Does Online Dating Affect Assortative Mating?

The Case of Educational, Racial and Religious Endogamy

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Mate selection and assortative mating (i.e., the nonrandom pairing of individuals with similar traits) depend on particular contexts of interaction that mediate the formation of partnerships (Bozon and Héran 1989; Kalmijn and Flap 2001; Lampard 2007; Mollenhorst, Völker, and Flap 2008a). The pool of available partners supplied by certain social contexts and networks determines the extent to which individuals are able to match with people belonging to their own group. However, the knowledge about the way in which the most recent and increasingly prevalent settings of partner selection (e.g., online dating sites) influence assortative mating patterns is absent.

The ongoing shifts in work and family life and the decline of traditional settings of meeting and mating (Rosenfeld and Thomas 2012) entail that individuals become progressively more in charge with the process of finding a partner (Barraket and Henry-Waring 2008). Against this backdrop, online dating services surged in popularity, fundamentally changing the dating landscape and the process of relationship initiation (Finkel et al. 2012). More than one-third of American marriages begin online (Cacioppo et al. 2013). Attitudes towards online dating as a good way to meet people and find a match have also grown more positive over time (Pew Internet 2013). Despite the large interest it raises among scientists, media and general audiences alike (Sprecher 2009), there is still limited understanding about the nature of relationships formed through Internet dating sites. Social relations initiated online are generally assumed to take on different forms than in traditional face-to-face settings, given that cyberspace provides distinct ways of communicating and interacting with others, non-mediated by typical third parties and unconstrained by physical boundaries (Houston et al. 2005). During the early stages of its development, the Internet was in fact subject to utopian predictions about its role in making ascriptive characteristics obsolete (Barlow 1996). Individuals' matching based on similar race or

socio-economic status, known to prevail in segregated offline environments, would then dissolve in the boundless space of the Internet. The question that follows is whether online dating contributes to alleviating the typical social divides between groups by providing an unrestrictive space for partner selection, or whether it preserves social boundaries and promotes similarity between partners due to its highly systemized interface for browsing and easily getting in contact with similar others.

Studies examining partner preferences and first-stage contacting behavior in Internet dating find strong evidence for online daters' tendency of preferring similar partners (e.g., Skopek, Schulz, and Blossfeld 2011; Lewis 2013; Lin and Lundquist 2013; Robnett and Feliciano 2011; Yancey 2009). However, the relative importance of online dating sites in promoting endogamous couples as compared to other meeting settings is unexplored. This study aims to examine the extent to which online dating sites impact assortative mating and the level of partners' similarity in contrast to other online venues and conventional settings of meeting. Using recent data referring to how couples meet in the U.S. (i.e., the How Couples Meet and Stay Together survey data), I focus on three most commonly studied types of endogamy (Schwartz 2013), related to education, race, and religious background. In this study, endogamy and related terms are generically used to describe similarity for both married and unmarried couples. I distinguish between ten types of meeting settings, namely: online dating sites (in connection to online platforms where people enroll with the specific purpose of finding a romantic partner), other online venues (pointing to online communities, chat rooms, online gaming etc.), family, friends, neighbors, leisure, the workplace, school, religious venues and other settings.

The paper adds to the literature in several ways. First, it contributes to the recent line of studies examining the ways in which new technologies affect partner selection and romantic outcomes (e.g., Cacioppo et al. 2013; Rosenfeld and Thomas 2012). Second, it provides the first comparison between couples that met via online dating sites and couples that met via other online or offline meeting venues, with respect to endogamy patterns. Using the same data source, the study by Rosenfeld and Thomas (2012) offers novel insights into the differences between couples that met via the Internet and couples that met via family intermediaries. However, their study does not make a distinction between online dating sites and other online settings of partner selection. Examining marital satisfaction and dissolution across various meeting contexts, Cacioppo and colleagues (2013) show that online venues do not yield similar marital outcomes. While this study does not differentiate between all specific online venues, I find it necessary to distinguish among online settings specifically designed for partner selection and other online venues that favor partnering as a by-product (McKenna 2007). Third, I extend the work by Rosenfeld and Thomas (2012) by contrasting online dating settings to more than one offline setting. The results of this study therefore enable more far-reaching conclusions about the impact of online dating settings on assortative mating. Finally, whereas most research examines endogamy patterns in connection to married couples only (e.g., Hou and Miles 2008; Mare 1991; Rosenfeld 2008), the current study refers to both marital and non-marital relationships and is thus better able to capture the broader reality of romantic unions.

Theoretical Background

Endogamy Patterns and Trends

Research on mate selection spanning over several decades has consistently indicated individuals' tendency of choosing partners from within their own educational, religious, and ethno-racial group (e.g., Blau and Duncan 1967; Blossfeld and Timm 2003; Burgess and Wallin 1943; Mare 1991; Smits, Ultee, and Lammers 1998; for reviews, see Blossfeld 2009; Kalmijn 1998; Schwartz 2013). In-group preferences are motivated by the need to preserve in-group cohesion (Sumner 1906), the need for security given by interactions with culturally similar individuals (Hutnik 1991), or in-group favoritism as a means of sustaining a positive and distinguishable social identity (Tajfel 1982). Marital sorting (i.e., whom marries whom) along education, race and religion has received particular attention in the literature on assortative mating (for a recent review, see Schwartz 2013) given their significance in indicating economic and social between-group boundaries (Blau and Duncan 1967; Blossfeld 2009; Fernández and Rogerson 2001; Mare 2000). An overview of the relevance, patterns and trends associated with each of the three types of endogamy examined in this study is provided below.

Education represents a central predictor of favorable labor market prospects and overall socioeconomic status (Blossfeld 2009; Fu and Heaton 2008; Mare 1991; Rosenfeld 2008) as well as an indicator of cultural resources and lifestyle (Halpin and Chan 2003; Hou and Miles 2008; Mare 1991). The *educational resemblance* of partners has consequences for the transmission of social advantage across generations (Kalmijn 1991; Schwartz and Mare 2005; Ultee and Luijkx 1990), as well as the development and educational achievement of offspring (Beck and González-Sancho 2009). Research on patterns of educational endogamy in the U.S. provides evidence of high educational endogamy (Fu and Heaton 2008; Rosenfeld 2008). However, findings are inconsistent with respect to trends over time. One line of empirical studies indicates that spouses' educational resemblance has sequentially increased over the last century (e.g., Hou

and Myles 2008; Kalmijn 1991; Qian and Preston 1993). A second group of studies uncovers non-linear trends, with educational endogamy first increasing, then decreasing over time (e.g., Mare 1991; Liu and Lu 2006) or initially rising and afterwards declining (Schwartz and Mare 2005). Finally, a third line of research suggests that the association of husbands' and wives' education remained relatively stable or slightly decreases in most of the 20th century (Fu and Heaton 2008; Raymo and Xie 2000; Rosenfeld 2008).

In comparison to educational endogamy, *racial endogamy* is much more prevalent, robust, and associated with less divergent research findings (Fu and Heaton 2008; Rosenfeld 2008). The arrival of large immigrant populations of non-European origin (e.g., Asians, Hispanics) over the last decades and the subsequent proliferation of racial diversity in the U.S. provided the background for a surge in racial studies in general and research on racial intermarriage (i.e., marital union between individuals of different race) in particular (Burton et al. 2010). Same-race partnering is believed to most accurately indicate the continuity of group boundaries (Fu 2001). Interracial marriages, particularly between majority Whites and racial minorities, are an indicator of assimilation and diminishing social and cultural distances between groups (Alba and Nee 2003; Gordon 1964). Racial intermarriage reveals how much groups perceive and accept each other as equals (Kalmijn and van Tubergen 2010). In the long run, it also weakens the salience of racial identities given the multiracial background of potential children born within such unions. Empirical studies examining changing trends in racial endogamy over the last century find overall trends of declining same-race partnering and increasing intermarriage rates[1] (e.g., Fu and Heaton 2008; Rosenfeld 2008).

