Do People Mix at Mixers? Structure, Homophily, and the "Life of the Party"

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We used electronic name tags to conduct a fine-grained analysis of the pattern of socializing dynamics at a mixer attended by about 100 business people, to examine whether individuals in such minimally structured social events can initiate new and different contacts, despite the tendency to interact with those they already know or who are similar to them. The results show that guests did not mix as much as might be expected in terms of making new contacts. They were much more likely to encounter their pre-mixer friends, even though they overwhelmingly stated before the event that their goal was to meet new people. At the same time, guests did mix in the sense of encountering others who were different from themselves in terms of sex, race, education, and job. There was no evidence of homophily (attraction to similar others) in the average encounter, although it did operate for some guests at some points in the mixer. Results also revealed a phenomenon that we call "associative homophily," in which guests were more likely to join and continue engagement with a group as long as it contained at least one other person of the same race as them. We consider the implications of these results for organizations and individuals seeking to develop their networks and for theories of network dynamics. ●

With evidence accumulating that interpersonal networks are critical to individual career success and organizational functioning, many managers and firms are asking, "How do we make connections?" One popular answer is mixers, receptions, or networking parties, minimally structured social events that bring together guests who do not all know each other and provide a context in which they can interact freely to strengthen existing ties or forge new ones. There is hardly a professional organization, large company, industry association, university, or business district that does not sponsor such events, and there are few managers or professional people who do not sometimes attend them. Many organizations and individuals invest substantial amounts of money and time in minimally structured parties. For example, a recent study estimates that the meetings, conventions, and exhibitions industry generated $122 billion in total direct spending in 2004, making it the 29th largest contributor to the gross national product, more, for example, than the pharmaceutical and medicine manufacturing industry (Krantz, 2005). Of course, these events include highly structured components, such as formal presentations, in addition to minimally structured components such as receptions, parties, or mixers. The level of social events within corporations, schools, and other organizations may be at least as high, with just one indicator being that 90 percent of corporate workplaces host some kind of holiday party (Shartin, 2005). The tacit assumption is that these investments pay off in terms of encounters that take place in the context of the mixer and that may extend the attendees' social networks or reinforce existing network ties.

Unfortunately, there is almost no systematic empirical research of encounters at parties or in other minimally structured contexts. The notable exception is the "sociability project" led by David Riesman at the University of Chicago (e.g.,

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Riesman, Potter, and Watson, 1960a, 1960b; Watson and Potter, 1962; Riesman and Watson, 1964), but that project did not analyze who met whom at parties, instead focusing on the content and pattern of conversations. Although that work was primarily a predecessor of contemporary conversation analysis, it did generate some general observations about parties that are useful to a study of interactions at parties. Some might also consider the work of Robert Bales to be relevant to interactions at parties, but Bales' work examined interactions between individuals based on fixed seating arrangements in small groups, more akin to dinner parties than cocktail parties, and Bales himself distinguished between the types of gatherings he studied and cocktail parties (Bales et al., 1951). The dearth of research on parties is stunning, given their prominence in social life and their relevance to the formation of relations that receive substantial attention from network theorists and others. It is likely that parties have gone unstudied in the past mainly because the measurement technology to track encounters and the methodological tools to analyze dynamic networks were lacking. Still, research on this topic may have also been inhibited by the perception that parties are trivial, but there are several reasons why parties such as mixers are significant for business life and for the formation and development of substantive relationships. Parties like professional mixers are not all fun and games. They are forums for initiating acquaintanceships, cementing friendships, and introducing others and are therefore paths to more substantive goals. Parties may also be representative of other contexts of first encounter. It is because parties are archetypes of weakly structured interactions that Simmel called them "a social type characteristic of modern society" (Wolff, 1950: 111).

The incidence and persistence of conversations between individuals at a mixer constitutes an "elemental" form of encounter, which can be contrasted with a mature relationship, such as a friendship. We do not suggest that elemental encounters are as important as mature relationships, but mature relationships must begin somewhere, so some elemental encounters, particularly those between previous strangers, are notable as the buds from which more mature relationships such as friendship may grow. And even an encounter between previous acquaintances is relevant, as mature relationships are reinforced by elemental encounters (Goffman, 1961).

Collins (2004: chap. 4) presented an even stronger case for the significance of elemental encounters such as conversations, claiming not just that they lead to more mature relationships but that they constitute those relations. He argued that micro encounters aggregate into networks and markets of interactions. Network theorists lend credence to this view by gauging the strength of a network contact by measuring the frequency of interaction. It is common practice, for example, for network theorists to ask how often a respondent interacts with a contact (e.g., Burt, 1992: 122; Reagans and McEvily, 2003). Typical advice for networkers seeking to build relations is to "increase the frequency of interaction" (Baker, 1994: 217).

