to test partner social exchange mechanism vs. attraction to similarity. To collect data about partners for Hypotheses 2 and 3.1-3.4, I asked the respondents (users or former users of Randivonal), where did they meet their last partners. Of those, who answered and ever had a partner, 3344 (51%) have met face-to-face, 1508 (23%) on Randivonal 1182 (18%) on other dating site and 473 (7%) in chat groups or using messenger programs.

5.5. Testing social exchange vs. similarity

My first question was whether people prefer similar others (attraction of similarity) or whether there are people who are generally preferred by others, and individuals, who are less desirable on the market (social exchange mechanism and preference for the best value). I assumed that there are generally preferred and less preferred people according to their education, age, social status, and physical attractiveness.

To answer this question, **I applied two tests**. The first is the one, which is generally used to examine social exchange, and the second is a new way of testing.

5.5.1. Traditional test

Previous studies (Taylor & Glenn [1976], Stephens et. al. [1990], Kalmijn [1993], Schoen & Wooldredge [1989], DiMaggio & Mohr [1985]) used the following method to prove the presence of social exchange mechanism: they examined, whether there is positive correlation between two *different* characteristics of the couples controlled by other variables. The test is based on the fact that attraction to similarity does not predict this kind of correlation, but social exchange mechanism does (see section 3.1.)

To do this test, it was necessary to find couples. In the questionnaire respondents were asked about their last partner („Where did you meet your last partner? On this dating site, in a chat group, or face-to-face?“). Afterwards, respondents were asked about age, education, social status and social background of the partners. Similar questions about the respondents themselves were also asked, which made it possible to calculate correlations between the respondents' and their partners' traits. In this test, the effect of physical attractiveness was not examined, since photos of the respondents and their partners were not available. Therefore I had to limit the analysis to exchange between age and education.

To test the exchange between age and education, age differences and education differences between partners were computed. Using differences instead of absolute values, I can avoid the mistake of representing something as an exchange, what can be explained with similarity too, which was the critique of Rosenfeld [2005]. (He pointed out about race and education that one can only regard something as a status-caste exchange, if the black partner actually has higher education than the white one, but it can be similarity, if the black partner's education is only higher than the average black level.)

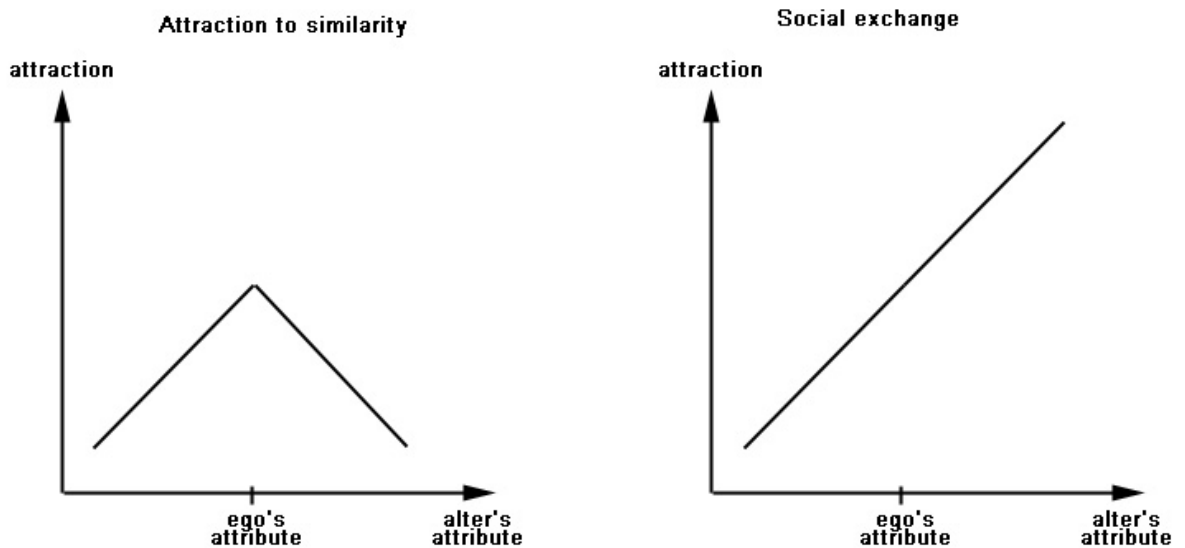
For examining relationship between age and educational difference, linear regression models were used with the education difference as dependent variable. Beside age difference between partners, age of respondents were included in the model as a control variable. The age variable in an analysis include different effects, namely age, period and cohort effects. Methodological research have been carried out on differentiation on these effects (for example Goldstein 1968, Mason et. al. 1973, Feinberg 1979), however, it is certainly not possible if the data is cross-sectional. Given that the data is cross-sectional, these effects are present together in the age variable.

5.5.2. New test

Although it is generally used, the traditional test has an imperfection in examining preferences. It does not measure the preferences directly: it observes the partner choice, and infers the preferences from the choice. However, not only preferences influence partner choice, but opportunities as well. Therefore the examined correlation between different traits of the partners can be due to social opportunities beside preferences.

Therefore **I propose a second test** for distinguishing between social exchange mechanism (preference for the best value) and attraction to similarity. As shown before, in the case of social exchange mechanism, people find a trait attractive regardless their own characteristics, which is not true for similarity.

Figure 9: Preferences with social exchange mechanism (preference for best value) and similarity



To measure attraction, (preferences) vignette method (see Finch [1987]) was used. In study 2, introduction forms of hypothetical members of the dating site (Randivonal) were shown to the respondents containing a picture, age, height and weight, education and social status.

This way it is possible to ask people, what would they (or what should someone) do in a more or less complex hypothetical situation. The important benefit of this method is

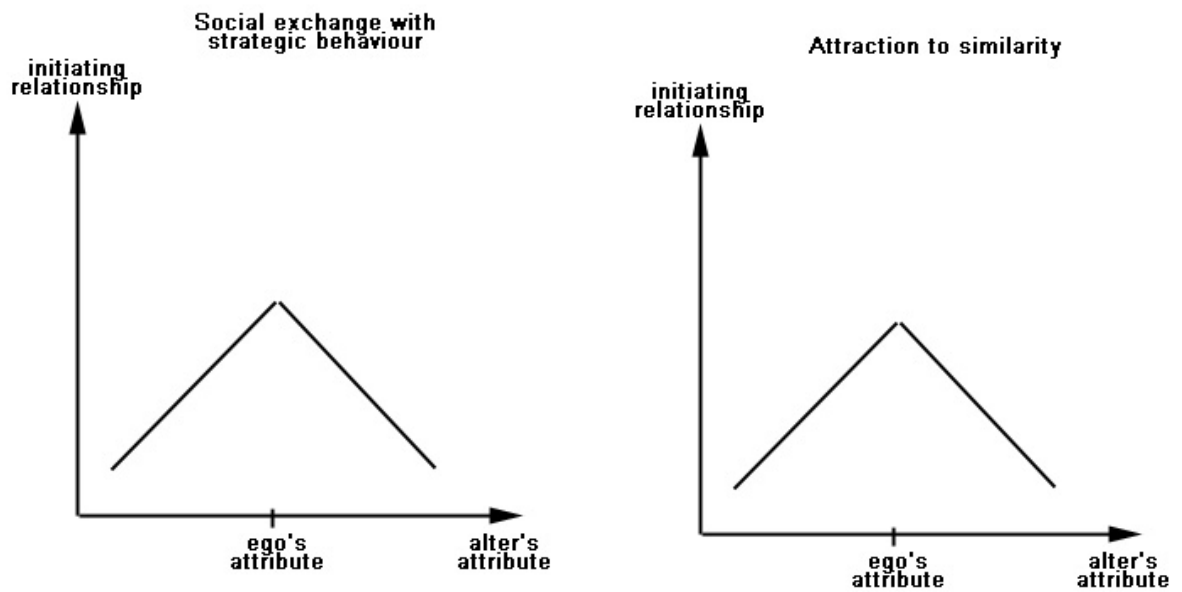
that the questions are framed in a concrete and realistic context; therefore the respondents do not have to answer a general question without a context. (Like "How important is it for you that your partner is beautiful/handsome").

Every respondent were shown five hypothetical profiles. Each man and women have seen the same five pictures, but to every picture two social-educational backgrounds were assigned, which appeared randomly. Additionally, to pictures of men two possible values of height were assigned, which also appeared randomly. Concerning age, only one possible age was assigned to each picture. A previous survey indicated that most of Randivonal users are 18-30 years old; therefore to men on the pictures ages 22-38, to women on the pictures ages 19-34 was assigned. Of course, matching of the data and the picture was ensured, to maintain the credibility of the hypothetical profiles.

Pictures for the hypothetical profiles were gathered from volunteers for compensation of 5.000 forints (20 Euros). Volunteers agreed that their picture would be used in a questionnaire about dating. Pictures portrayed man and women in casual clothing, including at least half of their figures. Size of the pictures was also standardized.

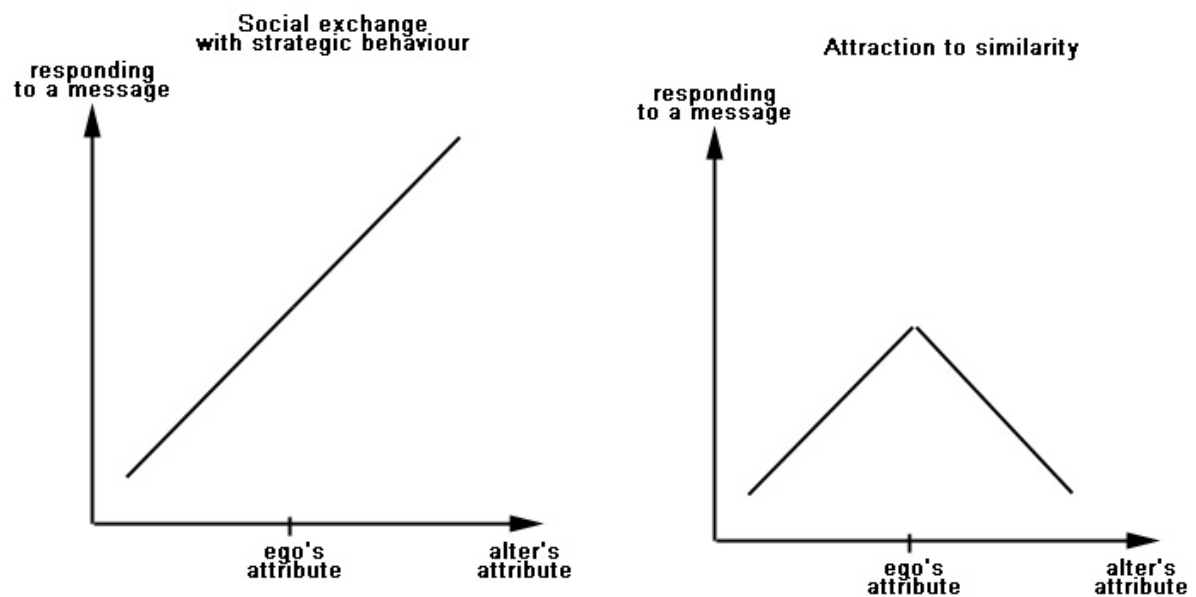
To measure attraction in this context, respondents were asked, whether they would write an initiating letter to owners of the introduction forms. However, initiating a relationship itself is not a perfect measure for preferences. It is possible, that someone actually likes the other, however, he or she thinks that the other is more attractive, educated, younger, etc, therefore he or she would not find him or her attractive at all, therefore sending a message would be only a waste of time to that given man or woman. In this case the preferences are exchange-like, however, it can be observed that people do not initiate relationship with others, who they think better than themselves on the dating market, because **they act strategically**. Therefore preferences for similarity, and preferences for the best value with strategic scrutiny cannot be distinguished (see Figure 10).

Figure 10: Initiating assuming social exchange and similarity



To differentiate preferences for similarity and preferences for the best value with strategic behavior, a second question was asked: whether users would respond, if the hypothetical member on the site would write them a message and initiate dating. In this case, one cannot worry, that the other would not like him or her, therefore when liking the other he or she would respond to the message.

Figure 11: Response assuming social exchange and similarity



As a result, preferences for the best value vs. similarity preferences could be distinguished by using the question about response, and comparing the question about initiating and about responding can be used to identify strategic behavior.