Religious endogamy is considered as one of the main contributing factors of marital quality (e.g., Heaton 1984; Myers 2006), scarcity of relationship disputes and conflicts (e.g.,

Curtis and Ellison 2002), as well as marital stability (e.g., Heaton and Pratt 1990; Lehrer and Chiswick 1993). Spouses who share the same religion are believed to benefit from more effective partnerships due to common beliefs and values grounded in the same (religious) ideology (Myers 2006). Partners' religion influences not only the type of religious practices performed by each, but also lifestyle decisions with respect to child care, time and financial management, the formation of social and professional networks, and residential choices (Lehrer 1998; Lehrer and Chiswick, 1993). Even though research indicates strong homogamous patterns along religious lines in the U.S. (e.g., Bisin, Topa, and Verdier 2004; Blackwell and Lichter 2004), the last decades witnessed both drops in rates of endogamy and increases in religious intermarriage[2] (Lehrer 1998; Rosenfeld 2008; Sherkat 2004).

Social Contexts of Interaction – The Supply Side Perspective

As Blau's (1977) theory of social structure suggests, interpersonal choices are largely determined by the opportunities for contact that each social setting provides. What may appear as personal preference for similar others is in fact highly contingent on the configuration of contexts. The social contexts or foci of activity in which people initiate and construct relations differ in the characteristics of individuals embedded in them (Feld 1984; Marsden 1990). As a result, any study of personal relations needs to account for the social composition of different types of social settings. Each context provides a distinctive pool of potential interaction partners (supply), from which people can select according to personal preferences (demand). The supply of contact opportunities supported by each social setting determines whether or not individuals can realize preferences for similar others. The more socially and culturally homogenous a context is, the higher chances people have to associate with those belonging to the same background. The supply-side perspective and its focus on the importance of local interaction opportunities in

breeding similarity have been connected to multiple types of close personal relations, ranging from marital or cohabiting unions (e.g., Blau and Schwartz 1984; Kalmijn 1998; Kalmijn and Flap 2001), sexual relationships (e.g., Laumann et al. 1994), friendships and acquaintanceships (e.g., McPherson and Smith-Lovin, 1987; Mollenhorst, Völker, and Flap 2008a), or core discussion networks (e.g., Mollenhorst, Völker, and Flap 2008b). This study continues the tradition of applying the supply-side perspective in examining how meeting venues favor similarity of romantic partners with a particular focus on the digital setting of online dating sites. In order to draw expectations about the relative contribution of Internet dating sites in breeding endogamy, an overview of the social composition, supply of spousal alternatives and general marriage market conditions provided by both conventional and digital meeting settings is outlined below.

Conventional Meeting Settings

Due to a balanced gender and age distribution and a subsequently large pool of young male and female candidates, *school settings* (i.e., ranging from primary school to university) constitute one of the most abundant partnership markets (Kalmijn and Flap 2001). Schools display high levels of internal homogeneity in terms of educational level (predominantly for individuals at the upper end of the schooling distribution who are inherently more uniform in their final educational attainment (Mare 1991) and religious affiliation (Kalmijn and Flap 2001). Meeting partners via school is therefore associated with strong and multiple endogamous effects, particularly with respect to education, class and religion (Kalmijn and Flap 2001; Lampard 2007; Mollenhorst, Völker, and Flap 2008a).

Workplaces are social contexts that are highly homogenous in socioeconomic status and education, but less segregated with respect to other ascribed characteristics such as race or religion (Feld 1984; Mcpherson, Smith-Lovin, and Cook 2001). Research indeed reveals that romantic ties among co-workers are associated with high endogamy with respect to education (Mollenhorst, Völker, and Flap 2008a), but none with respect to religion (Kalmijn and Flap 2001; Mollenhorst, Völker, and Flap 2008a).

Personal networks consisting of *family members* and *friends* are usually highly homogeneous on ascribed characteristics such as race and religion (Feld 1984; Mcpherson, Smith-Lovin, and Cook 2001). Having friends and family as intermediaries in the mating market not only ensures opportunities for positive sorting along these lines, but also entails direct third party pressures to conform to endogamy norms (Kalmijn 1998; Lampard 2007). Empirical findings, however, remain inconclusive. Kalmijn and Flap (2001) find positive effects of family networks on religious endogamy only, while Mollenhorst and colleagues (2008a) encounter no significant effects. Mixed results are also found for *neighborhood* as context for meeting partners with relatively high levels of homogeneity with respect to social class, race, and religion. Compared to other settings, neighborhoods are shown to favor either lower (Mollenhorst, Völker, and Flap 2008a) or higher religious similarity between partners (Kalmijn and Flap 2001).

Other settings for which empirical studies find no definite effects on endogamy are *public places* for drinking, eating, or socializing, as well as *voluntary organizations*. Such optionally selected contexts generally present lower structural constraints and higher chances of meeting people of different backgrounds (Bozon and Héran 1989). Nonetheless, these settings also preserve some degree of social and cultural segregation (Lampard 2007). Certain voluntary associations, for instance, are religion-affiliated (Feld 1984) or targeted towards specific groups

(e.g., youth organizations, professional organizations), resulting in particular types of social composition and endogamy (Mcpherson, Smith-Lovin, and Cook 2001). Finally, *religious venues* are known for high levels of religious homogeneity (Feld 1984) that leads to high probabilities for partners to share the same system of beliefs.

Digital Partnership Markets

As with previous contexts for interaction, there are certain particularities of individuals enrolled on *Internet dating sites*. Online dating sites most often attract more men (Hitsch, Hortaçsu, and Ariely 2010), individuals with previous partnership experience (Feliciano, Robnett, and Komaie 2009; Sautter, Tippett, and Morgan 2010; Yurchisin, Watchravesringkan, and Brown McCabe 2005), higher educated (Feliciano, Robnett, and Komaie 2009; Hitsch, Hortaçsu, and Ariely 2010) or middle-aged individuals (Feliciano, Robnett, and Komaie 2009; Valkenburg and Peter 2007). There appears to be no particular segregation with respect to racial background or religious affiliation (Feliciano, Robnett, and Komaie 2009; Hitsch, Hortaçsu, and Ariely 2010).

Current studies of Internet dating preferences and interaction reveal positive assortative mating patterns along various social lines. Skopek and colleagues (2011) find that educational similarity influences contact and response behavior in the initial stages of online dating. Various research addressing racial preferences in online dating points to the endurance of same-race preferences and typical racial hierarchies (Wilson, McIntosh, and Insana 2007; Feliciano, Robnett, and Komaie 2009; Yancey 2009; Feliciano, Lee, and Robnett 2011; Lewis 2013; Lin and Lundquist 2013; Robnett and Feliciano 2011). Finally, studies that examine the religious preferences of online daters indicate that both men and women are more likely to contact potential partners with the same religious affiliation (Fiore and Donath 2005; Hitsch, Hortaçsu,

and Ariely 2010). However, when contrasting couples that met online with couples that met via traditional marriage markets, Rosenfeld and Thomas (2012) find no difference between the two groups with respect to partners' educational gap. They also reveal that same-race partnering is as frequent among those who met online as it is among the couples that met via family members. When it comes to the ways in which new forms of technology affect religious endogamy, the authors ultimately show that the Internet favors interreligious partnering. With this latter exception, these singular findings can lead to the conclusion that the online marriage market contributes little to diminishing particular boundaries between social groups and that online partner choices are guided by the same set of criteria as partner selection via family. However, as previously mentioned, the study of Rosenfeld and Thomas (2012) does not distinguish between online venues that favor partnering as a by-product (e.g., online gaming, online social networking sites, Internet communities) and online setting specifically designed for partner selection.