Popular usage suggests two types of mixing that may take place at a party. First, guests may mix with people they did not know or did not know well before the event. Second, the event may present guests with the opportunity to mix with people who are different from them on demographic factors, life experiences, or other characteristics. The extant literature on network dynamics suggests that there are barriers to both types of mixing. Meeting new people may be inhibited by the tendency for network structures to follow path dependence, such that subsequent ties depend on information that flows through earlier ones (e.g., Van De Bunt, Van Duijn, and Snijders, 1999; Gulati and Gargiulo, 1999). Meeting different types of people may be inhibited by homophily in networks, the tendency for attraction between similar people (e.g., Ibarra, 1993; Brass et al., 2004). Against this background of past research the question, "Do people mix at mixers?" looms large.

To investigate the pattern of encounters, we hosted an after-work mixer for almost 100 business executives who were accomplished managers, entrepreneurs, consultants, and bankers, most based in New York City but some from other countries and other parts of the U.S. On average, they had friendly relationships before the party with about one-third of the other guests; the rest were strangers to each other. Informal discussions with our guests and a pre-mixer survey indicated that while many were attracted by the potential for an hour or two of fun, almost all were motivated by some other, more "serious" purpose. Some told us they wanted to reinforce relations with work-group mates, others that they hoped to make new friends. Still others had lobbied the Executive MBA program in which they were students for mixers like the one we studied by claiming that networking with the other high-fliers was key to the success of the program, as the source of jobs and support for entrepreneurial ventures. As they mingled at the mixer, we tracked their encounters using nTags—small electronic devices, worn by each guest, which registered encounters and tracked their duration. As a result, we gathered second-by-second data on contacts at the mixer, which we used to build a dynamic network that captured encounters throughout the event.

We examined the pattern of encounters at the mixer using two dynamic analyses at the dyadic level. One, which we refer to as the conversational encounter analysis, used event-history methods to predict the likelihood at any moment that two guests would come together to converse. The other, which we refer to as the conversational engagement analysis, used event-history methods to examine how long a given conversation continued. Although our unit of analysis was the dyad, we also considered the influence of larger groups on the likelihood that two individuals embedded within them would encounter each other and maintain an engagement.

Beyond whatever significance mixer encounters may have in their own right, they also provide a particularly appealing context in which to study the simultaneous influence of social structure and homophily on encounters. The advantage of a mixer for this purpose is that with the tools we used it is possible to effectively capture the social structural opportunities for contact, which amount to the network of who knew whom before the mixer and the evolving network of who has met at the mixer. In contrast, the preexisting network structure for other relationships is often invisible and correlated with characteristics of actors that may be the bases for homophilous attraction. The need for dynamic analyses to separate these influences looms as one of the most pressing in the analysis of homophily (McPherson, Smith-Lovin, and Cook, 2001).

EFFECTS OF STRUCTURE AND HOMOPHILY ON INTERACTION

The Influence of Preexisting Network Structure on Encounter and Engagement

Researchers have identified two structural factors as driving forces of network dynamics: previous direct contacts between two actors and indirect contacts that flow through third parties connected to both. Previous direct contacts are viewed as a source of information about and trust in a potential interaction partner, as an indicator of investment and therefore commitment to them, as well as positive affect toward them (e.g., Uzzi, 1996; Van De Bunt, Van Duijn, and Snijders, 1999; Ingram and Roberts, 2000). Indirect contacts through mutual ties to third parties form a bridge along which information may travel and also provide social closure (contacts all know each other), which is comforting and facilitates social control and therefore trust (Van De Bunt, Van Duijn, and Snijders, 1999; Gulati and Gargiulo, 1999; Jin, Girvan, and Newman, 2001). But these arguments have developed through analyses of more mature relationships such as friendships, and there are reasons to question whether they will apply at a mixer.

Though it is certain that past relationships are informative about who has positive affect for whom, individuals claim that they do not attend parties like the one we studied to talk to their friends. We surveyed our guests as to their goals for the mixer, and the least likely to be cited as most important (by only 5 percent of guests) was "To build a few close relationships/to cement the relationships I have already started." The seven more favored options were all about forming new relationships. Similarly, trust seems less important at a party, both because vulnerability to malfeasance or defection by interaction partners is small and because invitees are typically sanctioned and legitimized by the host.

Although the application to parties of the idea that network dynamics depend on the history of direct and indirect ties is not trivial, we nevertheless believe it is a good place to start, not least as a way to understand the relationship between elemental and mature networks. We will therefore test the role of direct and indirect ties:

Hypothesis 1a: The likelihood of encounter and engagement between two guests is greater if they were friends before the mixer.

Hypothesis 1b: The likelihood of encounter and engagement between two guests is greater the more intermediaries they have in common in the pre-mixer network.