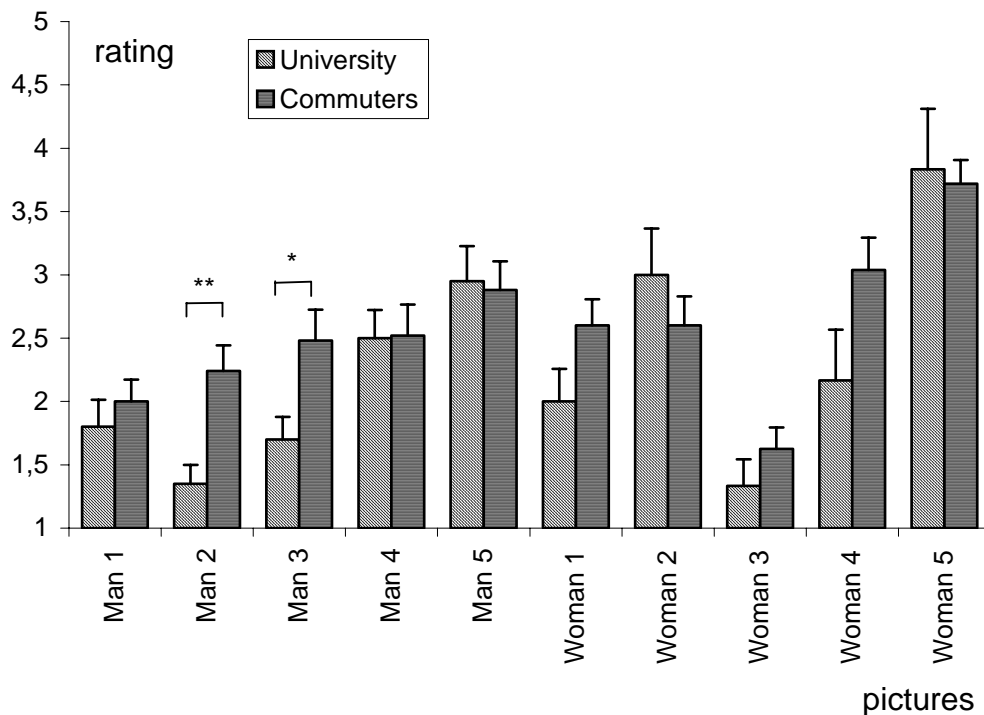
Preferences concerning education, age was examined with this method. The effect of physical attractiveness was also examined. For analyzing the effect of physical attractiveness, additional measurement was necessary, to **identify attractiveness of the people on pictures**. It was done using independent raters. This method is generally used in psychology. Feingold [1988] analyzed 16 studies, where physical attractiveness was measured, and in each of them independent raters were used; either the way that raters rated pictures, or that they were present at the place of the study and rate appearance of the respondents. Interestingly, it seems that the general method is to use college students as raters. This method was used by Hitsch et al [2006], Stephens et al [1990], Bailey and Kelly [1984], Bailey and Price [1978], Critelli and Waid [1980], and I do not know any counterexample. However, the clothing, hairstyle and make-up can tell much information about the style of the person on the picture, and taste for styles can be socially different. What is regarded as trendy and attractive for college students may not be attractive for older or lower class people. Therefore ratings by college students may not be a valid measure of attractiveness. Thus a more heterogeneous pool of raters was used: a paper questionnaire containing the 5 photos was given to randomly

selected 25 men and 25 women passengers on a commuter rail in Budapest, and they were asked to rate the attractiveness of the pictured people on a 1-5 scale. 26% of raters were students, and 74% of them were working. 74% of them had high school degree or less, 22% BA and 4% MA degree. Average age of raters was 30 years with standard deviation of 10 years. Average values of ratings were used as scores for attractiveness. Attractiveness scores of pictured women had a range from 1,6 to 3,7, while this for pictured men had a smaller range of 2 to 2,9.

As a control study, the same pictures were screened to a group a 2nd year university students (20 women and 6 men), and they were asked the same question of rating the attractiveness of the people on the pictures on the same 1 to 5 scale. As expected, there were significant differences in the ratings. College girls rated attractiveness of men on a wider range (1,35 to 2,95), and they rated significantly lower two pictures than commuter women.

Figure 12: Ratings of the same pictures of college students and commuters.

*Mean + SEM. *: significant difference at 5%, **: significant difference at 1% level (independent sample t-test)*



For analyzing the preferences for similarity vs. preferences for the best value, the effect of different attributes were examined simultaneously, in a multivariate model.

Separate models were used for men and women, since different attributes of partners matter for men and women (Buss & Barnes [1986], Kenrick et. al. [1993], Sprecher et. al. [1994], Li et. al. [2002]). As described, I used separate models for estimating initiating relationship and responding to a message. Thus altogether 4 models were estimated.

Half of the respondents of study 2 were asked about initiating and half of them about responding to a message. In each case five pictures was shown to them, thus when I analyzed liking (either initiation and responding), I have got five answers from the same person. To handle this situation, instead of using ordinary linear regression, multilevel regression models were used (see Snijders and Bosker [1999], Rabe-Hesketh and Skrondal [2005]) which are able to handle the fact that my observations (liking) were not independent, but clustered in groups (respondents). In this case multilevel models take into account that effective sample size, used to calculate standard errors is smaller, due to the correlation between observations in the same group. (Snijders and Bosker, [1999], p. 16). Specifically, the so-called random intercept models were estimated, which is formulated as:

$$y_{ij} = \beta_1 + \xi_j + \beta_2 x_{2ij} + \dots + \beta_p x_{pij} + \varepsilon_{ij},$$

where ξ_j is the group level error term and ε_{ij} is the individual level error term.

To be able to test, whether preferences over an attribute are linear or V-shaped, differences were calculated between ego's and alter's attributes, and two variables were created: one for positive and one for negative difference. This was done for education levels and age. Frequency distributions of age and education differences between partners are resented in Appendix 2-3.

5.6. Examining the effect of group heterogeneity

Group heterogeneity and homophily of couples of two Hungarian dating sites (Study 1 and Study 2) was used to examine the effect of group heterogeneity on homophily of couples considering age and education. Age was coded as years, and a five-grade scale was used to measure education (1: Elementary (8 years), or less 2: Skilled worker 3: High school 4: BA 5: MA). Education levels of students were coded

as missing Study 1, since they have not reached their final education levels. In Study 2, a question was asked about type of institution, the student attends. In the case of some types of institutions final education degree could be well predicted. Education coding of students in this case is presented below.

Type of school respondent attending	Education coded
Elementary or less	Missing
Skilled worker	Skilled worker
High school	Missing
BA	BA
MA	MA

To measure group heterogeneity, there are more possibilities. Blau and Schwartz [1984] define heterogeneity as "the chance expectation that two persons belong to different groups" (p.41). They use inmarriage rate (when in a couple both people belong to the same group) as the measure of homogamy. Kalmijn and Flap [2001] and Verbrugge [1977] use the same idea. On the other hand, McPherson and Smith-Lovin [1987] estimated homophily by calculating status distances between partners (friends). They measured group heterogeneity by computing the average of these differences in case of random pairing. I shall use this type of measurement, because it keeps the information, which ordinal and nominal variables contain. (For example, a marriage of a 20 and the 50 years old using the first measure is just as not similar, as the marriage of a 20 and a 25 years old. Using distance measure, the information is not lost that the difference is five times bigger in the first case). McPherson et. al [2001] remind us that the two types of measures are often not related.

Thus, average distances were used to measure homophily of couples. To measure group heterogeneity, the average distances were computed assuming random selection.

5.7. Testing the effect of context on selection and homogamy

Four hypotheses were formed in Section 4.3 about the effect of context on the selection process and homogamy. I argued that the earlier and the better an attribute is observable in the dating process, the more people will use it as a selection criterion, therefore the higher the homophily of couples will be. In case of three specific contexts

(dating sites, chat groups and face-to-face meetings) I assumed that dating sites yield higher spatial homophily than chat groups, fields of interests will be similar on chat groups than on dating sites, and social homophily will be the highest on dating sites, the second face-to-face and the lower on chat groups.

5.7.1. Study 1

In the questionnaire it was asked, if the respondents have got known anyone from that dating site, or from any chat groups, with whom they have met face-to-face at least two times. I also asked the respondents the personal characteristics of the last dating partners from the dating site and from chat groups. Education level, status, and age of the partner were asked. They were also asked, where did their partner live when they got known each other (the same settlement, within 50 kms range, over 50 kms range or abroad). About common interest a subjective question was asked, to what extent their fields of interests are similar. On the bases of this, it was possible to compare homophily of couples, which have met on chat groups, with that from the dating site.

Measuring interest similarity by the single subjective question, “to what extent you and your partner have similar interests”, was not only an economical choice on the length of the questionnaire. Cosley, Ludford and Terveen [2003] studied effect of similarity on attraction in on-line environments. They created an on-line game, and tested whether interest similarity of game partners increases the enjoyment of the game. They measured interests using an inventory of 6 items asking to what extent the subject was interested in that topic. A surprising result of the study was that interest similarity did not effect enjoyment of the games. Authors brought up that one possible reason for this could be that this type of inventory (e.g. to what extent someone is interested in sport) is not deep enough to disclose relevant information on interests (Section 5.2 of the study). Based on this experience I did not create such inventory of interest topics assuming that it would not have been deep enough to disclose relevant interest similarity. Additionally, with asking one partner only, this kind of detailed question about the partner’s interest would have created problems of validity. Therefore only a single subjective question was asked, which trusted the respondent to sort out and weight the relevant information on interests subjectively.

5.7.2. Study 2

The recruitment method of using a banner yielded low response rates, and only a moderate number of answers in Study 1. Additionally, in Study 1 face-to-face meetings were not examined. Thus a second study was carried out with different recruitment method and including face-to-face meetings.

Respondents in Study 2 were asked about their social status (whether they work or study) and education. On the bases of this, final education level was computed, as described in Section 5.6. Respondents' social background was also examined using a question about their father's education. They were also asked about status and education of their partner, and the education of their partner's father.

Using the 5-grade education scale, absolute value of education difference of respondent and her partner was computed. This education difference was used to examine social homogamy. Similarly, education difference between the respondent's father and her partner's father was computed, and was used as a proxy for difference of social background.

6. Results

6.1. Similarity or social exchange mechanism?

For analyzing partner preferences, data from Study 2 were used. Descriptive results show that on the average women are more educated than men (on the 1-6 scale their average is 0.16 points higher). Frequency distributions show that it is due to the fact, that women are more likely to have BA education, while among men, skilled workers are overrepresented.

Table 3: Education levels of men and women in study 2

Education	Gender		Total
	Men	Women	
1. = Less than 8 elementary years	,1%	,1%	,1%
2. = Elementary (8 years)	1,0%	,6%	,8%
3. = Skilled worker	15,9%	6,5%	11,5%
4. = High school	30,5%	32,1%	31,3%
5. = BA	33,6%	44,0%	38,6%
6. = MA	18,9%	16,7%	17,9%
Total	100,0%	100,0%	100,0%
N	N=4642	N=4245	N=8887

Considering only those, who had a partner, a smaller difference was found between respondents' own education compared to their partners' education. Men's education is approximately 0.07 levels lower, and women's is approximately 0.07 levels higher, than their partners' one on the 1 to 6 scale presented in table 4.

Table 4: Average education differences between partners

Respondent's gender	N	Average education difference	Std. Deviation	Std. Error
Man	3210	-,0673	1,03979	,01835
Woman	2927	,0745	1,04213	,01926

P=0.000 using one-way ANOVA

6.1.1 Traditional testing

The presence of social exchange mechanism was tested using linear regression models. For the simplicity, separate models present the effect of age difference on educational difference in the case of men and women.

Table 5: Effect of age difference on educational difference. Linear regression (Men)

	B	p
(Constant)	-0,530	0,000
Age difference	0,005	0,161
Age	0,012	0,000

$R^2=0.018$ ($p=0.000$) $N=3071$

Table 6: Effect of age difference on educational difference. Linear regression (Women)

	B	p
(Constant)	0,755	,000
Age difference	0,021	,000
Age	-0,016	,000

$R^2=0.033$ ($p=0.000$) $N=2761$

Coefficients of the age difference show that men cannot compensate their lower education with their youth, or their older age with higher education. On the other hand, the coefficient for the women is significant, which is the evidence of exchange. However, the magnitude of the effect is small. According to the parameter estimate, they can compensate one education level difference with $1/0.021 = 48$ year age difference.

Considering the age coefficients, one can calculate that a 20 years old woman is in average 0.44 categories more educated than her partner, however, this difference decreases with age. Approximately for 47 years old women, this difference vanishes. Likewise, using the 1 to 6 scale, a 20 years old man is in average 0.29 categories less

educated than his partner. The older the man, the smaller this difference is, until the age of 44, when men have in average the same education as their female partners.

6.1.2. New test

Results of the estimations are displayed in Appendix 5. to Appendix 8. Concerning **age**, results of the response models (Appendix 6 and Appendix 8) indicate a preference for similarity. Coefficients of both the positive and negative age difference are significantly negative for women (Appendix 8). Men's coefficient of positive age difference itself is positive, but one must remember that interaction effect of own age and age difference is also included in the model, which has significant effect. If these two are calculated together (Table 7), it can be seen that coefficient of positive age difference is -0.09 for a 20 years old men, and it is -0.28 for a 40 years old one. For negative age difference this effect of men's own age is smaller. The coefficient is -0.03 for 20 years old and -0.04 for a 40 years old men. Additionally, it is visible that men prefer women less, who are older, than the ones, who are younger than them. Women's coefficients for younger men ranges from -0.13 to -0.08 considering a 20 years old and a 40 years old women. On the other hand, their coefficient for older men ranges from -0.04 to 0.08. It shows that for women over 25, it actually do not have a negative effect, if the man is older than them.