Other online venues can also lead to couple endogamy. For instance, social networking sites maintain ties with former high school classmates (Ellison, Steinfield, and Lampe 2007), allowing schools to operate as marriage markets further into the age of adulthood and ensure educational similarity between partners (Schwartz 2013). However, the scarcity of knowledge regarding the socio-demographic profile of individuals interacting in other online settings (e.g., chat rooms, online gaming, online communities) makes it difficult to assess the relative composition of these digital partnership markets beyond what is known about the population of Internet users, which points to an over-representation of men, the young and highly educated (Pew Internet 2013). Cacioppo and colleagues (2013) provide some clues about the differences in demographic composition between these digital settings by examining the characteristics of

individuals who met their spouse through various online venues. For instance, the authors show that, compared to those who met their spouse through online dating, respondents who met via an online discussion group are more likely to be higher educated and Catholic; while individuals who met through online communities and chat rooms tend to be non-White. While acknowledging the multiple particularities of these various online contexts, it is beyond the scope of this study to focus on the specific endogamy patterns promoted by each of these additional online settings. This study assumes that both offline and other online meeting venues broadly differ from online dating sites by not displaying the same accessibility, forms of communication and matching that these sites do (Finkel et al. 2012). I therefore suggest that Internet dating sites play a particular role in shaping endogamy patterns, as outlined below.

Due to the online dating sites' use of matching algorithms largely based on trait similarity, Finkel and colleagues (2012) believe that the increasing popularity of online dating sites for long-term partnership formation would eventually lead to a rise in homogamous marriages. Matching formulas represent undisclosed mathematical algorithms that online dating sites use in order to select and provide to their members a set of their most suitable potential partners. Using individuals' self-reported information, some matching algorithms apply principles of complementarity, but most of them are set up on principles of similarity in terms of both personality traits and socio-demographic profile (Finkel et al. 2012). Given that users are exclusively presented with potential candidates that share a similar background, this would ensure high levels of endogamy from the very first stages of dating online. Not all Internet dating platforms provide matching services though (e.g., PlentyOfFish, OkCupid).

Nonetheless, even in the absence of a matching device, the specific design of dating websites allows for the screening of potential partners based on key socio-demographic

characteristics. This facilitates and reduces the cost of searching and eventually finding a partner that is similar on many characteristics. In addition to allowing for the selection of a similar partner with minimum efforts, online dating sites also bring together people who, due to lack of access and time, remain underexposed in traditional settings (Sprecher 2009). An abundant and easy to access supply of partner candidates implies that dating sites favor the materialization of similarity preferences and therefore boost endogamy (Schwartz 2013), irrespective of design. To summarize, compared to traditional settings whose highly endogamous patterns are related to homogeneous market composition (e.g., school, family, religious venues), online dating sites present the advantage of providing a larger and more accessible pool of prospective partners. The guiding theoretical expectation of this study therefore states that online dating sites promote more educational, racial and religious endogamy in comparison to both conventional and other online meeting settings.

Data and Measures

This study uses data from the first wave of the How Couples Meet and Stay Together (HCMST) survey (Rosenfeld, Thomas, and Falcon 2011), which took place in 2009. HCMST is a nationally representative longitudinal survey of English-speaking adults in the U.S. Knowledge Networks/ GfK conducted the survey, with respondents being recruited from an ongoing panel. The survey questions were mostly answered online, with some follow-up surveys being conducted by phone. Participants who did not have Internet access at home were given an Internet access device (for a more detailed description of survey design, see Rosenfeld and Thomas 2012). The survey is largely interested in respondents who are either married or in a romantic or sexual relationship,

and inquires about the main socio-demographic characteristics of their partner, various aspects of their relationship, as well as the circumstances in which they met. Among the 4,002 respondents, 3,009 declared to be in a romantic relationship at the time of the first HCMST wave. The survey oversamples lesbian and gay respondents. One of the advantages of the HCMST survey is that respondents were asked to recall how and where they originally met their partner, both in closed-ended and open-ended questions. Based on the answers to the open-ended question, the data managers created a scheme of meeting settings, which they used in recoding the original answers. Given that this study addresses endogamy patterns across various meeting settings, I restrict the analysis to partnered respondents only (N = 3,009). After removing couples with missing data on one of the variables of interest, the analysis is performed on a final sample of 2,970 cases.

Measurement of variables

The main characteristics of both the respondent and their partner were measured on identical scales, as presented below. *Education* is a categorical variable which distinguishes between less than high school (reference group), high school degree, some college, and bachelor's degree or higher. *Race* is a four-category variable with the following options: non-Hispanic White (reference group), non-Hispanic Black, Hispanic, and other. The first three categories are featured in the original coding of the data set, while the 'other' category was constructed by the author to include the non-Hispanic Asian or Pacific Islander, non-Hispanic American Indian, and non-Hispanic other racial groups. *Religion* is a categorical variable that measures both partners' religious affiliation at age 16. It differentiates between the following: Catholic (reference group), other Christian (broad recoded category referring to Baptist, Protestant, Mormon, Pentecostal,

Eastern Orthodox, other Christian), non-Christian (generic recoded category including Jewish, Muslim, Hindu, Buddhist, other non-Christian), and no religion.

The categorization of *meeting settings* is based on the multiple answers to the open-ended question of how respondents met their partner (as coded by the data managers). The original classification comprises of various meeting settings and intermediaries (associated with either respondent or partner). I constructed the following ten categories: 1) online dating sites (referring to dating websites that provide a platform for their members to select and get in contact with potential partners[3]; as detailed responses to the open questions reveal, these are online venues with the precise purpose of dating and can refer to matchmaking sites, personal ad sites, or online message board sites that appear to be targeted to the general population[4]); 2) other online venues (broad recoded category referring to Internet social networking, Internet gaming website, Internet chat, Internet community, and other Internet setting); 3) friends; 4) family; 5) neighbors (i.e., having met as neighbors or through neighbors); 6) leisure (broad recoded category that refers to non-organized socially constructed settings and that includes having met through the following: bar, restaurant, other public social gathering place, public space, private party, blind date, vacation, business trip); 7) workplace (having met as co-workers or through co-workers, or as part of a customer-client relationship); 8) school (includes school and college); 9) religious venues (referring to church or other religious organizations); and finally 10) other settings (broader category that refers to military, voluntary organizations and non-Internet singles service).

47.2 percent of respondents mention one meeting setting. However, a great deal of participants report multiple meeting setting, with 52.4 percent recalling two or more meeting venues. In order to properly contrast the effect of online dating sites with each of the remaining

nine meeting settings, I remove any potential overlap associated with this particular category. I therefore assume that the intermediary for individuals that met their partner via online dating sites is primarily and exclusively the dating website. The data in fact show little overlap of the first setting category with the other settings, with most of overlapping cases referring to a combination of online dating sites and leisure settings. This is potentially related to the fact that individuals that first get to know each other through online dating sites eventually decide to meet face-to-face in public places such as bars or restaurants (as detailed responses to the open-ended questions also confirm). However, as mentioned above, we assume online dating sites as the only setting of meeting and treat it as mutually exclusive with respect to the other categories. The other categories nonetheless remain unchanged and non-mutually exclusive with respect to one another.

Other variables of interest comprise of: respondent's age at the time of the survey, number of children in respondent's household (the variable is the sum of these responses to questions about the number of children in the household ages younger than 2, 2-5, 6-12, and 13-17 respectively), and the length of the relationship (in years, based on the respondent's age, the question "how old were you when your romantic relationship with [partner_name] began," and the question "how long have you been in a romantic relationship with [partner_name]?"). There are also two dichotomous variables indicating whether the respondent is part of a same-sex couple ('0' meaning heterosexual relationship and '1' meaning same-sex partnership), or a married couple ('1' indicating married).