A social event like a mixer also produces another type of tie, indirect ties that emerge at the mixer by virtue of two guests having encountered the same third person, currently or earlier in the event. The structure of a guest's prior interactions at the party constitutes his or her mixer network. Riesman, Potter, and Watson (1960a) argued that the third parties in such circumstances broker connections between the two in an effort to build cohesion, in the sociable spirit of the party, playing a type of hosting role. Gibson's (2005) analysis of network influences on conversation suggests another type of cohesion-driven mechanism. In what he referred to as "piggybacking," either of the two non-intermediaries may initiate a connection with each other to reinforce their relationship with the intermediary. These arguments are very different from the social control argument that lies behind the expectation of an indirect influence through the network of stronger pre-mixer ties and lead to the following hypothesis:

Hypothesis 1c: The likelihood of encounter and engagement between two guests is greater the more intermediaries they have in common in the mixer network.

Homophily as a Basis of Encounter and Engagement

Evidence from many sources indicates that interaction is more common between similar actors (McPherson, Smith-Lovin, and Cook, 2001). Marriages are more likely between individuals with similar levels of education, religion, and race (Kalmijn and Flap, 2001). Investment links are more likely between investors and investees who function in the same geographic areas and in the same industries (Sorenson and Stuart, 2001). Friendships are more likely between people of the same races, classes, and ages, and those with similar attitudes (Verbrugge, 1977; Lazarsfeld and Merton, 1954). Joint ventures are more common between organizations of similar status levels (Podolny, 1993).

There are two accounts for the gravity between similar actors. The first and most familiar is what Lazarsfeld and Merton (1954) called "value homophily," the idea that it is more rewarding to interact with others who hold similar values. Others who see things as we do are more likely than dissimilar others to be empathetic and to provide us with positive feedback. Whereas Lazarsfeld and Merton (1954) measured the values of their research subjects directly, subsequent researchers have taken advantage of the fact that values, attitudes, and experiences correlate with individual attributes such as sex, race, and education. For example, value homophily has been proposed as the explanation for the tendency of organizational participants to make friends with others who are of the same race and sex as them, because people of the same race and sex often have similar values, attitudes, and experiences (Ibarra, 1993). Given that many people attend parties in the hope of a rewarding social experience, the value homophily argument suggests that they are most likely to look for these benefits at the mixer by interacting with others like them. Thus, we expect the following:

Hypothesis 2a: There is a greater likelihood of encounter and engagement between two guests who are similar on demographic dimensions and other characteristics that indicate common experiences.

The second explanation, which has been labeled "status homophily," reaches a kindred prediction through different mechanisms. According to this argument, interaction between similar actors is expected even if interaction partners do not prefer similarity. All that is required is a generally recognized status ordering of the attributes on which actors in the group of potential partners differ. If some attributes are preferable to others, then competition among actors who seek high-status others, yet who attract those others based on their own status, results in pairings of those sharing similar status and similar attributes (Podolny, 1993). Status homophily might be at work during the mixer if there were some personal attribute that was generally viewed as better in an encounter partner. A likely candidate is physical attractiveness, as good looks have been shown to make someone a more likely choice for interaction, even in same-sex dyads (e.g., Mulford et al., 1998). We are not suggesting that physical attractiveness is a particularly important component of overall social status, merely that it is a generally preferred trait in an interaction partner at a mixer. If that is true, and if there is a competition for the most preferred interaction partners, we expect the following:

Hypothesis 2b: There is a greater likelihood of encounter and engagement between two guests who are similar in terms of physical attractiveness.

These homophily predictions are not trivial, even in the face of extensive evidence of homophily in relations such as friendship and marriage. As we have explained, studies of the structure of such relations often struggle to distinguish homophily from the constraint of previous social networks. Furthermore, some accounts of homophily emphasize its relevance for mature ties, in which empathy and support seem more important (e.g., Marsden, 1988; Ibarra, 1992). An alternative to the predictions is feasible (and perhaps assumed by mixer guests and organizers), that people at a party may seek interaction partners different from them as an inexpensive form of exploration (Wolff, 1950). Riesman, Potter, and Watson's (1960a) observations led them to challenge the very idea that people at parties enjoy interacting with others who are like them in obvious ways, arguing instead that the relevant bases of similarity are deep and not reflected in characteristics such as race or job type.

It is often difficult to know what dimensions of similarity will drive homophily in a given context (Brass et al., 2004), but at a mixer, some dimensions seem much more likely for encounter than engagement. This is obviously true in the instance of the potential meeting of two strangers, because many important sources of similarity that are difficult to discern before the meeting will be unknown to them. Past research cites dimensions such as sex, race, age, class, religion, education, and profession as bases of interpersonal homophily (McPherson and Smith-Lovin, 1987). Of these, only the first three are easily observable to strangers, and attraction in first meetings can only be based on observable characteristics. Of course, some meetings at the mixer we studied were between individuals who knew each other before the mixer, but for these, relevant deeper similarities are already incorporated into liking relationships. These arguments lead us to expect the following:

Hypothesis 2c: Homophily will be based on observable characteristics for encounters.