Table 7: Age coefficients including interaction effects of own age

		men		women	
		20 years old	40 years old	20 years old	40 years old
Initiating	Age +	-0,11	-0,33	-0,04	0,10
	Age –	-0,07	-0,06	-0,12	-0,08
responding	Age +	-0,09	-0,28	-0,04	0,08
	Age –	-0,03	-0,04	-0,13	-0,08

When comparing coefficients of initiating a relationship and responding to a message (Table 7), no major differences can be observed about the coefficients either for women or men. This indicates that there is no strategic behavior about age differences. If users would not write to others with different age, they do it because they

do not like him or her, not because the strategic scrutiny that the other would not like them.

Concerning **education**, in the response model of women (Appendix 8) it was found that education difference does not matter for women. Neither the positive, nor the negative difference had significant effect. Men (Appendix 6) preferred women less, who had lower education than them, but it did not have an effect if she had higher education. Respondent's age did not have an effect on education difference coefficients in either of the models: these interaction parameters are non-significant.

Surprisingly, negative coefficients are found about education difference, when looking at the initiating model of women (Appendix 7). It indicates that women do not initiate relationship with men with different education for strategic reasons. For men, the positive difference's coefficient is non-significant, similarly to the response model, but the negative difference's parameter is augmented, indicating the presence of strategic reasons in addition to disliking when initiating relationship.

Besides testing preference for the best value vs. similarity preferences for age and education, effect of other attributes was examined. For physical attractiveness preference for the best value and preference for similarity was not tested, due to lack of observations on physical attractiveness of the respondent. Physical attractiveness of alter had significant positive effect on liking both for men and women. Parameter estimates for women are higher, however, one must remember that attractiveness scores of men on the picture had lower range and standard deviation than women's ones (Section 5.5.2).

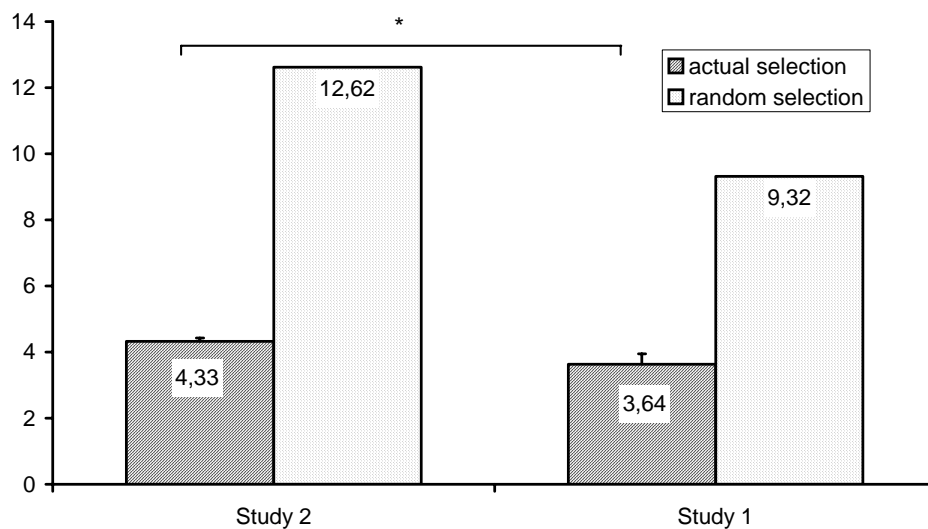
Respondent's other assets were also included in the model. Financial well-being was measured by owning a car and a condominium. These variables did not have an effect themselves on initiating a relationship. Neither the interaction effects of these were significant, which would have indicated, that financially better off respondents are more (or less) picky about attractiveness. Height of respondents (in cms) was also included in the models. Its parameter was not significant for men, and the magnitude of its effect was also small for women. On the other hand, age of respondents had significant positive effect on liking, showing that older respondents were less picky. Its effect was much higher for women than for men. Additionally, its interaction effect with alter's attractiveness was also significant, indicating that older respondents are less demanding about attractiveness of the potential partner.

6.2. Effect of group heterogeneity on homophily

Average age distances in case of random selection (group heterogeneity) and actual couples (homophily) are presented in Figure 13. The more heterogeneous age composition of Study 2 is clearly visible. Age differences are higher for Study 1 as well, which shows that there is an effect of group heterogeneity. Thus H.2, that group heterogeneity does not affect selection on dating sites was not supported.

However, difference in homophily is smaller than the difference of group heterogeneity. Group heterogeneity is 1,41 times bigger in Study 2 than in Study 1, and differences between actual partners only 1,19 times.

Figure 13: Average age distances



*Mean+SEM (actual selection), mean (random selection). *: Difference is significant at $p = 5\%$ level using independent samples t test.*

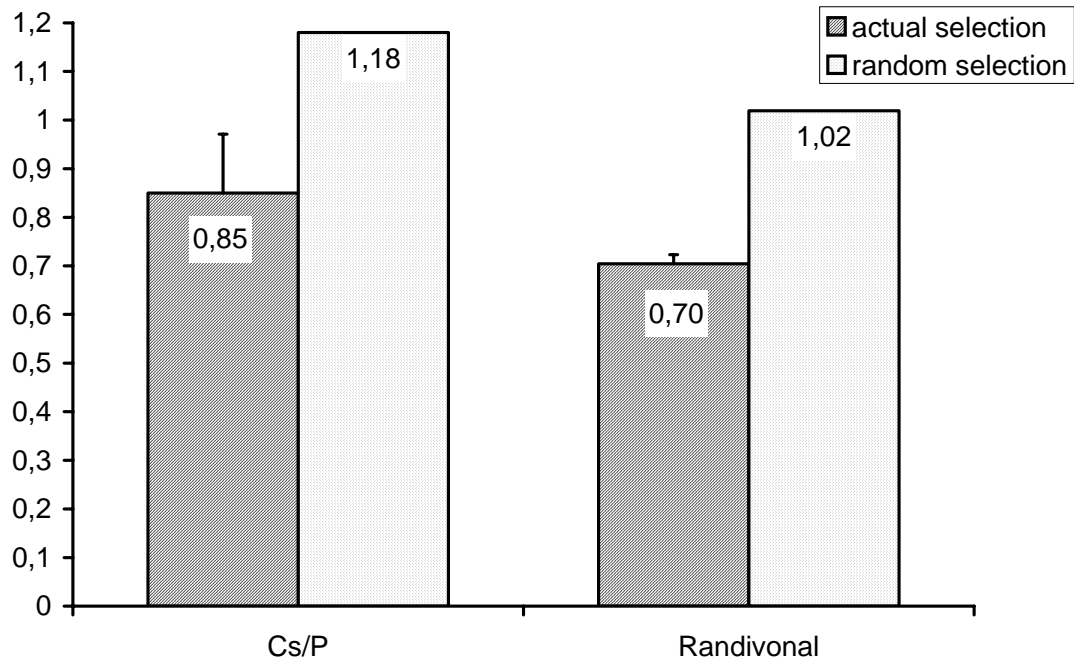
Concerning education heterogeneity Study 1 is somewhat more heterogeneous than Study 2. Education differences between partners are also slightly higher there, but the difference is not significant at $p=5\%$ level using independent samples t test.

Difference of group heterogeneity and homophily is lower in the case of education than it was in the case of age.

Ratio of heterophily and group heterogeneity is 1.39 for Study 1, and 1.45 for Study 2. This difference is probably due to the fact that registration forms do not include education in the case of Study 1, while it is present in the case of Study 2. Therefore it is

not possible to search users by education in the dating site examined in Study 1. This feature of not including education on the registration form is not typical on dating sites

Figure 14: Average education distances



Mean+SEM (actual selection), mean (random selection)

6.3. Effect of context on homophily

6.3.1. Study 1.

Out of 278 people, who have answered, 108 have met face-to-face at least two times someone from the dating site, and 118 from any chat group. The results show that the physical distance between the places of residence of the dating partners have almost identical distribution in the two cases. Higher geographical distances between partners occur somewhat more often on the chat, however, the difference is not significant statistically. It does not support the hypothesis that spatial homophily of couples is higher if they have met in chat groups.

Table 8: Spatial distances at partners from dating site (Study 1) and chat groups

	Place of residence of the person known from the dating site	Place of residence of the person known from chat group
Same settlement as the respondent's	49,1%	42,7%
Another settlement in the range of 50 kms	33,0%	31,1%
More than 50 kms	16,0%	20,4%
Abroad	1,9%	5,8%
Total	100% N=106	100% N=103

(*Chi-square=3.18, p=0.365*)

The second hypothesis concerned similarity of interests. It was expected that interest similarity would be higher among couples met on chat than ones met on dating sites. Results presented in Table 9, which show that interest similarity higher in chat groups to a small extent, but this difference is not significant statistically. Therefore, this hypotheses is not supported

Table 9: Interest similarity for couples from dating site (Study 1) and chat groups

"How much their interests are similar?"	Couples from the dating site	Couples from chat groups
Absolutely	11,3%	10,3%
To more extent	49,1%	55,1%
To less extent	34,0%	23,4%
Not at all	3,8%	6,5%
Don't know	1,9%	4,7%
Total	100% N=106	100% N=107

Chi-square = 4.57 (p = 0.335)

The lack of significant relationship between dating sites and chat groups concerning interest similarity and spatial homophily may be due to incorrect assumptions about

chat groups. Many chat groups might not be based on interests actually, but many of them might be formed on local bases.

It was possible to examine these reasons using data from Study 1 with some additional data collection. In Study 1, respondents were asked to specify the chat site, where they met their partners. Chat sites are different in their composition of rooms. In some of them rooms about interests are typical, in others many local groups are formed. If the reason for the lack of relationship is due to differences in room compositions, couples from chat sites, where there are more local groups should be more homophile spatially, and interest homophily should be higher for couples met on chat sites where there are more rooms about interests. To test this, data was collected about room composition of chat sites. It was coded as number of rooms based on interests as a percentage of all rooms and locally based groups as a percentage of all rooms on the site. Interest based rooms ranged from 5% to 68% of all rooms and locally based rooms from 17% to 100% on the four major chat sites. No significant correlations were found between share of rooms and homophily of couples. Interest similarity and interest based rooms' share shown Pearson correlation of 0.085 ($p=0.514$, $N=61$), and locally based chat groups' share and spatial homophily shown correlation of -0.034 ($p=0.78$ $N=72$). Therefore, lack of the hypotheses context effects on couple homophily is not due to the incorrect assumptions about room composition of chat groups.

The third hypothesis concerns the socio-economic status of difference of the couples. Hypothesis 3 considered three contexts: face-to-face meetings chat groups and dating sites. In Study 1 questions about face-to face meeting were not asked – results concerning this context are available from Study 2 (see below). A simple indicator of social status, which is also generally used to study homogamy, is education. However, on the dating site most respondents were young and many of them have not finished his or her studies. Therefore, beside the education, it had to be considered, whether the respondent is still in school, or have already finished it. On the bases of this, 7 categories were created. Using this attribute of both partners, it was possible to classify couples as homophile, heterophile, and “uncertain”. The reason for this uncertainty is that it is not known, what will be the final degree of those, who still study in elementary or secondary school. The classification is shown in Appendix 9 for couples from the dating site. A similar table can be created about the status / education of the respondent and the partner known from chat groups. The result concerning homophily is summarized in Table 10:

Table 10: Education homophily of couples from dating site (Study 1) and chat groups

	Status homophily of couples met on the dating site	Status homophily of couples met on chat group
Homophile	51,2%	52,2%
Uncertain	11,6%	16,7%
Heterophile	37,2%	31,1%
Total	100% N=86	100% N=90

Chi-square = 1.275 (p = 0.529)

Contrary to my expectations, homophily of couples from the dating site are not higher than for couples from chat groups.

6.3.2. Study 2

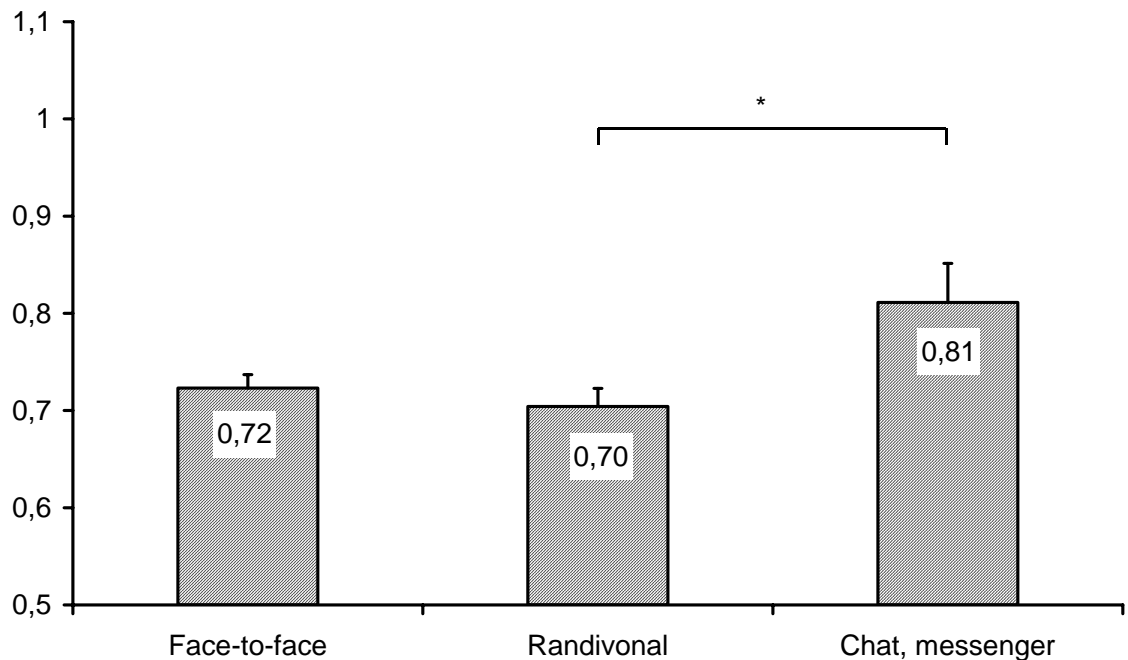
Study 2 (see Section 5.4.) included items for testing context effects too. To compare different contexts, I asked the respondents (users or former users of the dating site), where did they meet their last partners. Of those, who answered and ever had a partner, 3344 (51%) have met face-to-face, 1508 (23%) on the dating site 1182 (18%) on other dating site and 473 (7%) in chat groups or with messenger programs. To control for potential effect of intensity of the relationship, type of the relationship was also asked. 11% of the relationships were reported as casual dating, 26% as steady dating, 11% were cohabiting (living together), 3% marriage and 5% was characterized as ‘none of the above categories’. This category was included to capture casual sexual relationships.