Analytical Strategy and Results

Descriptive statistics will be first presented to examine the key socio-demographic characteristics of the partnered individuals included in our sample, in connection to the various meeting settings. Using the *unidiff* package (Pisati 2000) in Stata, I then fit log-multiplicative uniform difference (hereafter: unidiff) models (Erikson and Goldthorpe 1992), also referred to as log-multiplicative layer effect model (Xie 1992), to examine variations in the strength of partners' association between meeting settings. The models represent a variant of log-linear models commonly used in the analysis of cross-tabulated data (Agresti 1996; Hout 1983). Emerged in the literature on comparative social mobility, the unidiff model is here applied to the context of couple endogamy and meeting settings. The model is based on three-way cross-classifications of both partners' characteristics and meeting settings (4 x 4 x 10 = 160 cells). The unweighted cell distributions that form the basis for the analysis can be found in the Appendix (Table A1). Unidiff models require all cross-classified tables to display a common pattern of association (Xie 1992), meaning greater odds that partner's characteristics are the same rather than different. Within the unidiff framework, the strength of this association is allowed to vary across settings. The models therefore estimate setting-specific association parameters. A constraint is imposed that all log odds ratios (i.e., corresponding to all four educational/ racial/ religious groups) evenly increase or decrease compared to a reference meeting setting.

The mathematic description of the models is specified below:

$$\text{Log}(F_{ijk}) = \lambda_i + \lambda_j + \lambda_k + \lambda_{ik} + \lambda_{jk} + \exp(\omega_k)\beta_{ij},$$

where *i* indexes the categories of the row variable (i.e., partner *i*), *j* indexes the categories of the column variable (partner *j*), *k* indexes meeting setting, and F_{ijk} is the expected number of couples in each cell of the cross-classified tables. The λ_i and λ_j parameters adjust for the marginal

distributions of partner's *i* and partner's *j* characteristics. In different-sex couples, the male partner is assigned partner *i*, while the female partner is assigned partner *j*. In same-sex couples, the respondent in the data set is partner *i*, while the respondent's partner is assigned partner *j*. The λ_k parameter adjusts for the numbers of couples associated with different meeting settings, while the λ_{ik} and λ_{jk} parameters control for the differences in partners' characteristics across all types of settings. Finally, β_{ij} represents the general pattern of association between partner *i* and partner *j*, and $\exp(\omega_k)$ is a multiplicative term that applies to all cells in the table and that represents the relative strength of the association at a particular level (or layer) *k*. The multiplier is specified as an exponential in order to ensure a nonnegative multiplicative interaction. The unidiff models estimated in this study specify a full-interaction baseline pattern of association (for details, see Hout 1983) between partner *i* and partner *j*. The parameter for the reference setting is constrained to zero[5], which means that the coefficients for each of the remaining nine settings represent deviations from the baseline category. Given this study's goal of examining the extent to which Internet dating sites promote endogamy, the setting of online dating sites is set as the reference level. I report exponential layer scores and goodness-of-fit statistics for each model. Given the problematic use of the Bayesian Information Criterion (BIC; Raftery 1986) when dealing with small-size samples and its tendency to favor more parsimonious models (Weakliem 1999), I mostly rely on the log-likelihood-ratio statistic (L^2) in selecting the model with the best fit.

Descriptive Results

Table 1 presents descriptive statistics for the data set used in the analyses of educational, racial, and religious endogamy, by meeting setting. Most respondents mention to have met their partner

via leisure settings (41.3) or through friends (37.4). The individuals who selected their partner via online dating sites comprise only 2.6 of the sample. Respondents that met their partner via online dating appear better educated, with 53.6 of them having at least a bachelor's degree (compared to 22.2 percent among those who met via other online venues). Blacks who met their partner through online dating sites are more numerous than in any other category, while Hispanics are highly represented among those who met their match through other online venues. Both online dating and other online settings are more frequently linked to same-sex couples, younger respondents and relationships of shorter duration. Finally, individuals who met their partner online are also less likely to be married at the time of the survey.

TABLE 1 HERE

Results from the Log-multiplicative Unidiff Models

First of all, to assess if the *unidiff* model provides the best fit to the data, I compare its goodness of fit to four benchmark models. First, I fit the null association (NA) model, which assumes that partners' characteristics are unrelated in each meeting setting. Second, the constant association model adds 9 = (4-1)*(4-1) extra parameters that estimate partner *i* by partner *j* association, but assumes the association to be constant across all meeting settings. Third, the endogamy model includes an interaction between meeting setting and an endogamy dichotomous term for whether the partners are similar or not, thus adding 10 = 1 + 1*(10-1) extra parameters to the NA model. Fourth, a scores' model introduces an interaction between meeting setting and a product score between each partners' educational score, also adding 10 = 1 + 1*(10-1) extra parameters to the NA model (suitable with data that have some ordering of categories, therefore fitted for

education only). Lastly, the *unidiff* model tests for between-setting differences in the strength of partners' association, therefore having 9 extra parameters in comparison to the constant association model. The formulas for the four additional models described above are as follows:

Null association model: $\text{Log}(F_{ijk}) = \lambda_i + \lambda_j + \lambda_k + \lambda_{ik} + \lambda_{jk}$

Constant association model: $\text{Log}(F_{ijk}) = \lambda_i + \lambda_j + \lambda_k + \lambda_{ik} + \lambda_{jk} + \lambda_{ij}$

Endogamy model: $\text{Log}(F_{ijk}) = \lambda_i + \lambda_j + \lambda_k + \lambda_{ik} + \lambda_{jk} + \delta_k$, where $\delta = 1$ if $i = j$, 0 otherwise.

Scores' model: $\text{Log}(F_{ijk}) = \lambda_i + \lambda_j + \lambda_k + \lambda_{ik} + \lambda_{jk} + \alpha_k$, where $\alpha = i * j$.

As results in Table 2 show, adjusting for the association between partner *i* and partner *j* in the constant association model produces a large and significant improvement in fit in connection to all three types of characteristics, reducing the goodness-of-fit chi-square drastically from 1601.8 to 123.5 (for education), from 2212.6 to 130.5 (for race), and from 1197.3 to 140.4 (for religion). Both the endogamy model and the scores' model fit the data poorly, increasing the likelihood ratio chi-square. The *unidiff* models however further improve the fit to the data in comparison to the constant association model. For education, the goodness-of-fit chi-square is 75.8 (*df* = 72), a reduction of 47.7 on 9 *df*. For race, the likelihood ratio test statistic is 92.8 (*df* = 72), a decrease of 37.7 on 9 *df*. Finally, for religion, the chi-square statistic is 83.9 (*df* = 72), a reduction of 56.5 on 9 *df*. Even though according to the BIC test, the constant association models appear as the best-fitting models (i.e., have the smallest values), the *unidiff* models are the best fit to the data according to the likelihood ratio test, which is better suited for the small-size groups used in this study.

TABLE 2 HERE

To investigate assortative mating patterns in online dating compared to other places of meeting and mating, I now proceed to analyze the setting-specific patterns revealed by the multiplicative interactions. Table 3 provides the exponential layer estimates based on the *unidiff* models of educational, racial, and religious endogamy. To graphically inspect the relative strength of partners' association across settings, Figure 1 plots the estimated layer scores and confidence intervals for each of the three types of endogamy. Recall that the guiding hypothesis of this study is that online dating sites promote more educational, racial and religious endogamy in comparison to both conventional and other online meeting settings. Findings corresponding to Table 3 and Figure 1 show that the data entirely contradict this expectation. Looking at education, the results indicate that, compared to online dating sites, friends, neighbors, religious venues and particularly school settings promote more similarity between partners in terms of educational attainment. The remaining settings also display stronger associations between partners' educational level, but the differences are non-significant. Findings also show that online dating settings display a relatively weaker association between partners' race compared to all other meeting venues. All differences are significant, with largest racial endogamy scores encountered for religious venues, school, neighbors, and family. Finally, online dating sites are shown to have the weakest association between partners' religion compared to all offline settings. Other online venues however have a lower score compared to the reference category, but the difference is non-significant. Religious endogamy seems to be particularly favored by religious settings, followed by family, school, friends or leisure settings. Neighborhood, workplace and other settings also display stronger associations between partners' religion, but their contrast values are non-significant.