Another variation on the basic expectation of homophily depends on the dynamics of the mixer. A number of arguments suggest that homophily will have more influence on early encounters than later ones. Research on networks of racial-minority managers reveals that homophily decreases over time as minorities seek the strategic benefits of attachments to representatives of majority groups (Ibarra, 1993). Another line of argument, that homophily is most likely to have an effect when actors face uncertainty (Kanter, 1977; Galaskiewicz and Shatin, 1981; Ibarra, 1993), as they are likely to do in the early stages of a party, reinforces the expectation that the preference for similar others will be more important for early encounters than later ones.

The idea of a dynamic interplay between individual and social characteristics is particularly germane to parties. Countless experiments in the social identification and self-categorization theory literatures have found that even artificial groups created in the laboratory can become a salient basis of group identification so long as participants have some opportunity to interact with fellow group members (Tajfel and Turner, 1986; Hogg and Terry, 2000). At a party, the opportunity to interact is complemented by a social boundary established by the invitation (Wolff, 1950) and a sense of collective social purpose (Aldrich, 1972), further enhancing the foundation for social identification. Successful parties take on a life of their own, in the sense that the common bond of membership in the party begins, at least partly, to supersede individuals' characteristics. Parties, when they work, illustrate the principle that social networks and social identities are reciprocally dependent (Mehra, Kilduff, and Brass, 1998); they are emergent phenomena in which the social whole becomes more than the sum of its individual parts. To explore the melding effect that emerges as the party comes to life, we examine the following prediction:

Hypothesis 2d: The influence of similarity on the likelihood that two guests will encounter and engage each other at a mixer is greater for early encounters than for later ones.

We treat "early" and "late" in terms of the number of encounters individuals have had at the mixer, not time at the mixer, based on the logic that identification with the social collective of "the mixer" is built by social activity and not the mere passage of time.

Associative Homophily and Friendship: Groups at the Mixer

Encounters and engagements at the mixer provide an opportunity to think about the influence of homophily and friendships in social groups. Although the dyad is the foundational unit of encounter and engagement, in the sense that every conversing group can be broken down into a set of dyads, dyads at mixers are often embedded in groups of three or more. Whereas members of a dyad can only be the same or different with regard to discrete demographic categories, and they are either good friends or not good friends, when groups are considered, the possibilities multiply. For example, a guest at the party (ego) may consider beginning a conversation with another guest (alter) who is currently engaged with others. Some or all of these others may be demographically similar to or friends with ego, and if they are, it may positively influence alter's attractiveness to ego. This possibility leads us to propose the concepts of associative homophily and associative friendship, through which the demographic characteristics and pre-mixer friendships of those with whom a given guest is currently engaged (the group) may affect the likelihood of that guest encountering and engaging others who share those demographic characteristics or friendships. There are a number of reasons why this might occur. To start with, there are fundamental arguments in network theory that individuals take on the attitudes of and make decisions that reflect those of their friends (e.g., Erickson, 1988; Kilduff, 1992). This tendency extends to the evaluation of interaction partners (Newcomb, 1960), so a guest who sees one or more of his or her friends talking to another person might view that person as more attractive and be influenced to start an encounter:

Hypothesis 3a: Two guests at the mixer will be more likely to encounter and engage with each other if one of them is already engaged in a group that includes one or more pre-mixer friends of the other.

Likewise, with regard to demographics, some individuals may not want all of their interaction partners to be the same as them but might instead be satisfied if one or more members of an interacting group were like them (Schelling, 1978). Furthermore, according to the value-homophily argument, demographic similarity is influential as an indicator of shared values. This signal may be transferable, such that ego may conclude that if alter is related to or engaged with someone of ego's demographic category, he or she may share values with that person and therefore with ego. Along the same lines, alter's engagement with someone of ego's demographic category may be interpreted as a willingness or disposition of alter to engage with people like ego. These arguments suggest the following:

Hypothesis 3b: Two guests at the mixer will be more likely to encounter and engage with each other if one of them is already engaged in a group that includes one or more individuals who share demographic characteristics with the other.

METHOD

The Mixer and the Participants

The mixer we hosted began at 7:00 P.M. on a Friday evening in the reception hall of a university professional education facility in New York City. The hall offered a square-shaped party space, approximately 60′ by 60′, sufficiently spacious for the 97 attendees to mingle freely. In the center of the room was a large table of hors d'oeuvres, and on the east wall there was a table with pizza. There was a bar on the north wall, which served beer, wine, and soft drinks. There were no chairs in the room. The mixer lasted for 80 minutes, during which the guests were free to speak to whomever they wanted. The invitation explained that guests would wear an electronic tag but assured them that their only task was "Act normally. Talk to whomever you want to, while enjoying food and drinks."

The invitees were working managers, current students in an Executive Master's of Business Administration (EMBA) program of the university that hosted the event. The invitation was extended to 261 executives in four sections of the program (a section is a group of about 65 who take first-year classes together), and 120 accepted the invitation. This acceptance rate was high, considering that the event took place on a Friday night, one of the invited sections was not on campus that day, and many of the executives lived outside of the city and even the country.[1] Ninety-two (76 percent) of those who accepted the invitation actually attended and participated in the event. There were five other participants in the mixer, guests of the inventor of the nTag technology we used to measure interaction. These five are not included as actors in the analysis below because we do not have data on their pre-mixer networks, jobs, etc., although their encounters at the mixer are included for the purpose of calculating the mixer network and environment (e.g., the path distance between other guests). The average age of the guests was thirty-three, and 34 percent were female.