Majority of users in the sample of Study 2 have already finished school, which made it easier to compute education differences of the partners. Education of those, who were still in school were coded according to the final degree, they would possibly achieve. Where it was uncertain, education was coded as missing. This process is summarized in Section 5.6.

Average education difference between partners using the 6-grade scale is 0.75. It was somewhat smaller for partners got know each other on the dating site than ones met face-to-face, and it was the highest for couples met in chat groups. Only the difference between chat and the dating site was significant at 5% level using ANOVA and post hoc

test. Difference between face-to-face and chat groups was significant at 10% level. An important result is that on-line dating using dating sites do not decrease homophily.

Figure 15.: Education difference between partners by context of meeting



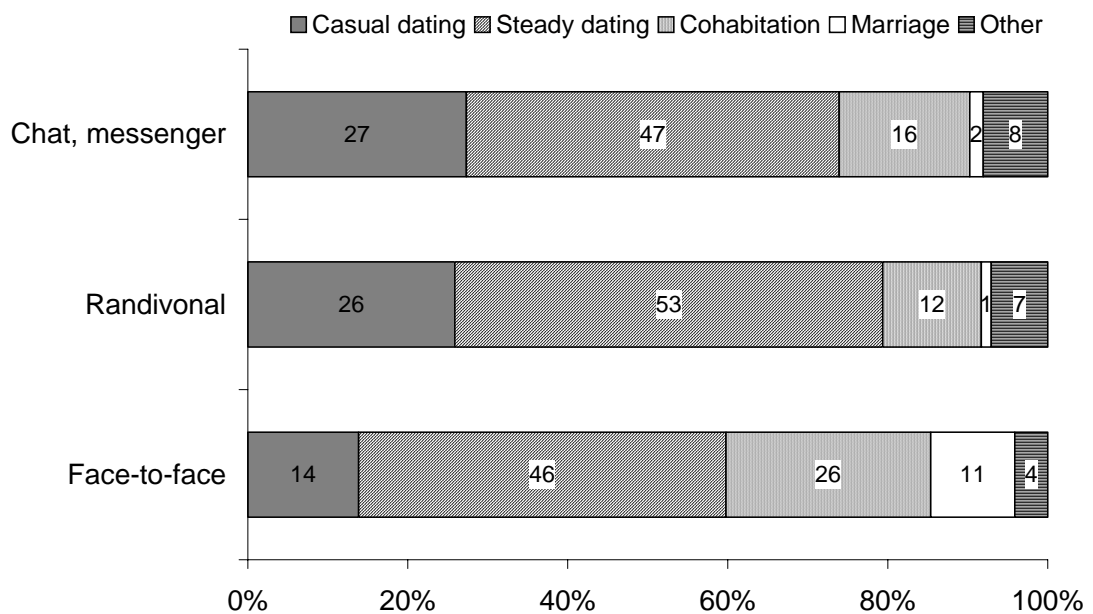
*Mean + SEM. *: difference significant at 5% level using one way ANOVA with Tukey's post hoc tests.*

The test presented compared homophily generally. It includes every kind of romantic relationships from casual dating to marriage. However it is possible that homophily is different by the relationship strength. Actually this was the winnowing hypothesis stating that heterogeneous relationships end and homogeneous ones proceed to marriage. An additional argument is that social status is less important in dating, however, when one considers marriage, its significance increases. This hypothesis was tested by Blackwell and Lichter [2004], but it was not supported by the data. Nevertheless, it is necessary to control the above results by analyzing the effect of relationship intensity on homophily and the relationship between context of meeting and relationship intensity.

Figure 16 presents actual differences of relationship type by context of meeting. Stronger relationships (cohabitation and marriage) are more frequent in the face-to-face sample than the on-line ones. This phenomenon could be predicted by the sampling method. I asked about the last relationship of the respondent, and on-line dating is relatively new compared to the traditional face-to-face one. Therefore among older (and

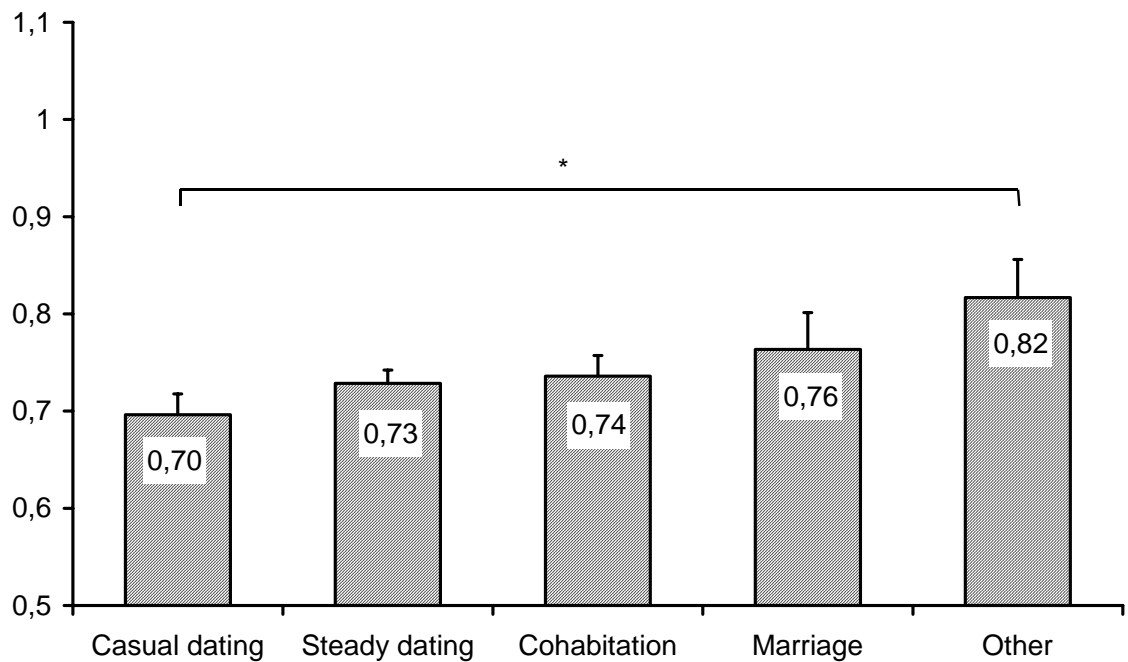
consequently stronger) relationships one can find more face-to-face ones. This comparison is by no means predictive about difference in potential strength and length of relationships created on-line and off-line. About this question McKenna et. al. [2002] have shown that relationships created on-line do not differ from ones created off-line in potential length.

Figure 16. Distribution of relationship types by contexts of meeting



Average education difference between partners by relationship type is presented in Figure 17. Data shows that homophily is somewhat lower in stronger relationships, but the differences are not significant. This lack of significant relationship between tie strength and couple homophily excludes the alternative explanation that effect of context on homophily may be due to the underlying effect of tie strength. These findings contradicts the winnowing hypothesis that homophily is increased if the relationships are stronger.

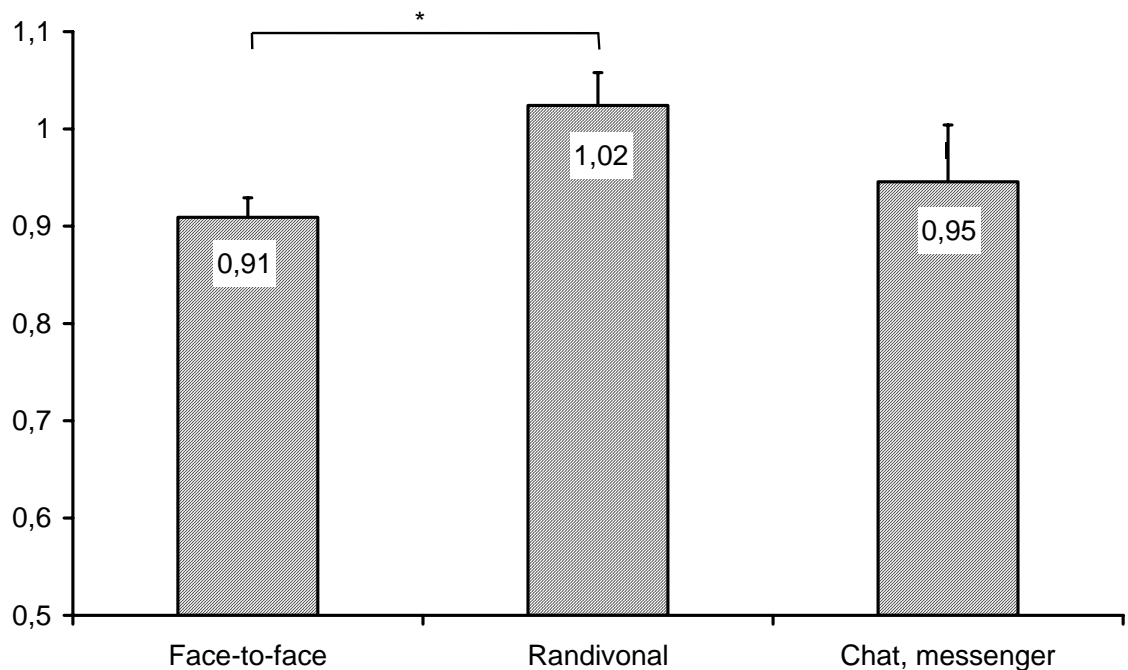
Figure 17. Education differences of partners by type of relationship



*Mean + SEM. *: difference significant at 5% level using one way ANOVA with Tukey's post hoc tests.*

Beside education, differences of social background between partners were analyzed. Social background was measured by education level of the father. Parents' education in a characteristic cannot be observed on the dating site, there is no question about this data on the introduction form. Corresponding our hypothesis, heterophily in this aspect is higher for couples met on the dating site than for couples met face-to-face. On the other hand, chat groups do not differ significantly from the other two contexts in this aspect.

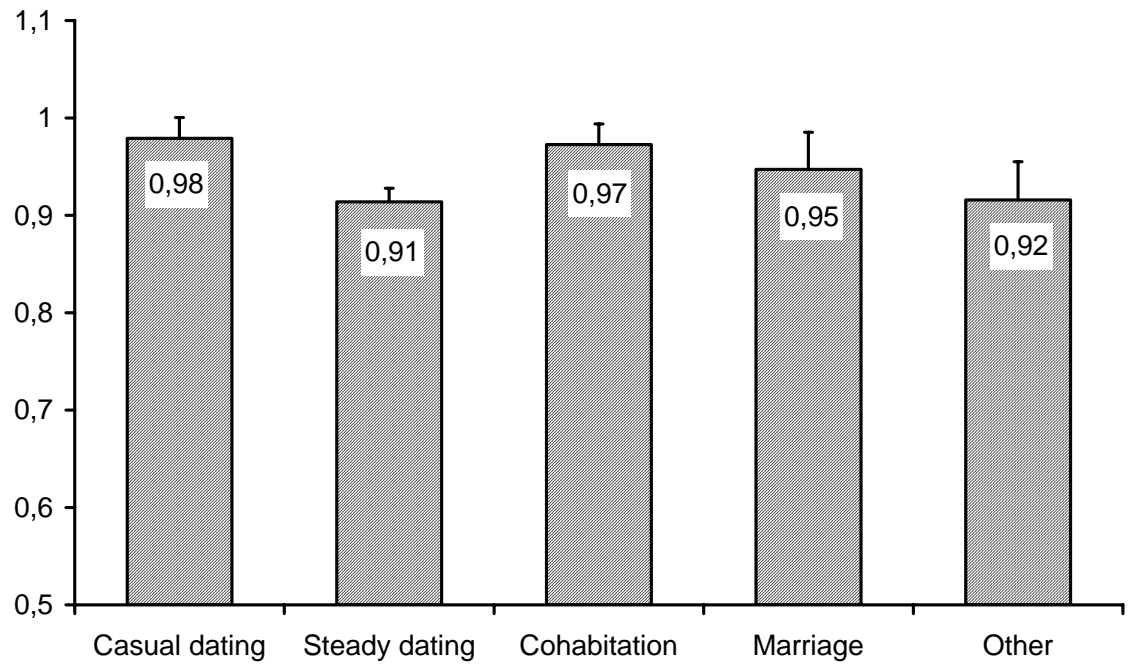
Figure 18. Differences of social background (father's education) of partners by context of meeting



*Mean + SEM. *: difference significant at 5% level using one way ANOVA with Tukey's post hoc tests.*

About context's effect on homophily of social background it is also necessary to control the possible underlying effect of the relationship strength. An alternative explanation may arise that social background is a characteristic, which is more important when considering marriage than dating, thus social homophily can be higher in marriages than in dating relationships. Since stronger relationships are more frequent among face-to-face meetings, social homophily may be higher for this reason. However, when comparing social homophily by relationship type, no significant difference was found (Figure 19), which excludes this alternative explanation.