TABLE 3 AND FIGURE 1 HERE

Additional Analyses

Given that the data-set captures prevailing relationships at the time of the survey instead of recently formed partnerships, one needs to account for the fact that similarity might not be determined by assortative mating only. Partners in long-lasting relationships could also influence each other's characteristics. One way of controlling for subsequent adjustments after a partnership is formed is to include a factor of relationship duration. However, due to the small sample size and the difficulty of including a high number of covariates in log-linear models in general, I estimate supplementary logistic regression models of endogamy, which include a series of continuous and categorical covariates of interest. Educational, racial, and religious endogamy are dummy-coded variables with the value '1' indicating that partners share the same educational level, racial background, and religious affiliation respectively. For each characteristic I estimate two models, one that includes the effects of meeting settings, excluding online dating sites, and respondent's main characteristic (e.g., respondent's educational level for the educational endogamy model), and another that adds control variables. Recall that the 'online dating sites' category is the only one with no overlap with other categories. Since the model controls for other meeting settings, the estimated effect of 'family', for instance, is the net effect of family versus online dating. Given that the relationship duration variable has a few missing values and the fact that it is highly correlated with respondent's age ($r = 0.72$, $p < .01$), I include the latter as proxy for relationship length.

Results in Table A2 in the Appendix show that being part of a same-sex couple is associated with significantly higher educational endogamy. Respondent's age has little effect on the probability of couple resemblance with respect to education, race or religion. Being married seems to play a significant role in increasing the chances of racial endogamy, while the number

of children within the household is related to significantly higher chances of educational similarity. Some of the setting-related results diverge from *unidiff* findings given that logistic regression cannot account for the distributions of both partners' characteristics and thus cannot model the full association between partners' characteristics. Even though the direction of the effects corresponding to meeting settings is generally unchanged by the addition of control variable, there are certain differences (e.g., the effect of religious setting on educational endogamy becoming less prominent and non-significant in the second model), which prompt further examination of unidiff layer estimates for certain groups.

Endogamy Patterns across Various Groups

Figure 2 plots raw layer estimates of educational, racial, and religious endogamy, by type of couple, age group, marital status, and presence of children. Since the frequency of particular groups is very small (e.g., same-sex couples that met through family or religious venues, married couples that met in online dating and other online settings, couples with at least one child that met via online dating), I report results for sub-groups large enough to allow for the estimation of *unidiff* models.

The first row of Figure 2 shows setting estimates for the total sample of couples and a sub-group of opposite-sex couples. Results indicate that among opposite-sex couples, layer scores corresponding to online dating sites display similar patterns as for the total sample, meaning generally lower endogamy compared to other settings. Encountering similar results when replicating the analyses on opposite-sex couples also shows that the initial results based on unweighted data are not biased. Applying weights would have mainly adjusted for the over-sampling of same-sex couples in the HCMST data.

The second row of Figure 2 illustrates results for two additional groups: respondents under 40 and over 40 years old. There are certain deviations from patterns observed for the total sample when it comes to the younger group. Respondents younger than 40 who met their partner through online dating sites are slightly more endogamous with respect to education than those who met their partner through other online venues, family, workplace and other settings. This could indicate that younger people do take advantage of the large and easily accessible pool of potential candidates offered by online dating to find better matches with respect to education. The matchmakers of family or work appear to be less effective in providing young individuals with educationally similar partners. However, online dating sites still promote less educational endogamy compared to school, religious venues, neighborhood, friends and leisure. When it comes to race, online dating sites continue to have the lowest endogamy score in comparison to other settings, for both younger and older couples. Religious endogamy is also low among young couples that met via online dating, but slightly higher compared to other online venues and neighbourhood settings.

The third row of Figure 2 shows estimates for the total sample, as well as a sub-group of non-married couples. For both groups, online dating settings reveal the lowest levels of educational, racial and religious endogamy, with the previously noted exception of higher religious endogamy compared to other online venues. The last row of Figure 2 graphs the results in connection to the total sample and a sub-group of couples with no resident children. For the latter group, online dating settings unanimously display the lowest levels of educational, racial and religious endogamy.

These findings overall indicate that online dating sites promote consistently lower levels of endogamy across various groups. Even among the younger group, couples that met through

online dating display generally low levels of endogamy, particularly when it comes to race and religion.

FIGURE 2 HERE

Discussion and Conclusions

This study revisited the supply perspective on assortative mating by exploring the role played by digital marriage markets, particularly online dating sites, in breeding couples' socio-demographic similarity. More precisely, it focused on the educational, racial and religious endogamy of couples that met through online dating platforms compared to couples whose context of meeting was related to other online venues (that are not specifically designed for mate selection) or traditional intermediaries such as friends, family, neighbors, school, workplace, leisure, religious venues, and other settings. The study explored the importance of meeting venues for couples' endogamy among 2,970 partnered individuals in the U.S. The unique HCMST survey data enabled an innovative test of assortative mating in online dating settings. I put forward a main hypothesis on the relative impact of online dating sites as initial context of meeting on couples' similarity. Due to the particularities of their market (i.e., easy access to a large pool of prospective mates, potential similarity-based matchmaking algorithms, systemized interfaces for browsing along key socio-demographic traits), I anticipated that online dating sites allow individuals to more effectively choose according to the universally assumed preference for similarity. Therefore, I hypothesized that Internet dating promotes more educational, racial and religious endogamy compared to both conventional and other online meeting settings.

Using log-multiplicative uniform difference models that allows for the strength of partners' association to vary along meeting settings, I find that the data entirely disconfirm the hypothesis. Contrary to expectations, online dating sites display weaker endogamy patterns compared to other contexts of meeting and mating. School settings are confirmed as contexts that favor positive sorting along education, race or religion (Kalmijn and Flap 2001). Organized and highly homogenous religious settings encourage higher levels of couple similarity as well, particularly when it comes to race and religion. Personal networks of family, friends, and neighbors are also shown to promote more endogamy than online dating settings, especially with respect to race.

Despite dating sites' advantage of providing systemized tools and resources for meeting and connecting with similar others, offline social circles manage to facilitate more endogamous matches, potentially related to a more immediate influence by third parties (Kalmijn 1998). Leisure and work settings also display more racial endogamy than Internet dating sites, confirming that freely chosen places of socializing and working are also defined by a certain degree of demographic segregation (Lampard 2007). Other online venues that are not explicitly designed for partner selection exhibit more racial endogamy than online dating sites as well. More research that can disentangle between these additional online settings, using larger sample sizes, is required to further examine the differences in romantic outcomes between 'natural' online settings (Sprecher 2009, 767) and dating-specific online contexts.