We used four sources of data. For demographic data, we relied on "face books" published by the EMBA program, which present pictures and biographical entries for each guest. We captured the pre-mixer network using an online survey administered one week before the mixer in which each guest indicated his or her relationship (negative, no relationship, positive, strongly positive) to each of the other guests. We administered a short, 16-item survey, completed after the guests arrived but before they began participating in the mixer, on what their social networking goals were for the mixer and for the EMBA program in general. Finally, to capture the pattern of meetings at the mixer, we relied on nTags, a technology originally developed in the MIT Media Lab. An nTag is a wearable device, technologically akin to a personal digital assistant, 4″ × 6″ in size, with a weight of six ounces.

For the mixer, the most relevant function of the nTags was their ability to register other tags with which they come into contact. Two tags come into contact with each other when they face each other at a distance of less than 8′, a parameter chosen through pre-testing and the experience of the

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In a supplementary analysis, we determined that invitees were no more or less likely to accept the invitation based on their demographic characteristics or whether their pre-mixer friends had accepted. The latter result supports the finding in the pre-mixer survey that guests did not attend the mixer with the intention of hanging out with friends.

nTag designer. The nTags store those contacts in their internal memory. We used these contact records to identify encounters at the mixer and to build a dynamic network of who was engaged with whom at each moment of the mixer. For a meeting to have occurred, we required two tags to be in contact with each other repeatedly over a span of at least one minute. Again, this parameter was set based on extensive pre-testing by the designer of the nTags. With this approach, we are confident that we recorded only actual encounters, and not spurious proximity, such as two people walking past each other, or seeking hors d'oeuvres simultaneously. The nTags also had a two-line LED display that displayed a digital greeting when two people met: "Hello 'Helen', this is 'John'."

Network Structure Variables

To test the influence of the pre-mixer network on encounters and engagements, we included three variables that captured varying degrees of friendship: *pre-mixer dislike*; *pre-mixer like*; and *pre-mixer strong like.* Some of the guests who did not report a pre-mixer friendship had been in the same section of 65 students who took all classes together for a semester or more and can therefore be expected to be aware of each other. We identified this group with the variable *pre-mixer exposure,* on the logic that their mutual awareness might make them more likely to encounter each other at the mixer, even if they were not friends or enemies. The omitted category indicated dyads that had no pre-mixer relationship or exposure to each other. We assessed the possibility of an indirect influence of the pre-mixer network with a count of the *pre-mixer mutual friends* (based on friends at the mixer) of the members of the dyad. To capture opportunities for referrals and bridging based on encounters at the mixer, we included two variables, *current mutual ties A and B,* which is the number of shared third parties with whom A and B are both currently engaged, and *mutual ties A and B,* which is a count of the number of non-current intermediaries from earlier in the mixer that the members of a dyad share. We included *no path between A and B,* in case referrals and bridges occur through more extended relations. *No path* was coded one if there was no path of any length in the mixer network that connected the two guests. In preliminary analyses, we examined continuous measures of the number of links between guests in the mixer network and discovered that after distinguishing for path lengths of two, which we do with our mutual ties variables, the most relevant distinction was between actors who were connected at all and those that were not, although our results were the same when we used a continuous measure of path length.

Homophily Variables

We relied on five variables to examine homophilous attraction, three observable characteristics and two less superficial characteristics that could only be discovered through conversation. Sex, race, and physical attractiveness were observable characteristics.[2] The other likely basis of observable similarity, age, was not available to us but did not vary greatly among our guests. Unobservable similarity was based on

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In the analysis reported here we used six categories for race: Caucasian (75 percent of guests); African (2 percent); Latino (2 percent); Middle Eastern (4 percent); East Indian (8 percent); and other Asian (9 percent). Given the large majority of Caucasians among the guests, we conducted a supplementary analysis in which we collapsed all of the non-Caucasian categories into one. Results of the two-category analysis are comparable to those reported below.

whether the participants performed the same broad job function (five categories) and whether members of a dyad had both graduated from an elite institution, using the list of the 25 most prestigious undergraduate institutions provided by Finkelstein (1992). Job function is relevant in this context because others who do the same type of work are a source of information on career opportunities and advice. The status of the undergraduate institution has been shown to be an important predictor of success for business executives and serves as an indicator of socio-economic status (Useem and Karabel, 1986). In preliminary analyses, we examined other potential bases for homophily, including industry of employment and foreign vs. native born. Neither of these affected the incidence of encounter or the persistence of engagement at the mixer.