Figure 19. Differences of social background (father's education) of partners by relationship type



Mean + SEM. No significant difference was found at 5% level using one-way ANOVA with Tukey's post hoc tests

7. Discussion

Internet usage has several kinds of social effects: effects on political participation, local communities, social capital, earning capacity, and inequality in consumption are only some examples. (DiMaggio et. al. [2001, 2003]). The basic question of this research was to analyze the effect of Internet on social network composition of individuals. From different types of social relationships, romantic relationships were selected, and from different types of Internet usage online dating. Romantic relationships have crucial importance in sociology. Studies on homogamy and heterogamy analyze the trends in marrying similar or different people. Racial or status homogamy are measures of closeness of a society, and one kind of social mobility is marital mobility.

On-line dating systems have gained particular popularity in the last decade. This can be illustrated by the fact that in Hungary in April 2006 10% of the Internet using population did use on-line dating, and 45% of them have ever tried it. An important property of on-line dating today is that it is typically organized by general websites, where every layer of society can be found, which have Internet access. On dating sites people, who would not meet in traditional meeting places (such as schools, workplaces or clubs) can find each other. Therefore, this kind of dating may decrease homophily of dating couples and homogamy.

Using survey on on-line dating not only the effect of the opportunity structure, but also partner selection preferences could be examined. Information on preferences is necessary for analyzing Internet's effect on partner selection, and on-line surveys on dating sites created excellent opportunity to examine them. When analyzing partner preferences, an important theoretical question arose: the question whether social exchange mechanism exists, or people simply prefer similar others. Mechanisms have been presented to illustrate, that both of the mechanisms homogamy. Thus, by analyzing the preferences the question could be answered that which of the two is the responsible for homogamy.

The key variables, for which similarity vs. preferences for the best value (social exchange mechanism) were examined, are education and age. For age, preference for similarity was found for men. Coefficients of both positive and negative age difference

were negative, showing that age difference has negative effect on liking in both directions (older or younger partner). However, a difference was found between the magnitudes of these effects. Men disprefer younger women less than they disprefer older ones. This suggests that the two forces (liking younger women and liking similar aged women) are present simultaneously. Nevertheless, since the coefficient for negative age difference is negative, it shows that the similarity preference is stronger, and the preference for younger women is only a supplementary effect. For women, similarity preferences were present when they were younger, but preference for older men was found, when they were older. Additionally, dispreference for younger men was stronger than dispreference for older ones in the case of young women too. This indicates the joint presence of two forces: preference for similarity, and the asymmetric preference for older men. Again, the stronger of the two forces is similarity. Thus, the question, that what explains age homogamy can be answered now. Similarity preference itself causes the homogamy. A weaker force of asymmetric preferences is also present that men prefer younger women and women prefer older men. This explains the fact that when age difference exists between the partners, why usually men are the older partners.

An interesting finding is that age of respondents increases the willingness to initiate communication and respond to a proposal. This is an indication of exchange on the level of strategic behavior. It shows that participants on the marriage market *believe* that they are less desirable, if they are older; therefore they are less picky in their preferences.

About education the first conclusion, that education is only a secondary preference in partner selection after age and physical attractiveness, can be found in previous social psychological literature. Beside regression on preferences, it is supported by the finding that difference in homophily and homogeneity of the selection pool is much bigger in case of age than in case of education. Regressions on preferences have shown that people disprefer others with lower education for proposing relationships and accepting proposals for men and in the case of initiation for women. Coefficients of being more educated than the respondent are insignificant for both men and women. As attraction to similarity predicts negative effect, and preference for similarity positive one, finding that these coefficients are not significant may suggest that the positive effect of the first mechanism neutralizes the negative effect of the second one.

Hitsch et al. [2006]. found some negative effect of positive education difference for high school graduate men and women analyzing first contact e-mails. Negative effect of

negative education difference was also found for women with graduate degree. They concluded that people have preference for partners with similar education on the bases of the results. Taken into account initiating relationships, I also found negative coefficients for both positive and negative education difference in case of women. The fact that these coefficients were insignificant when modeling response suggests that this is not an indication of preferences for similarity, but signifies strategic behavior.

Taken into account that no preferences for best value were found for either education or age, it is not surprising that only a minor education-age exchange was found for actual couples using the traditional test. In the regression models, age difference did not have an effect on education difference for men, and a small, but significant effect was found for women. It supports the conclusion of Rosenfeld [2005], that social exchange is only a secondary, minor force in partner selection, if it exists at all.

When comparing the education levels of partners, I found that women are more educated on the average than men. This advantage of women in education in Hungary is an interesting phenomenon, which is documented by sociologists. Róbert [2000] found that in 1998 58% of newly enrolled students were women in the higher education. Differences can already be seen among high school graduates: 56% of them were girls. (Among boys, the skilled worker degree was more popular, which is not eligible for entry to college level). One would assume that overrepresentation of women in higher education is due to high proportion of women in the faculties training for lower prestige jobs (e.g. teachers). Róbert [2000] have shown that this is not the case: actually, at high prestige faculties (law, business, medical, IT) 62% of the students were women. On a regional sample Fényes and Pusztai [2006] have found that 68% of college students are women. Woman majority in higher education is not a Hungarian specialty. Buchmann and DiPrete [2006] finds increasing female representation among college graduates in the U.S.: in 1960 only 35% of college graduates were females, and their proportion grew to 58% in 2004. Woman majority was found in higher education in many modern societies, including, Canada, Czech Republic and France. However, this is not true for all industrial countries, for example there were a male majority in Germany, The Netherlands or Switzerland. Jacobs [1996] provides a comprehensive list, and a discussion of the possible explanations for this phenomenon. When comparing these results with our sample, one must remember, that studies presented above used a special, young generation (college students) sample; while in my sample older

generations are also present. It is also important that the present study is by no means representative to Hungarian population; it includes only online daters from a dating site.

After partner selection preferences, the effect of opportunity structure was examined. Specifically, it was analyzed, whether group heterogeneity has an effect on dating sites. The existence of this well documented relationship about friends and marriage choices off-line is not evident on-line. Social psychologists have shown that frequent meeting may lead to attraction, and I argued that this could be the underlying micro mechanism behind the relationship found between context heterogeneity and homophily by macrosociologists, especially Peter Blau. I argued that group heterogeneity would not have an effect on dating sites in homophily, since on-line dating is different in several aspects from traditional meeting places. A relevant difference is that there are no random meetings in on-line dating. Members of dating sites usually use built in search engines to select partners; therefore they interact only selected members of the site. An other important difference is between dating sites and off-line communities that while members of off-line communities may meet each other often for several different reasons, regardless of liking, dating site users interact fewer times unless they would like to date each other. Attraction formation may be also limited on-line. Scholars of the “reduced cues” approach (Sporull and Kiesler [1986], Rice and Love [1987]) argued that lack of gestures, mimicry and voice tone lead to weaker ties in on-line relationships than in off-line ones. However, McKenna et. al [2002] found that liking is even higher if partners first communicate on-line than if they meet first off-line suggesting that assumptions of the reduced cues studies are not correct.

The effect of group heterogeneity was tested about age and education by comparing two Hungarian dating sites. Results have shown that group heterogeneity does decrease homophily. Comparing the two dating sites where the heterogeneity according to age was higher, higher heterophily was found. In case of education this relationship was not significant, however, the mean difference (0.7 and 0.85) is substantial.

How can this finding be explained? A reason can be that people do not always use the search engines on the dating sites. They may also simply browse new users, and write to ones, who they like on the bases of the photo or the introduction text, which simulates random meetings of face-to-face encounters. Assuming this, on more heterogeneous sites homophily would decrease. An additional relevant explanation can be that there are other mechanisms explaining the relationship between context heterogeneity and couple homophily, beside attraction formed by random meeting.

Previously I assumed that people have preference for similarity, and dissimilar couples can be formed in heterogeneous contexts, when the force of attraction to frequently seen people can overwhelm the affinity for similarity. However, it is possible that there are people in society, who have lower preference for similarity, or have preference for dissimilarity. For them, homogeneous contexts are effective barriers in meeting others, who are different from themselves. Thus, in more heterogeneous contexts they select more different others, and in homogeneous ones more similar others, according to the opportunity structure. For finding an effect of context heterogeneity on homophily it is not necessary that lack of similarity preferences would exist for everyone or for even the majority. If only a significant minority existed with weak preferences for similarity, which would have been restricted in selecting non-similar partners by homogeneous contexts, there would be an effect of context heterogeneity on homophily.

Age is an important predictor of partner preference, and users were able to use it as a search criterion on both sites. It was found that age heterophily is higher on the site, which is more heterogeneous by age. It shows that although people have strong preference for similarity in this aspect, there are members, who are restricted in their choice by the opportunity structure of the more homogeneous site, and would select more different partners on a more heterogeneous site. Education was a secondary, but significant predictor of partner choice. It was possible to use it as a search criterion on the more homogeneous dating site. Results have shown that higher heterogeneity and/or lack of opportunity to use it as a search criterion resulted in higher heterophily.

Having found an effect of heterogeneity of dating sites on homophily of couples formed on them may have an important implication regarding social effects of on-line dating. Dating sites today are mostly very heterogeneous contexts. Every layer of society can be found on them, which have Internet access. Therefore on-line dating can contribute to decreasing homogamy levels in society.

Concerning differences between on-line dating and the traditional face-to-face one, additional hypotheses were set. It was assumed that the earlier and the better a characteristic was observable in a context, the higher the homophily of couples would be. Three contexts, online dating, web-based chat groups and face-to-face dating were examined. In Study 2 it was found that educational homophily is lower for couples met in chat groups, than ones, met on dating sites and face-to-face. No significant difference was found between the on-line dating site of Study 2 and face-to-face meetings. On this dating site people were able to search for users on the bases of education, and check

education of their candidates on their registration form before contacting them. Using chat groups, this information usually turns out only after interacting the other. Therefore, this result is consistent with the hypothesis.

The fact that on-line dating on dating sites did not decrease educational homophily is an interesting finding from the perspective of the previously found relationship between group heterogeneity and educational homophily. Assuming that dating sites are presumably more heterogeneous educationally than face-to-face meeting contexts, one could assume that educational homophily would be lower on dating sites. An explanation may be that the effect that education is well observable on the dating site (Study 2) balances the effect that it is more heterogeneous than face-to-face meeting places. Educational homophily in Study 1, where education was not observable, was somewhat lower, than for couples met face-to-face in Study 2.

Concerning social background there was no information on the examined dating site of Study 2, which can be considered as general practice. In this aspect for couples met on the dating site, homophily was lower than for ones met face-to-face, which match my hypothesis too.

Concerning similarity of interests and spatial homophily no significant difference was found between couples from chat groups and the dating site in Study 1. Probably this can be explained with the fact that these effects are too small to be visible on a small sample. The findings that context's effects on social homophily was not significant on the small sample of Study 1 (N=176), but it was significant on the bigger one (N=4907 at Study 2) supports this assumptions. Hence, another finding is that online dating has some effect on couple homophily, but this effect is not too big.

To be able to say more about magnitude of the examined effects, they can be compared to previous results. There are no previous studies, which analyze context's effects on dating, cohabiting and married couples together. Therefore, to make any comparison, I need to compare the effects to findings about married couples. Thus, the caution must be added, that different types of relationships are compared: my more general ones to the closest relationships, marriages. In spite of this difference I dare to make the comparison, since no differences were found in the effects by the relationship type, which might suggest, that similar conclusions could be drawn for married couples as well.

Because of the different methodology of studies on homogamy (log-linear models), my parameters cannot be compared to them. For making the comparison possible,

education and social background distances were recoded into different/not different categories. Considering education, 43% of couples were dissimilar in Study 2 altogether, and 39% among couples from chat group. Thus parameter of meeting in chat groups using log-linear method is 0.18. Considering social background 40% of couples were similar in the population, and 37% of those, who met on the dating site. Log-linear parameter in this case is 0.17. Kalmijn and Flap [2001] have found parameters in log-linear models 0.15-0.20 about effect of organized settings on class homogamy, and 0.05-0.41 about educational homogamy. It shows a substantial effect of meeting on-line dating compared to effects of different face-to-face settings.