The findings of this study indicate that despite presumably less effective market conditions, conventional marriage markets prevail in endogamy patterns over online dating settings. An abundant and easily accessible supply of prospective partners does not translate into more endogamous partner choices. The fact that online dating sites favor less endogamy contests

the universal norm of partner similarity and affirms the importance of agency alongside opportunity structure. As Lampard (2007) suggests, individuals differ in how much they prefer to partner with similar others and also adjust their choice for meeting venues accordingly. Individuals who prefer matching with similar others will self-select in contexts of meeting that allow for the realization of endogamous preferences. It is possible that online dating sites attract individuals with less homophilous preferences. In fact, Schwartz (2013) believes that due to the weakening of geographical barriers and the numerous possibilities of getting in contact with people from various backgrounds, online dating sites should display less positive assortative mating. Exposed to diversity and benefiting from lower social control and influence of third parties (Rosenfeld and Thomas 2012), online daters would find it easier to select partners with different socio-demographic profiles. Furthermore, the previously mentioned particularities of individuals enrolled on Internet dating sites (i.e., middle-aged, divorced individuals) could play an additional role. Individuals belonging to restrictive partnership markets in the offline environment are the ones more likely to search for a partner online (Rosenfeld and Thomas 2012). Facing an unfavorable market is presumed to alter the standards for partner selection (Harknett 2008). This could attract more openness towards potential partners from different backgrounds. The online dating choices of individuals who experience difficulties in finding a partner offline could translate in increased receptivity online. Finally, online daters might differ in the importance they attach to similarity with respect to social status, racial or religious background and place more emphasis on similarity in personality traits, lifestyle or leisure interests. The abundance of the online dating market supply could therefore allow for a better match in terms of 'soft' attributes instead of socio-demographic aspects.

This study provides a novel test of assortative mating in connection to the recent and increasingly popular online settings of partner selection. It shows that online dating sites play a role in alleviating social barriers between groups and contribute to the overall decreasing trends in couple endogamy. Results provide a certain degree of confirmation to Barlow's (1996) initial prediction according to which cyberspace would eventually reduce the importance of socio-demographic characteristics such as race. However, there are certain limitations that need to be acknowledged. As with previous other studies that try to examine the supply side perspective of mate choice (Kalmijn and Flap 2001; Mollenhorst, Völker, and Flap 2008a), this research also falls short in inspecting the actual composition of networks and contexts of interaction mediating the formation of couples. Furthermore, the size of the data set did not allow for a more refined examination of the endogamy (or off-diagonal) patterns of subgroups (e.g., lower educated versus higher educated, Whites versus Blacks). Future research should also address the potential interdependence between education and race-related partner choices and provide a test of status exchange theory (Merton 1941) in digital marriage markets.

Notes

1. There is a hierarchical pattern of crossing racial boundaries in marital choices (Bonilla-Silva 2004; Fu 2001) and different trajectories of assimilation for different groups (Alba and Nee 2003). During the last decade of the 20th century, Hispanics and Native Americans displayed the highest chances of marrying Whites, followed by Asians and lastly by Blacks (Qian and Lichter 2007). A more recent study however suggests a "retreat from intermarriage" among large and expanding minority populations (i.e., slower increases in interracial marriage between Whites and Hispanics, or Whites and Asians), as well as a surge in intermarriage between Whites and Blacks (Qian and Lichter 2011). Despite group variations in the pace and occurrence of interracial pairings, the overall trends point towards decreasing racial endogamy.
2. The most notable growth in interreligious mixing is observed for Catholics and liberal Protestants (Lehrer 1998; Sherkat 2004). Exclusivist Protestants and Jews on the other hand maintain distinctively lower rates of religious intermarriage and a stronger norm and tendency to partner within their own group (Blackwell and Lichter 2004; Lehrer 1998; Rosenfeld 2008). This is attributed to stronger third party control, more traditional belief systems and higher church engagement among their members (Kalmijn 1998).
3. Respondents do not mention whether the dating website provided matching or not.
4. Only two respondents mentioned having met their partner on a religious-themed dating site and other two participants revealed meeting their partner on a race-specific dating site.
5. Constrained coefficients and their standard errors have a value of zero, but quasi-standard errors can be computed.

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Table 1. Respondent and Couple Characteristics, by Meeting Setting

	Online dating sites	Other online venues	Friends	Family	Neighbors	Leisure	Workplace	School	Religious venues	Others
All couples	2.6	4.4	37.4	17.9	9.7	41.3	18.6	19.7	6.5	12.2
Respondent's education										
Less than high school	5.1	7.4	11.3	19.3	13.5	14.1	9.4	6.0	10.9	14.5
High school	11.6	29.3	32.8	36.3	28.0	33.8	38.1	19.3	23.9	29.2
Some college	29.7	41.0	24.6	22.9	23.7	24.1	26.4	29.3	23.5	29.7
Bachelor's degree or higher	53.6	22.2	31.3	21.4	34.8	28.0	26.1	45.4	41.7	26.6
Respondent's race										
White	71.6	59.9	71.6	73.7	80.7	68.6	73.3	73.9	79.8	72.9
Black	13.1	4.8	7.6	7.1	6.8	10.8	8.7	8.3	7.9	7.2
Hispanic	11.8	25.3	15.1	12.9	11.5	14.1	15.7	12.2	10.4	12.3
Other	3.5	10.0	5.7	6.2	1.0	6.4	2.3	5.6	1.9	7.6
Respondent's religion										
Catholic	25.0	24.2	27.6	30.8	24.5	29.6	29.5	23.6	14.6	27.6
Other Christian	60.6	52.8	54.0	52.5	63.9	52.0	52.9	59.5	80.1	55.6
Non-Christian	4.1	10.4	4.6	6.2	3.0	5.4	4.0	4.8	3.4	6.6
No religion	10.3	12.6	13.8	10.5	8.6	13.0	13.6	12.2	1.9	10.3
Same-sex couple	7.7	6.1	1.2	0.9	1.5	2.0	2.0	1.2	0.4	2.6
Married couple	49.4	45.0	72.2	77.6	73.5	72.1	75.1	79.6	88.2	73.4
				Mean (Standard Deviation)						
Respondent's age (range: 19-95)	37.95 (11.31)	36.09 (12.25)	44.44 (16.31)	47.09 (16.67)	44.84 (16.41)	47.75 (16.48)	46.47 (15.13)	39.73 (16.52)	44.93 (18.80)	47.71 (17.82)
Number of children in respondent's household (range: 0-7)	0.40 (0.90)	0.51 (0.85)	0.51 (0.88)	0.58 (0.97)	0.46 (0.82)	0.51 (0.95)	0.59 (0.95)	0.66 (1.06)	0.62 (1.02)	0.51 (0.92)
Length of relationship (range: 0.05-76)	3.16 (2.79)	5.23 (5.12)	18.15 (15.67)	21.24 (16.83)	19.42 (16.03)	20.04 (16.58)	18.12 (14.75)	18.91 (16.54)	19.39 (16.54)	20.27 (17.69)
N (unweighted)	*130*	*153*	*1,085*	*454*	*271*	*1,241*	*554*	*548*	*200*	*421*

Note: All percentages and means are computed using survey design weights (weight2).
Source: HCMST, wave I.