Physical attractiveness was coded on a five-point scale, based on pictures in the face books, by a research assistant who was naive to the predictions. To check reliability, a second research assistant also coded the pictures; the two sets of codings were within one point of each other 98 percent of the time. According to Riggio et al. (1991), ratings from pictures can be used to capture static attractiveness, which reflects the physiognomic qualities of beauty. At the mixer, dynamic attractiveness, which also involves aspects of movement and expressive behavior, would be important. We could not code dynamic attractiveness because we did not videotape the participants, but the coders' ratings from pictures correlated highly (.75) with attractiveness ratings provided by instructors who had interacted with our participants in class for one semester, suggesting that they provided a fair representation of dynamic attractiveness as it might be experienced at the mixer.

For categorical traits, similarity was measured with indicator variables: *same sex, same race, same elite undergraduate status,* and *same job function. Same physical attractiveness* was calculated as $4 - \text{abs}(P_A - P_B)$, where P_A is the five-point physical attractiveness measure for actor A in the dyad. We interacted the similarity variables with the number of encounters members of the dyad had had so far at the mixer *(degree A + B)*, to investigate the idea that homophily becomes less influential as guests accrue experience at the mixer.

Associative Homophily and Associative Friendship Variables

The associative homophily and friendship arguments suggest that encounter and engagement in a dyad are a function of the similarity or friendship between one member of a dyad and the group that is engaged with the other member of the dyad. Considering similarity or friendship between individuals and groups requires decisions on how to aggregate the relations between the individual and each member of the group. We have no a priori theory about this aggregation. We therefore applied three alternative ways of calculating the extent of similarity or friendship: (1) based on the average similarity between one dyad member and the other's group (0 if the other had no group; averaged for both members of the dyad);

(2) whether there were any friends or similar others of one dyad member in the other's group (2 if both members were in a group that included similar others or friends of the other; 1 if only one was, 0 otherwise); and (3) the total number of friends or similar others of one dyad member in the other's group (totaled for both members of the dyad). Below we compare models that use these three methods to calculate *associative homophily* (for sex, race, attractiveness, elite undergraduate status, and job function) and *associative friendship* (for pre-mixer like and strong-like relationships).

Control Variables

Current guests at the mixer is a count of the guests at the mixer besides those in the dyad. We included this as a control for the competition for encounter partners and we expect that when there are more guests, the likelihood that any two will encounter declines. *Current engagements A + B* is a count of the number of alters with whom the members of a dyad are currently engaged (these need not be mutual to A and B, differentiating this variable from current mutuals). The idea is that if the members of a dyad are both engaged with others, this decreases the chances they will come together in the next moment. Finally, *alone* is an indicator variable that registers if one of the members of the dyad has no current engagements; this controls for the fact that encounters are more likely to be initiated by people who are currently unattached.

Analysis

The unit of analysis is the dyad, or pair of individuals, and we sought to estimate the likelihood that they would encounter each other (or once encountered, how long they would continue to engage) as a function of variables that captured the network structure, similarity, groups, and control variables. An appropriate methodology for this problem is event-history (hazard) analysis, which allows us to estimate r(t), the instantaneous risk that two individuals at the mixer who were not engaged at time t would encounter each other (or that two who were engaged would disengage) between t and t + Δt, calculated over Δt:

$$r(t) = \lim_{\Delta t \to 0} \Pr \frac{(\text{encounter } t, t + \Delta t \mid \text{not engaged at } t)}{\Delta t}. \qquad (1)$$

Parametric estimates of the hazard rate require assumptions about the effect of time, which in our models is duration in the status of "not engaged," for the encounter analysis, or "engaged," for the engagement analysis. We conducted exploratory analyses to choose a functional form of duration dependence, considering a number of common models. This analysis involved (1) visual examination of the pattern of duration dependence estimated as a spline function using a piecewise exponential model; (2) log-likelihood ratio tests to differentiate between parametric models that are nested; and (3) application of the Akaike information criterion (Akaike, 1974) to differentiate between models that are not nested. This process indicated that the Weibull model was the best fit for our data, although estimates of the influence of the independent variables were consistent across a range of models (Weibull, exponential, piecewise exponential, log-logistic, log-normal, Gamma, and Gompertz). The Weibull hazard function we estimated was of the following form:

$$r(t) = e^{\beta X}\, pt^{p-1}, \tag{2}$$

where X is the vector of covariates, β the associated vector of coefficients, and p is the shape parameter that captures the form of the influence of duration (t) on the hazard of encounter or disengaging.

A remaining methodological concern is the non-independence of observations. This problem is common to all dyadic analyses of network structure, as the same actors enter the data in multiple dyads. We responded to the problem of non-independence by including fixed effects for every guest at the mixer (Simpson, 2001; see Reagans and McEvily, 2003, for a recent application of this approach). The main disadvantage of this approach is that it prevented us from examining influences of stable individual differences, (e.g., physical attractiveness) in the dyad-level analyses, which would be linearly dependent with the fixed effects for the members of the dyad.[3] A kindred problem is that observations may be interdependent due to the influence of encounters at the mixer on other encounters, which is an issue of social influence. We responded by directly measuring whether members of a dyad were connected through the mixer network with the variables current mutual ties A and B, mutual ties A and B, and no path between A and B. These variables captured whether those most likely to influence A had encountered B and vice versa (Marsden and Friedkin, 1993). Relatedly, the variable current engagements A + B, as well as the associative homophily and friendship variables, captured the possible tendency of current interlocutors to encourage or discourage new encounters.