Another interesting comparison is to compare the results with historical trends. In the analysis of Bukodi [2004] the log-linear parameter of the difference of educational homogamy between 1973 and 1999 in Hungary is 1.6. Thus, magnitude of effect of dating on the chat is equal to 9 years difference in the trend. Schwartz and Mare [2005] report increasing trend in educational homogamy in the US from 1960 to 2000. Percentage of educationally homogamous marriages increased in this period from 45 to 53%. This 8% increase in 40 years can be compared to the 4% difference in educational homophily between Face-to-face (57%) and on chat meetings (61%).

Thus, the general implication is, that dating on dating sites does not have an effect on homophily of couples when the given characteristic is observable on the dating site. This was shown for education, which has special importance from a social aspect. However, dating in chat groups may decrease homophily of couples, and thus homogamy, when partners have met on chat groups. Effect of race, the other important social variable could not have been tested, however, since race is a well observable characteristic on dating sites too, it is a reasonable assumption that dating sites do not have effect on racial homophily of couple either. On the other hand, dating sites have equalizing effect in the aspect of social background, which is not observable on them well.

8. Implications for further research

Attraction to similarity vs. preferences for the best value could have been examined for other variables, such as physical attractiveness and race. Analysis of the race variable became impossible, since only Hungarian dating sites agreed to participate in the research, and Hungary is a racially homogeneous country. Testing similarity vs. preference for the best value of physical attractiveness was not possible by the used research design, since no information was available on the physical attractiveness of the participants. Analysis of actual messages by on-line dating users, as used by Fiore and Donath [2005] or Hitsch et. al. [2006] together with the method of testing the effects of both positive and negative differences as used in this study would be appropriate for this. Instead of survey methods log analysis of dating site activity is necessary for this, which is more sensitive data of dating systems than surveys, both for business and ethical reasons.

Additionally, in the research on-line dating was used as a field of measurement of partner preferences, but not a predictor. It was not tested, whether it affects partner preferences. Dating sites are environments, where participants may have the feeling that they are on an actual market. Thus, spending time there may change attitudes of participants toward preference for the best value and social exchange mechanism. An interesting question would be to test, whether these motivations are more prevalent among dating site users compared to non-users, and whether they are augmented, as participants use dating sites for longer time.

An important methodological question also arose about the research: the one about evaluation of physical attractiveness. It was found that evaluation of pictures by college students were different from evaluation by a more general, but lower class sample, which raises the issue that this evaluation is socially dependent. This is itself an interesting theoretical question, but also has the methodological implication that evaluation of pictures by college students, which is used generally in the literature (see Feingold [1988]), may not be a valid measurement tool.

A possible application of the study about preferences was not concerned in this study. It is the effect of selection (similarity vs. preference for best value) on degree

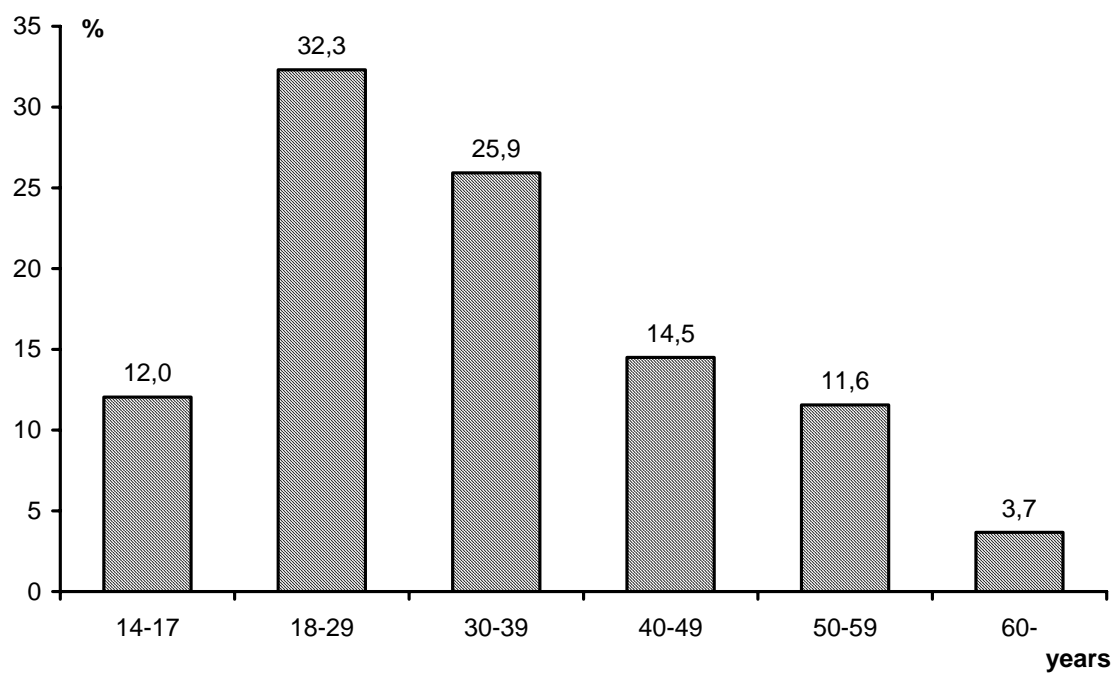
distribution of the social networks. Degree distribution of networks gained much attention since recent publications on scale free networks. Barabási and Albert [1999] have shown that preferential attachment mechanism creates scale free networks (networks with power law degree distribution). Preferential attachment is the mechanism that every new node given to the network are connected to previous ones with proportional probability to the number of links, they already have. Barabási [2002] have reported many examples for social networks and Internet networks, which are scale free networks. Scale-free networks are substantially different from small world networks (Watts and Strogatz [1998]), which were popular to describe social networks. A network analysis of a Swedish dating community (Holme et al [2004]) has found that degree distribution is close to power law. Several interesting questions could be put about network properties of on-line dating. First, whether degree distribution is different in on-line than in traditional dating. Second, how different preferences affect the network structure? Preference for the best value is close to preferential attachment, but it is not exactly the same mechanism. Preference for the best value assumes that linking is based on an external attribute, while preferential attachment is based on number of existing connections. An interesting question is that what kind of network is created based on preference for the best value, and what can one expect on the bases of attraction to similarity. Gathering data on degree distribution in on-line dating is much easier than on traditional dating, however it still requires log analysis of the dating site activity.

Degree distribution of social networks is especially interesting for managers of the dating sites. Highly asymmetric distribution means that some users get very high number of contacts, and majority only a small number or none. In this case the ones, who get high number of contacts (requests for dating) become overloaded and cannot answer the requests. Consequently many users become frustrated by the fact that they do not get enough contacts and do not get answers to their requests. User frustration sooner or later result in high churn rate on the dating site, which managers try to avoid. Therefore an interesting question for dating site managers is that how can they make degree distribution more flat. Some dating sites with special design (for example parship.co.uk) use psychological and social questionnaire and suggests partners to users on the bases of this, instead of charging users with searching among profiles. There are means for traditional dating sites (where users search on the bases of attributes of others) for making degree distribution more even too.

In the research an interesting result was found about difference in homophily along the dating process from dating to marriage. The winnowing hypothesis supposes that social homogeneity increases with the progress towards marriage. My data have shown that this hypothesis is not true, neither concerning educational differences, neither for differences in social background. Blackwell and Lichter [2004] did not find evidence that educational homophily would be higher for married couples than for dating ones using the Survey of National Survey of Family Growth [1995] in the U.S either. Furthermore, they neither found evidence for the hypothesis that more educationally homogamous couples would turn their cohabitations into marriages. An alternative hypothesis about marriages and cohabitations is that cohabitations are not informal marriages, but they are different kind of relationships. Schoen and Weinick [1993] found that educational homophily is higher among cohabitations than marriages, and age and education homophily is smaller, supporting this idea. However, lack of homogenizing effect of the dating and cohabiting period by education cast doubt on the winnowing hypothesis. The question remains, that what can be the reason for this. A reasonable assumption is that the winnowing process occurs earlier in the relationship. My data have shown that there are already no differences between casual dating and steady dating, so the winnowing process must take place even earlier. Presumably, it may take place at the first date. For testing validity of questions of this research, four interviews were carried out with users of dating services. Interviewees reported that the first face-to-face date is a milestone in on-line dating: partners decide then whether to engage in dating or not. Therefore (at least in on-line dating) this could be the decision point, when winnowing occurs. This hypothesis, is supported by findings of Kenrick et. al. [1993] for off-line meetings too. Using survey method they found that importance of similarity in education, age and race is higher for dating and marriage compared to a single date or a single sexual relationship. On the other hand, importance of similarity does not differ comparing dating relationship and marriage. However, this proposition needs further testing on actual couples. As suggested by Blackwell and Lichter [2004] unambiguous conclusions about the winnowing hypothesis can be best achieved using longitudinal data.

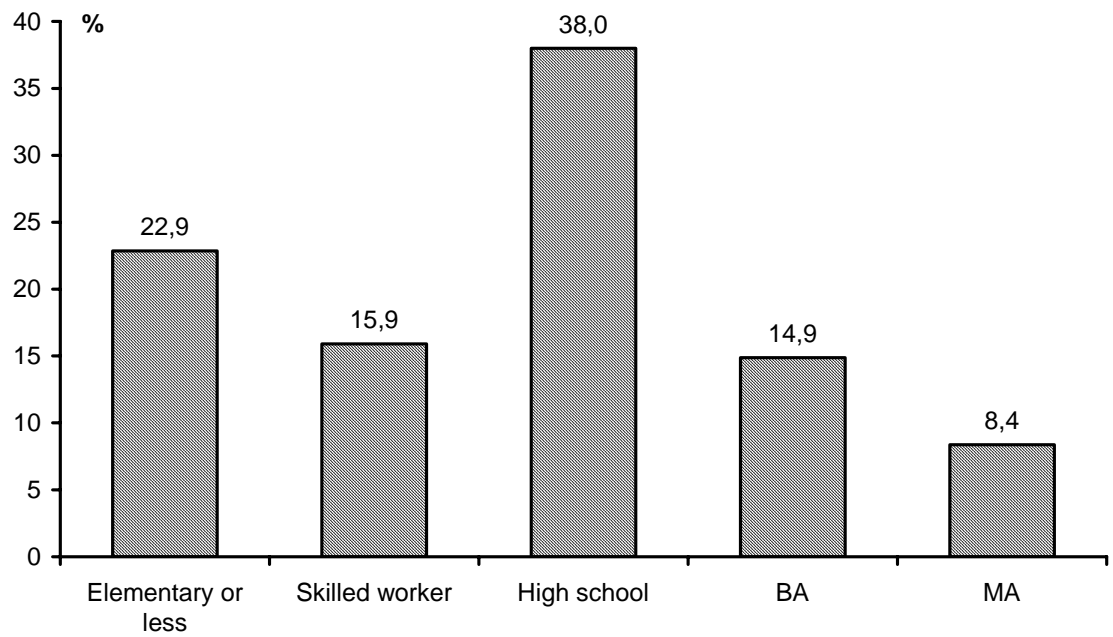
Appendix

Appendix 1. Age distribution of the Hungarian Internet users



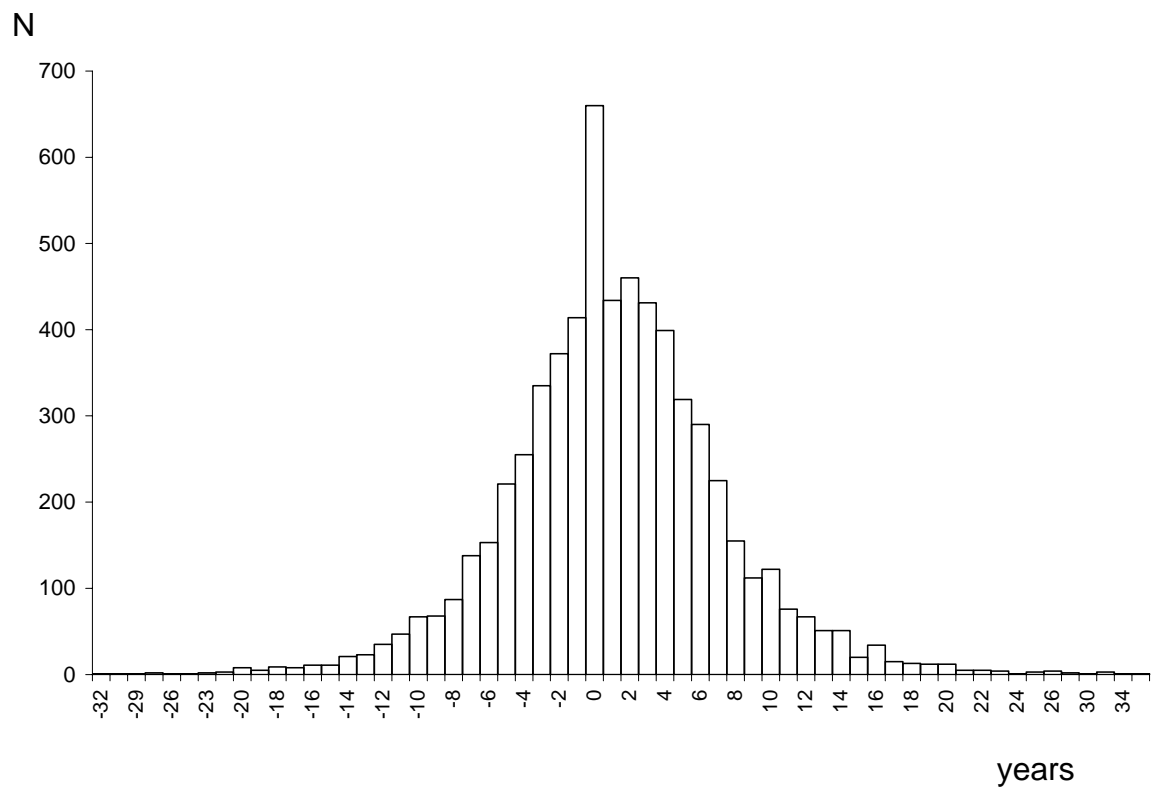
Source: World Internet Project, 2007.