Table 2. Goodness-of-Fit Statistics for Selected Models of Educational, Racial and Religious Endogamy

Model	*df*	L^2	*p*	*BIC*
Educational endogamy				
Null association model (NA)	90	1601.8	0.00	834.4
Constant association model (NA + partners' association)	81	123.5	0.00	-567.1
Endogamy model (NA + endogamy * setting)	80	580.1	0.00	-102.0
Scores' model (NA + score * setting)	80	279.8	0.00	-402.3
Unidiff model (NA + partners' association * setting)	72	75.8	0.36	-538.1
Racial endogamy				
Null association model (NA)	90	2212.6	0.00	1445.3
Constant association model (NA + partners' association)	81	130.5	0.00	-560.1
Endogamy model (NA + endogamy * setting)	80	351.1	0.00	-331.0
Unidiff model (NA + partners' association * setting)	72	92.8	0.05	-521.0
Religious endogamy				
Null association model (NA)	90	1197.3	0.00	430.1
Constant association model (NA + partners' association)	81	140.4	0.00	-550.1
Endogamy model (NA + endogamy * setting)	80	214.3	0.00	-467.7
Unidiff model (NA + partners' association * setting)	72	83.9	0.16	-529.9

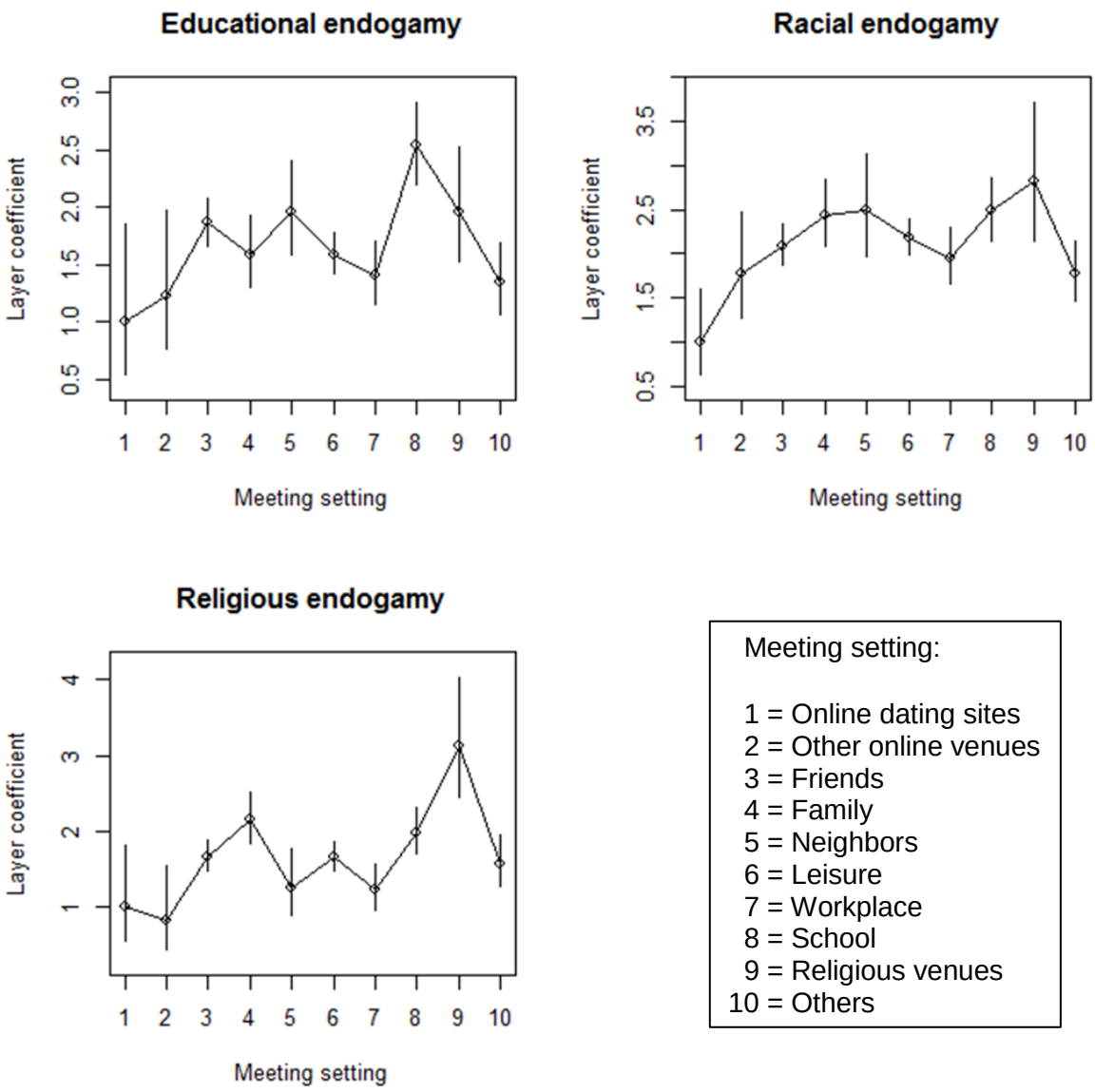
Note: 160 cells. *df* represents residual degrees of freedom. L^2 is the likelihood ratio chi-square for goodness of fit. *p* is the probability $P(\chi^2_{df}) \geq L^2$. *BIC* is the Bayesian Information Criterion statistic.

Table 3. Layer Estimates Based on *Unidiff* Models of Educational, Racial and Religious Endogamy

	Educational endogamy	Racial endogamy	Religious endogamy
Meeting setting:			
Online dating sites	1.00 (0.31)	1.00 (0.24)	1.00 (0.31)
Other online venues	1.23 (0.24)	1.77 (0.17) †	0.83 (0.32)
Friends	1.87 (0.06) †	2.09 (0.05) **	1.67 (0.06) †
Family	1.59 (0.10)	2.44 (0.08) ***	2.15 (0.08) *
Neighbors	1.96 (0.11) *	2.49 (0.12) ***	1.26 (0.17)
Leisure	1.59 (0.06)	2.18 (0.05) **	1.67 (0.06) †
Workplace	1.41 (0.10)	1.95 (0.08) **	1.23 (0.12)
School	2.54 (0.07) **	2.49 (0.07) ***	1.99 (0.08) *
Religious venues	1.96 (0.13) *	2.83 (0.14) ***	3.14 (0.13) ***
Others	1.35 (0.12)	1.78 (0.10) *	1.58 (0.11)

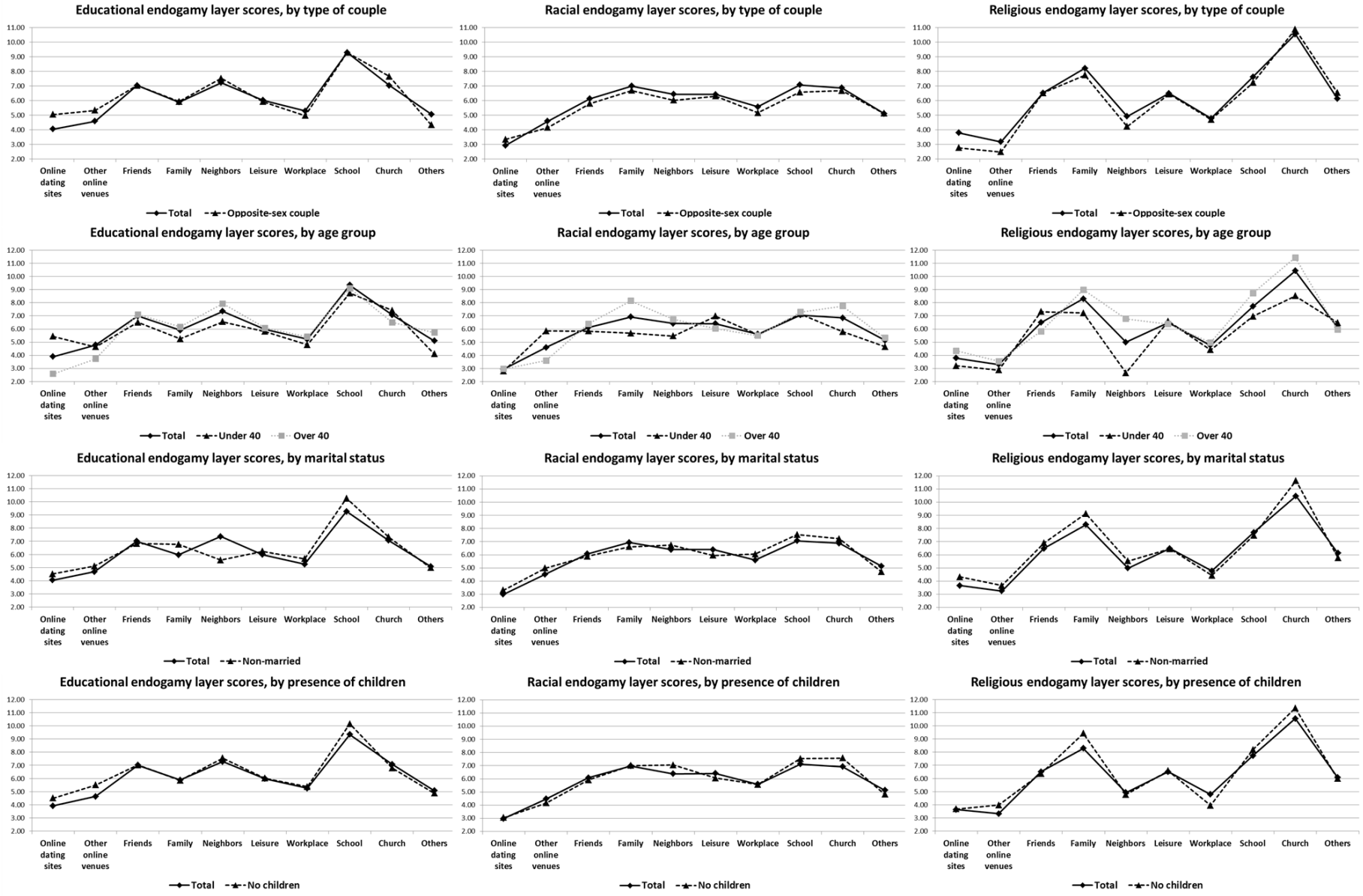
Note: Quasi standard errors are in parentheses.
† $p<.10$ * $p<.05$ ** $p<.01$ *** $p<.001$ (two-tailed tests)