To allow the variables to change as guests joined the mixer and as encounters and disengagements occurred, we broke the observation for each dyad into one-minute spells and updated the variables at the beginning of each spell. In the encounter analysis, there were 4,574 dyads, 169,980 spells, and 628 encounters. In the engagement analysis, there were 628 dyadic engagements, of which 547 disengaged before the end of the mixer; the dyadic engagements were split into 3,985 spells. The average guest had about 14 encounters at the mixer (628 × 2 / 92). We have produced a dynamic visualization of the mixer network, essentially an animated movie of how the network changes over the course of the mixer (Moody, McFarland, and Bender-DeMoll, 2005). It can be accessed at http://www.columbia.edu/~pi17/party.html.

RESULTS

Conversational Encounters: Who Comes Together?

Model 1 in table 1 includes control variables and the variables that capture the pre-mixer network and the structure formed

3
Our analysis did include similarity in physical attractiveness to test the idea of status homophily on this dimension. This estimation was possible because similarity is a dyadic measure, not a linear function of individual attractiveness.

Table 1

Weibull Models of Likelihood of Encounter*

Variable	Model 1 All dyads	Model 2 All dyads	Model 3 All dyads	Model 4 All dyads	Model 5 Dyads w/ two men	Model 6 Dyads w/ one or more women	Model 7 Dyads w/out a pre-mixer relationship
Pre-mixer mutual friends	0.006	0.006	0.007	0.006	0.035••	–0.009	0.012•
	(0.95)	(0.98)	(1.05)	(0.89)	(3.46)	(1.11)	(1.92)
Pre-mixer dislike	0.084	0.072	0.001	0.047	–1.140	0.515	
	(0.16)	(0.13)	(0.00)	(0.09)	(1.06)	(0.82)	
Pre-mixer exposure	0.359	0.345	0.308	0.335	–0.364	0.636•	
	(1.56)	(1.49)	(1.33)	(1.45)	(1.00)	(2.11)	
Pre-mixer like	0.687••	0.683••	0.659••	0.680••	–0.032	1.045••	
	(3.61)	(3.59)	(3.45)	(3.57)	(0.10)	(4.47)	
Pre-mixer strong like	1.173••	1.167••	1.147••	1.175••	0.438	1.521••	
	(5.78)	(5.74)	(5.63)	(5.77)	(1.32)	(6.03)	
Degree A + B	–0.091••	–0.091••	–0.120••	–0.102••	–0.209••	–0.071••	–0.054•
	(7.87)	(7.88)	(5.30)	(4.91)	(5.95)	(2.76)	(1.77)
Mutual ties A and B	0.074•	0.075•	0.076•	0.079•	0.159••	0.019	0.167••
	(2.07)	(2.10)	(2.10)	(2.20)	(2.88)	(0.39)	(3.01)
Current mutual ties A and B	1.610••	1.607••	1.651••	1.633••	1.611••	1.632••	1.829••
	(17.05)	(16.99)	(17.19)	(17.14)	(10.82)	(12.70)	(12.44)
No path between A and B	–2.356••	–2.350••	–2.357••	–2.390••	–2.417••	–2.429••	–3.033••
	(7.90)	(7.88)	(7.86)	(7.98)	(5.07)	(6.25)	(5.83)
Current guests at the mixer	–0.004	–0.004	–0.003	–0.004	–0.003	–0.006	–0.009
	(0.89)	(0.87)	(0.81)	(0.91)	(0.41)	(1.09)	(1.36)
Current interactions A + B	–0.341••	–0.340••	–0.346••	–0.346••	–0.329••	–0.356••	–0.414••
	(7.82)	(7.82)	(7.91)	(7.93)	(4.79)	(6.25)	(6.16)
Alone	0.353••	0.353••	0.343••	0.342••	0.501••	0.230	0.128
	(3.00)	(3.00)	(2.91)	(2.90)	(2.74)	(1.47)	(0.72)
Same sex		–0.045	0.436••	0.450••			0.507•
		(0.50)	(2.63)	(2.72)			(1.88)
Same sex × Degree			–0.031••	–0.032••			–0.037••
			(3.42)	(3.57)			(2.65)
Same race		0.172	0.091	0.185	0.657••	–0.098	0.244
		(1.12)	(0.43)	(1.20)	(2.75)	(0.48)	(1.06)
Same race × Degree			0.006				
			(0.60)				
Same physical attractiveness		–0.069	–0.222•	–0.224•	–0.478••	–0.084	–0.099
		(1.09)	(2.06)	(2.09)	(2.73)	(0.59)	(0.57)
Same phys. att. × Degree			0.010•	0.010•	0.022••	0.004	–0.002
			(1.72)	(1.75)	(2.36)	(0.58)	(0.28)
Same undergrad. status		0.027	–0.176	0.027	–0.250	0.172	0.077
		(0.21)	(0.91)	(0.21)	(1.11)	(1.06)	(0.43)
Same undergrad. status × Degree			0.014				
			(1.39)				
Same job function		0.002	–0.226	–0.009	–0.031	0.022	–0.136
		(0.02)	(1.27)	(0.09)	(0.20)	(0.17)	(0.90)
Same job function × Degree			0.014				
			(1.46)				
Constant	–25.316••	–25.346••	–24.927••	–25.124••	–28.711••	–47.108	–47.373
	(11.28)	(11.23)	(10.97)	(11.08)	(10.23)	(0.03)	(0.02)
Shape parameter (p)	2.259	2.258	2.250	2.25	2.80	2.034	2.23
	(14.63)	(14.62)	(14.62)	(14.58)	(12.17)	(9.86)	(8.68)
Log likelihood	–1568.86	–1567.51	–1557.49	–1559.81	–584.87	–916.96	–762.63