Appendix 2. Distribution of the education of Hungarian Internet users

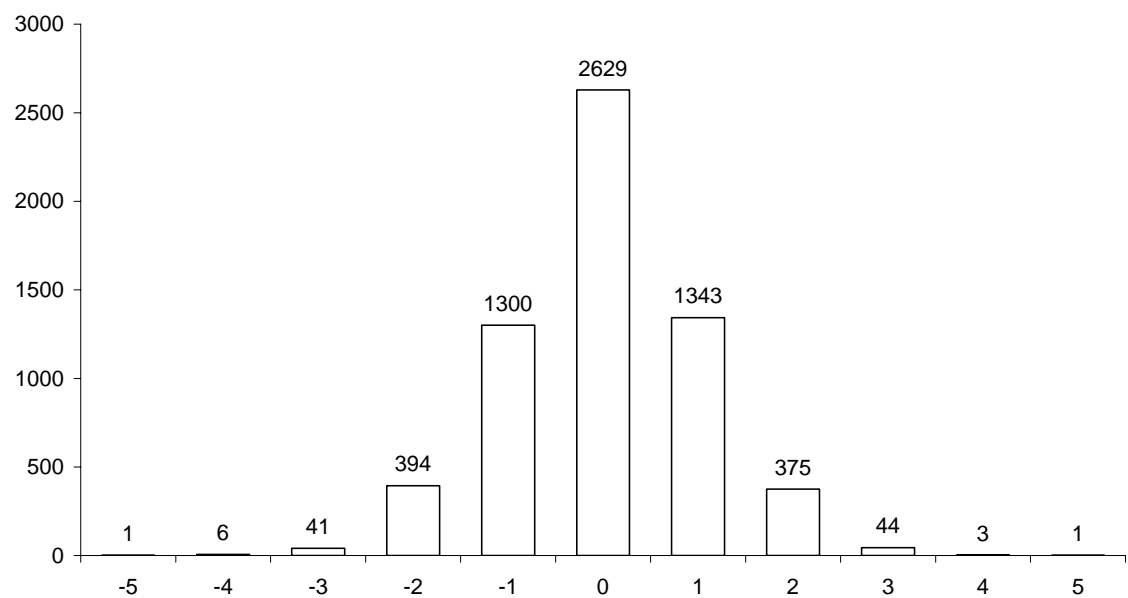


Source: World Internet Project, 2007.

Appendix 3. Distribution of age difference between partners



Appendix 4. Distribution of education difference between partners



Appendix 5. Predictors of men's initiation

	Coefficient	Standard Error	z	P> z
Age +	0.0981829	0.0304126	3.23	0.001
Age –	-0.0913429	0.0069456	-13.15	0.000
Attractiveness	0.8488811	0.1056882	8.03	0.000
Education +	-0.028936	0.0154774	-1.87	0.062
Education –	-0.4186066	0.0665005	-6.29	0.000
Age of respondent	0.0304973	0.0064843	4.70	0.000
Height of resp.	0.0006192	0.0024618	0.25	0.801
Resp has a condominium	0.0845879	0.1060232	0.80	0.425
Resp has a car	0.0953938	0.0991233	0.96	0.336
Weight of alter	-0.0169014	0.0059061	-2.86	0.004
Inter: resp's age x age +	-0.0106516	0.0013036	-8.17	0.000
Inter: resp's age x age –	0.0008186	0.0001281	6.39	0.000
Inter: resp's age x attractiveness	-0.0140421	0.0017066	-8.23	0.000
Inter: resp's age x education -	0.0078423	5.36422	0.00	0.999
Inter: resp's age x education +	0.000181	5.36422	0.00	1.000
Inter: resp has a condominium x attractiveness	-0.0370703	0.0334899	-1.11	0.268
Inter: resp has a car x attractiveness	0.0159448	0.0358015	0.45	0.656
Constant	1.939355	0.5941045	3.26	0.001

Appendix 6. Predictors of men's response

	Coefficient	Standard Error	z	P> z
Age +	0.102	0.03350	3.05	0.002
Age –	-0.0237501	0.0078175	-3.04	0.002
Attractiveness	0.7147111	0.0985127	7.26	0.000
Education +	-0.0142062	0.015352	-0.93	0.355
Education –	-0.2964166	0.0680339	-4.36	0.000
Age of respondent	0.0325033	0.0064057	5.07	0.000
Height of resp.	-0.0043845	0.0031094	-1.41	0.159
Resp has a condominium	0.1020392	0.1031172	0.99	0.322
Resp has a car	-0.0110171	0.0996045	-0.11	0.912
Weight of alter	-0.0129277	0.0055618	-2.32	0.020
Inter: resp's age x age +	-0.0095653	0.0014084	-6.79	0.000
Inter: resp's age x age –	-0.0003878	0.0001609	-2.41	0.016
Inter: resp's age x attractiveness	-0.0129313	0.001626	-7.95	0.000
Inter: resp's age x education -	0.0053026	6.201677	0.00	0.999
Inter: resp's age x education +	0.0001675	6.201677	0.00	1.000
Inter: resp has a condominium x attractiveness	-0.0050684	0.0317131	-0.16	0.873
Inter: resp has a car x attractiveness	0.0050321	0.0327832	0.15	0.878
Constant	3.484307	0.6841836	5.09	0.000

Appendix 7. Predictors of women's initiation

	Coefficient	Standard Error	z	P> z
Age +	-0.1822481	0.0184867	-9.86	0.000
Age –	-0.1583261	0.0076006	-20.83	0.000
Attractiveness	2.370335	0.2163565	10.96	0.000
Education +	-0.0476333	0.0135845	-3.51	0.000
Education –	-0.2043383	0.0432172	-4.73	0.000
Age of respondent	0.1122035	0.0094553	11.87	0.000
Height of resp.	-0.0082614	0.0025389	-3.25	0.001
Resp has a condominium	0.115396	0.1851796	0.62	0.533
Resp has a car	0.2073617	0.1515708	1.37	0.171
Weight of alter	0.0144599	0.0017328	8.34	0.000
Inter: resp's age x age +	0.007156	0.0007381	9.69	0.000
Inter: resp's age x age –	0.0020153	0.0001564	12.88	0.000
Inter: resp's age x attractiveness	-0.044343	0.003452	-12.85	0.000
Inter: resp's age x education -	0.0043156	3.932335	0.00	0.999
Inter: resp's age x education +	-0.0006724	3.932334	-0.00	1.000
Inter: resp has a condominium x attractiveness	-0.0354827	0.0609853	-0.58	0.561
Inter: resp has a car x attractiveness	-0.0304419	0.0743428	-0.41	0.682
Constant	-3.313412	0.7137544	-4.64	0.000

Appendix 8. Predictors of women's response

	Coefficient	Standard Error	z	P> z
Age +	-0.1727729	0.0222098	-7.78	0.000
Age –	-0.1862137	0.0093082	-20.01	0.000
Attractiveness	2.550675	0.2306853	11.06	0.000
Education +	-0.0183018	0.0158614	-1.15	0.249
Education –	-0.0755685	0.048245	-1.57	0.117
Age of respondent	0.1034554	0.0108944	9.50	0.000
Height of resp.	-0.0096078	0.0047065	-2.04	0.041
Resp has a condominium	0.1789472	0.21415	0.84	0.403
Resp has a car	0.4108398	0.1755895	2.34	0.019
Weight of alter	0.0137597	0.0019512	7.05	0.000
Inter: resp's age x age +	0.0064036	0.0008848	7.24	0.000
Inter: resp's age x age –	0.0025853	0.000196	13.19	0.000
Inter: resp's age x attractiveness	-0.0424651	0.0037618	-11.29	0.000
Inter: resp's age x education -	0.0374255	4.33254	0.01	0.993
Inter: resp's age x education +	-0.0370082	4.332541	-0.01	0.993
Inter: resp has a condominium x attractiveness	-0.1387277	0.0680285	-2.04	0.041
Inter: resp has a car x attractiveness	-0.1075273	0.0826617	-1.30	0.193
Constant	-2.349704	1.032748	-2.28	0.023

Appendix 9. Definitions of status/education similarity and difference in Study 1

Homophile couples are labeled as yellow cells, heterophile are blue and “uncertain” are white.

Respondent's status / education	Status / education of partner known from the dating site							Total
	Elementary or less	Studies in elementary or secondary school	Skilled worker *	Earned skilled worker degree, studies	Finished secondary education	Finished secondary school, studies	Earned BA or MA degree	
Elementary or less		1						1
Studies in elementary or secondary school		5			1	2	1	9
Skilled worker					1	1	4	6
Earned skilled worker degree, studies				1		1		2
Finished secondary education			1		10	8	13	32
Finished secondary school, studies		3	1	1	3	10	4	22
Earned BA or MA degree					2	1	11	14
Total		9	2	2	17	23	33	86

*In the Hungarian education system after the elementary school (at the age of 14) students choose, whether they continue in a skilled worker school for “skilled worker” degree, or go to high school where they earn “secondary school” degree, which is necessary to enter to college level.

References

- Bailey, R. C., Kelly, M. [1984]: Perceived physical attractiveness in early, steady, and engaged daters. *The Journal of Psychology* 116, 39-43.
- Bailey, R. C., Price, J. P. [1978]. Perceived physical attractiveness in married partners of long and short duration. *Journal of Psychology* 99, 155-161.
- Baker, A. [2000]: Two By Two in Cyberspace: Getting Together and Connecting Online. *Cyberpsychology and Behavior* 3(2).
- Baker, A [2002]: What Makes an Online Relationship Successful? Clues from Couples Who Met in Cyberspace. *Cyberpsychology and Behavior* 5(4).
- Barabási, A. L., Albert, R. [1999]. Emergence of scaling in random networks. *Science* 286: 509–512
- Barabási, A. L. [2002]: *Linked: The New Science of Networks*. Perseus, Cambridge, MA.
- Bartus, T. [2001]: *Social Capital and Earnings Inequalities. The Role of Informal Job Search in Hungary*. University of Groningen (PhD dissertation)
- Blackwell, Debra L., Lichter, Daniel T. [2004]: Homogamy among dating, cohabiting and married couples. *The Sociological Quarterly* 45 (4): 719-737.
- Blau, P. M., Schwartz, J. E. [1984]: *Crosscutting Social Circles. Testing A Macrostructural Theory Of Intergroup Relations*. Transaction Publishers, New Brunswick, NJ
- Brym, R.J., Lenton, R. L. [2001]: *Love Online: A Report on Digital Dating in Canada*. Research Report funded by MSN.ca
- Buchmann, C., DiPrete, T.A. [2006]: The Growing Female Advantage in College Completion: The Role of Family Background and Academic Achievement. *American Sociological Review* 71(4): 515-541.
- Bukodi, E. [2002]: Ki kivel (nem) házasodik? A partnerszelekciós minták változása az egyéni életútban és a történeti időben. *Szociológiai Szemle* (Hungarian Academy of Sciences' Review of Sociology), 2002/2.
- Bukodi, E. [2004] *Ki kivel (nem) házasodik? Párválasztás Magyarországon*. Budapest, Századvég

- Buss, D., Barnes, M. [1986]. Preferences in human mate selection. *Journal of Personality and Social Psychology* 50, 559-570
- Buss, D. M., Abbott, M., Angleitner, A., Asherian, A., Biaggio, A., Blancovillasenor, A., Bruchonschweitzer, M., Chu, Hy, Czapinski, J., DeRaad, B., Ekehammar, B., Ellohamy, N., Fioravanti, M., Georgas, J., Gjerde, P., Guttman, R., Hazan, F., Iwawaki, S., Janakiramaiah, N., Khosroshani, F., Kreitler, S., Lachenicht, L, Lee, M., Liik, K., Little, B., Mika, S., Moadelshahid, M., Moane, G., Montero, M., Mundycastle, A. C., Niit, T., Nsenduluka, E., Pienkowski, R., Pirttila-Backman, A. M., Deleon, J. P, Rousseau, J., Runco, M. A., Safir, M. P., Samuels, C., Sanitioso, R., Serpell, R., Smid,, N., Spencer, C., Tadinac, M., Todorova, E. N., Troland, K., Vandenbrande, L., Van Heck, G., Vanlangenhove, L., Yang, K. S. [1990]. International preferences in selecting mates - A study of 37 cultures. *Journal of Cross-Cultural Psychology*, 21, 5-47.
- Busschbach, Jooske T. [1996]: T Uit het oog, uit het hart? Stabiliteit en verandering in persoonlijke relaties (English Summary). Amsterdam, Thesis Publishers.
- Byrne, D. [1971]. *The attraction paradigm*. New York: Academic Press.
- Critelli, J. W., Waid, L. R. [1980]: Physical attractiveness, romantic love and equity restoration in dating relationships. *Journal of Personality Assessment*, 44(6), 624-629.
- Cohen, J. [1992]. A power primer. *Psychological Bulletin*, 112, 155-159.
- Cosley, D., Ludford, P., Terveen, L. [2003]: Studying the Effect of Similarity in On-line Task-Focused Interactions. In: *Proceedings of Group 2003 Conference (GROUP 2003)*, Sanibel Island, FL.
- DiMaggio P., Mohr, J. [1985]: Cultural Capital, Educational Attainment, and Marital Selection. *American Journal of Sociology* (90): 1231-61.
- DiMaggio, P., Hargittai, E., Neuman, R. W., Robinson J. P. [2001]: Social Implications of the Internet. *Annual Review of Sociology* 27: 307-336
- DiMaggio, P., Hargittai, E., Celeste, C., Shafer, S. [2003]: *From Unequal Access to Differentiated Use: A Literature Review and Agenda for Research on Digital Inequality*. Research Report for Russel Sage Foundation
- Dillman, Don A., Bowker, Dennis K. [2001]. The Web Questionnaire Challenge to Survey Methodologists. In: Reips, Ulf-Dietrich & Bosnjak, Michael: *Dimensions of Internet Science*.