Figure 1. Layer estimates of educational, racial and religious endogamy (*unidiff* model, multiplicative scale)



Note: The 95% confidence intervals are computed as exponential of the estimate ± 1.96 quasi standard errors and are therefore asymmetrical.

Figure 2. Raw layer estimates, by type of couple, age group, marital status, and presence of children (*unidiff* model)



APPENDIX

TABLE A1. Cross-tabulations of Partners' Characteristics by Meeting Setting

	Education				Race				Religion			
	I.	*II.*	*III.*	*IV.*	*I.*	*II.*	*III.*	*IV.*	*I.*	*II.*	*III.*	*IV.*
Online dating sites												
I.	0	2	2	0	84	7	8	4	11	13	3	6
II.	0	2	4	6	4	6	0	0	20	42	4	4
III.	2	4	19	18	9	1	2	0	2	0	2	2
IV.	1	5	17	48	2	0	1	2	5	8	2	5
Other online venues												
I.	0	1	3	2	105	4	7	4	14	15	3	6
II.	1	13	10	4	1	3	0	0	13	43	4	10
III.	4	18	35	19	7	2	7	1	0	9	1	4
IV.	1	4	14	24	4	3	2	2	5	12	2	11
Friends												
I.	33	35	21	10	805	4	39	31	150	120	11	34
II.	35	116	77	44	8	49	6	2	96	384	8	40
III.	22	77	142	69	53	9	35	5	10	16	20	13
IV.	5	35	86	277	18	2	2	13	42	71	8	57
Family												
I.	27	34	14	3	345	4	15	9	82	42	3	7
II.	26	59	37	18	4	27	2	0	36	176	1	14
III.	10	52	43	29	11	2	22	1	1	5	15	4
IV.	2	17	23	58	7	0	0	5	15	34	7	11
Neighbors												
I.	12	15	5	5	220	0	9	2	27	26	2	9
II.	9	21	15	6	0	14	1	1	29	112	6	7
III.	4	30	27	20	14	0	5	1	3	7	2	0
IV.	2	3	23	74	2	0	1	1	8	17	4	11
Leisure												
I.	36	41	25	12	886	10	36	32	191	132	13	31
II.	42	146	84	48	16	73	13	3	127	430	16	54
III.	34	93	149	93	51	8	55	8	10	15	23	11
IV.	14	47	100	272	16	1	6	22	48	63	10	63
Workplace												
I.	7	20	11	4	411	1	23	10	76	68	8	15
II.	11	66	37	32	6	27	5	1	67	190	8	23
III.	8	51	69	38	36	2	18	0	4	9	7	2
IV.	4	27	47	121	11	1	0	1	19	36	3	18
School												
I.	10	11	7	2	422	0	12	9	61	39	3	10
II.	7	37	33	11	4	30	3	1	50	241	3	24
III.	5	20	84	43	21	1	18	5	8	9	13	4
IV.	0	10	45	221	9	4	1	7	10	38	2	30
Religious venue												
I.	3	7	1	3	164	1	3	5	24	11	0	0
II.	4	18	11	5	0	8	2	1	7	134	1	2
III.	8	17	29	10	6	0	9	0	1	3	4	2
IV.	1	7	16	59	1	0	0	0	3	8	0	0
Others												
I.	3	18	9	3	305	5	15	13	57	48	1	7
II.	17	31	33	10	4	16	4	1	46	153	6	14
III.	17	30	52	40	22	3	7	4	7	9	10	3

IV.	8	18	34	98	9	0	1	9	6	31	4	18

Note: Education: I = less than high school; II = high school; III = some college; IV = bachelor's degree or higher. Race: I = White; II = Black; III = Hispanic; IV = other. Religion: I = Catholic; II = Other Christian; III = Non-Christian; IV = no religion.

TABLE A2. Logistic Regression Coefficients Predicting Educational, Racial and Religious Endogamy (N = 2,970)

	Educational endogamy		Racial endogamy		Religious endogamy	
Meeting setting:						
Other online venues	0.03	-0.07	-0.08	0.04	-0.60*	-0.42
Friends	0.17	0.16	-0.20	-0.21	-0.004	0.05
Family	-0.19	-0.23	0.65**	0.56*	0.35*	0.31*
Neighbours	-0.12	-0.12	0.15	0.15	-0.30	-0.27
Leisure	0.16	0.16	0.37*	0.31	0.10	0.08
Workplace	0.11	0.08	0.01	-0.07	-0.07	-0.07
School	0.60***	0.49***	0.47*	0.41*	0.38**	0.52***
Religious venue	0.42*	0.35	0.14	0.06	0.98***	1.03***
Others	-0.46**	-0.50**	-0.51*	-0.57*	0.17	0.17
Respondent's education: (ref. less than high school)						
High school	0.35	0.33		0.29		0.05
Some college	0.40*	0.34		-0.07		0.03
Bachelor's degree or higher	1.07***	0.99***		0.01		-0.27
Respondent's race (ref. White)						
Black		-0.24	-1.41***	-1.31***		0.29
Hispanic		-0.39*	-3.16***	-3.36***		-0.13
Other		0.34	-2.99***	-2.95***		-0.19
Respondent's religion: (ref. Catholic)						
Other Christian		0.08		-0.31	0.78***	0.70***
Non-Christian		0.24		-0.19	-0.70**	-0.63*
No religion		-0.05		-0.30	-0.66***	-0.62***
Same-sex couple		0.44*		0.01		0.25
Respondent's age		-0.01**		0.002		0.01**
Married couple		0.15		0.52**		0.19
Number of children in respondent's household		0.14*		0.07		0.07
Intercept	-0.87***	-0.50	2.43***	2.20***	-0.11	-0.76**
BIC	-1.105e+07	-1.443e+07	-4.557e+07	-4.746e+07	-1.690e+07	-1.972e+07

Note: Models weighted using survey design weights (weight2).

* $p<.05$ ** $p<.01$ *** $p<.001$ (two-tailed tests)