- Dormán Emese [2005]: Társkeresés az Interneten: Létezik-e Virtuális szerelem? *Médiakutató*, 2005/2.
- Elder Jr., G. H. [1969]: Appearance and education in marriage mobility. *American Sociological Review*, 34, 519–533.
- Feingold, A [1988]: Matching for attractiveness in romantic partners and same-sex friends: A meta-analysis and theoretical critique. *Psychological Bulletin*, 104, 226-235
- Fényes, H., Pusztai, E. [2006]: Férfiak hátránya a felsőoktatásban egy regionális minta tükrében. *Szociológiai Szemle* 16(1) 40-59.
- Feinberg, S. E., Mason, W. M. [1979]: Identification and Estimation of Age-Period-Cohort Models in the Analysis of Discrete Archival Data. *Sociological Methodology* 10: 1-67.
- Festinger, Leon, Stanley Schachter, and Kurt Back [1950] *Social Pressures in Informal Groups*. Stanford, CA: Stanford University Press.
- Finch, J. [1987] The Vignette Technique in Survey Research, *Sociology*, 21, pp.105-14
- Fiore, A. T., Donath, J. S. [2005]: *Homophily in Online Dating: When Do You Like Someone Like Yourself?* Paper Presented at CHI 2005 Conference, Portland, Oregon, USA
- Fischer, Claude S. et al [1977]: *Networks and Places*. New York, Free Press.
- Goldstein, H. [1979]: Longitudinal Studies and the Measurement of Change. *The Statistician* 18 (2): 93-117.
- Hampton, K. H., Wellman, B. [2002]: The not so Global Village of Netville. In: Wellman, B., Haythronthwaite, K.: *The Internet in Everyday Life*. Blackwell.
- Hardie, E., Buzwell, S. [2006]: Finding Love Online: The Nature and Frequency of Australian Adults' Internet Relationships. *Australian Journal of Emerging Technologies and Society* 4(1):1-14.
- Hatfield, E., Sprecher, S. [1995]: Men's and women's preferences in marital partners in the United States, Russia, and Japan. *Journal of Cross-Cultural Psychology* 26(6), 728-750.
- Henz, Ursula; Sundström, M. [2001] Partner Choice and Women's Paid Work in Sweden -The Role of Earnings. *European Sociological Review* 17(3)
- Hitsch, Guenter, Hortacsu, A, Ariely, D. [2006]: *What makes you click? An Empirical Analysis of Online Dating*. Paper Presented at the American Economic Association Annual Meeting, Boston MA, Jan 6, 2006.

- Hollingshead, August B. [1950]: Cultural Factors in the Selection of Marriage Mates. *American Sociological Review* 15, p. 619-627
- Holme, P., Edling, C. R., Fredrik, L. [2004]: Structure and time evolution of an Internet dating community. *Social Networks* 26, 155-174
- Homans, GC [1961] *Social Behavior: Its Elementary Forms*. New York, Harcourt, Brace & World.
- Huston, T. L., Cate, R. M. [1979] Social exchange in intimate relationships. In. M. Cook & G. Wilson (Eds.), *Love and Attraction. An International Conference*. Pergamon Press.
- Jacobs, J.A. [1996] Gender Inequality and Higher Education. *Annual Review of Sociology* 22, 153-185.
- Jennings, Helen H. [1950] *Leadership and isolation*. New York, Longman Green.
- Kahneman, D., Tversky, A. [1979]: Prospect Theory: An Analysis of Decision Under Risk. *Econometrica* 47(2)
- Kalmijn, Matthijs [1993]: Trends in Black/White Intermarriage. *Social Forces* 72, 119-146
- Kalmijn, Matthijs [1998] Intermarriage and Homogamy: Causes, Patterns, Trends. *Annual Review of Sociology* 24, 395-421.
- Kalmijn, M., Flap, H. [2001]. Assortive Meeting and Mating: Unintended Consequences of Organized Settings for Partner Choices. *Social Forces* 79: 1289-1312.
- Kandel, Denise B. [1978]: Homophily, Selection and Socialization in Adolescent Friendships. *American Journal of Sociology* 84(2), 427-436.
- Kenrick, D.T., Groth, G.E., Trost, M.R., Sadalla, E.K. [1993]: Integrating evolutionary and social exchange perspectives on relationships: Effects of gender, self-appraisal, and involvement level on mate selection criteria. *Journal of Personality and Social Psychology*, 64, 951-969
- Lazarsfeld, Paul and Merton, Robert K. [1954] Friendship as a Social Process: A Substantive and Methodological Analysis. In Morroe Berger, Theodore Abel, and Charles Page, eds.: *Freedom and Control in Modern Society*. New York: Van Nostrand, 18-66.
- Lengyel, Gy., Eranus, E., Füleki, D., Lőrincz, L., Siklós, V. [2006]: The Cserénfa experiment. *The Journal of Community Informatics* 2(3)

- Li, N. P., Kenrick, D. T., Bailey, M. J., Linsenmeier, J. A. W. [2002]: The Necessities and Luxuries of Mate Preferences: Testing the Tradeoffs. *Journal of Personality and Social Psychology* 82(6), 947-955.
- Lin, N, Ensel, W. M, Vaughn, J. C. [1981] Social Resources and Strength of Ties: Structural Factors in Occupational Status Attainment *American Sociological Review* 46 (4) 393-405.
- Lindenberg, Siegwart [1997], Grounding Groups in Theory: Functional, Cognitive, and Structural Interdependencies. *Advances in Group Processes*, 14, 281-331.
- Mare R. D. [1991]: Five decades of educational assortative mating. *American Sociological Review* 56, 15-32
- Marsden, P. V. [1990]: Network diversity, substructures and opportunities for contact. In: Structures of Power and Constraint: Papers in Honor of Peter Blau, ed. C Calhoun, M Meyer, RS Scott, pp. 397–410. New York: Cambridge
- Mason, K. O., Mason, W. M., Winsborough, H. H., Poole, W. K. [1973]: Some Methodological Issues in Cohort Analysis of Archival Data. *American Sociological Review* 38 (2): 242-258.
- McKenna, K. Y. A., Green, A.S., Gleason, M. E. J. [2002]: Relationship Formation on the Internet: What's the Big Attraction? *Journal of Social Issues* 58(1), 9-31.
- McPherson, J. M, Smith-Lovin, L. [1987] Homophily in Voluntary Associations: Status Distance and the Composition of Face-to-Face Groups. *American Sociological Review* 52(3): 370–379.
- McPherson, M., Smith-Lovin, L., and Cook, J. [2001] Birds of a feather: Homophily in social networks. *Annual Review of Sociology* 27, 415–44
- Mesch, G., Talmud, I. [2003]: The Nature of Computer-Mediated Social Networks among Israeli Youth. Paper presented at “Computer Networks and Social Networks: An International Conference”, University of Haifa, August 25-27 .
http://hevra.haifa.ac.il/~soc/events/cn/abstracts/mesch_talmud_4.htm
- Murstein, Bernard I. [1971] A Theory of Marital Choice and its Applicability to Marriage Adjustment. In: Bernanrd I Murstein (Ed) *Theories of Attraction and Love*. New York, Springer.
- Murstein, Bernard I. [1987]: Clarification and Extension of the SVR theory in Dyadic Pairing. *Journal of Marriage and the Family* 49(4), 929-933.
- Newcomb, Theodore. M. [1961]. *The acquaintance process*. New York: Holt, Rinehart & Winston.

- Rabe-Hesketh, S., Skrondal, A. [2005]: *Multilevel and Longitudinal Modeling Using Stata*. Stata Press
- Rice, R. E., Love, G. [1987]: Electronic Emotion: Socioemotional Content in a Computer-Mediated Network. *Communication Research* 14: 85-108.
- Róbert P. [2000]: Bővülő felsőoktatás – ki jut be? *Educatio* 9(1): 79-94.
- Rosenfeld, Michael J. [2005]: A Critique of Exchange Theory in Mate Selection. *American Journal of Sociology* 110(5): 1284-1325
- Rusbult, C. E. [1980]: Commitment and Satisfaction in Romantic Associations: A Test of the Investment Model. *Journal of Experimental Social Psychology* 16, 172-186.
- Rusbult, C. E. [1983] A longitudinal test of the investment model: The development (and deterioration) of satisfaction and commitment in heterosexual involvements. *Journal of Personality and Social Psychology* 45: 101-117.
- Scheff T. J. [1990]: *Microsociology. Discourse, Emotion and Social Structure*. The University of Chicago Press, Chicago/London.
- Schoen R, Wooldredge J. [1989] Marriage choices in North Carolina and Virginia, 1969.71 and 1979.81. *Journal of Marriage and the Family* 51, 465-481
- Schoen, R, R.M. Weinick R.M. [1993]. Partner Choice in Marriages and Cohabitations. *Journal of Marriage and the Family* 55:408-414.
- Segal, M. [1974] Alphabet and Attraction: An Unobtrusive Measure of the Effect of Proximity in a Field Setting. *Journal of Personality and Social Psychology*, 30 (5), 654-657.
- Snijders T.A.B., Bosker, R.J. [1999]: *Multilevel Analysis. An introduction to basic and advanced multilevel modeling*. London / Thousand Oaks / New Delhi: Sage
- Sproull, L., Kiesler, S. [1986]: Reducing social context cues: Electronic mail in organizational communication. *Management Science* 32(11): 1492-1512.
- Sprecher, S., Sullivan, Q., Hatfield, E. [1994]: Mate selection preferences: Gender differences examined in a national sample. *Journal of Personality and Social Psychology* 66, 1074-1080
- Stephen, Timothy D. [1984] A symbolic exchange framework for the development of intimate relationships. *Human Relations* 37, 393-408
- Stephen, Timothy D. [1985] Fixed-sequence and Circular-causal models of relationship development: Divergent views on the role of communication in intimacy. *Journal of Marriage and the Family* 47, 955-963

- Stevens G, Owens D, Schaefer E. C. [1990] Education and attractiveness in marriage choices. *Social Psychological Quarterly* 53, 62-70
- Schwartz, C. R., Mare, R. D. [2005] Trends in Educational Assortive Marriage from 1940 to 2003. *Demography* 42 (4), 621–646
- Surra, C. [1990] Research and theory on mate selection and premarital relationships in the 1980s. *Journal of Marriage and the Family* 52, 844 – 865
- Taylor PA, and Glenn ND. [1976] The utility of education and attractiveness for females' status attainment through marriage. *American Sociological Review* 41, 484-498
- Thoits, P. A. [1989]: The Sociology of Emotions. *Annual Review of Sociology* 15: 317-342.
- Thibaut, J.W., and Kelly, H.H. [1959]. *The Social Psychology of Groups*. New York: John Wiley and Sons Incorporated.
- Verbrugge [1977]: The Structure of Adult Friendship Choices. *Social Forces* 56(2), 576-597
- Watts and Strogatz 1998
- Whitty, M. T. [2002]: Liar, Liar! An examination of how open, supportive and honest people are in chat rooms. *Computers in Human Behavior* 18, 343-352.
- Whitty, M. T. [2003]: Pushing the Wrong Buttons: Men's and Women's Attitudes toward Online and Offline Infidelity. *Cyberpsychology & Behavior* 6(6), 569-579.
- Whitty, M. T. [2004]: Cyberflirting: An examination of en's and women's flirting behaviour both offline and the Internet. *Behaviour Change* 21:115-126.
- Whitty, M.T., Gavin, J.K. [2001]: Age/sex/location: uncovering the social cues in the development of on-line relationships. *CyberPsychology & Behavior* 4:623– 630.

Public Media:

- Die Zeit, [2005] : Suche: Liebe – Biete: Mich. <http://www.zeit.de/2005/07/NetzLiebe>
- Index.hu, Feb.15, [2005]: Bejöhét az Internetes randi. <http://index.hu/velvet/onleany/net50215/>

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