• $p < .05$; •• $p < .01$; one-tailed tests for predictions.
* The absolute values of the z statistics are in parentheses.

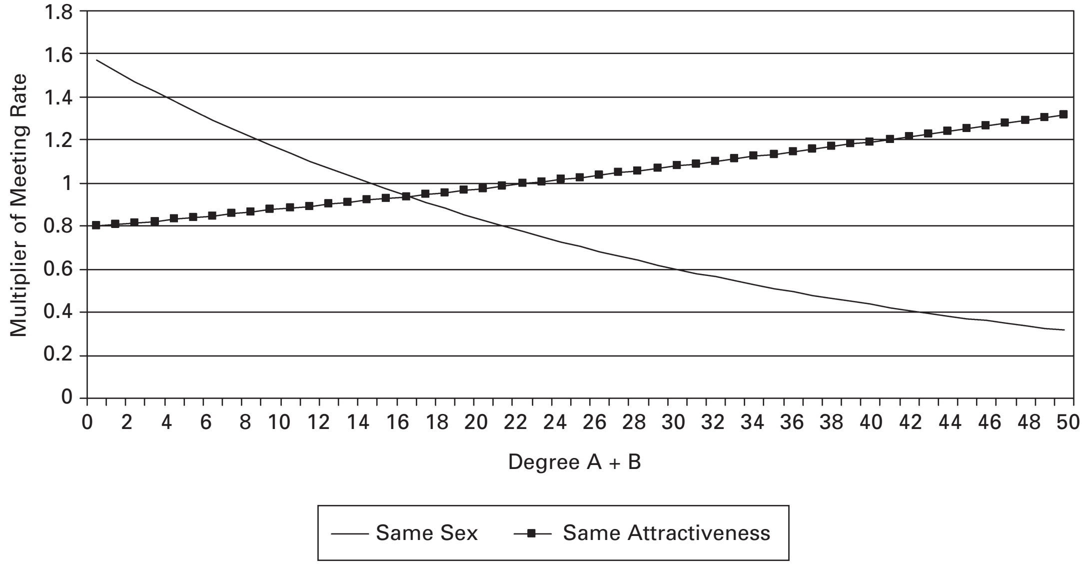
by encounters at the mixer. Guests are significantly more likely to encounter others with whom they had positive relationships before the mixer as predicted in hypothesis 1a. The likelihood is higher for dyads with strongly positive pre-mixer relationships than for those who were only positive ($\chi^2_{1df} \approx$

17.28, $p < .001$). Dyads that had a negative relationship before the mixer and those that were exposed to each other in class are neither more nor less likely to have an encounter than those with no pre-mixer relationship (the omitted category). The number of friends in common in the pre-mixer network does not affect the likelihood of encounter (hypothesis 1b), but there is support for our prediction in hypothesis 1c that encounter in a dyad will be more likely when its members have encountered or are currently engaged with the same others at the mixer, as indicated by the positive coefficients of mutual ties A and B and current mutual ties A and B.

The magnitudes of the variables that capture the pre-mixer and mixer networks are notable. Independent variables in the Weibull model have a multiplicative effect, so the magnitude of a coefficient can be understood in terms of a multiplier of the encounter rate determined by other variables due to a change in the level of the focal variable. The coefficient in model 1 indicates that dyads with strongly positive relationships were about 223 percent ($e^{1.173} - 1$) more likely to encounter each other at any point in the mixer than dyads that did not have a pre-mixer relationship. Dyads with positive relationships were 99 percent more likely to encounter each other. As for the mixer network, for every previous encounter partner that two guests at the mixer have in common, the likelihood that they will encounter each other increases by about 8 percent; for every current encounter partner they have in common, the likelihood increases 400 percent. Doubtless, part of this effect is due to physical proximity, as guests who share a current mutual tie must necessarily be close to each other.

Model 2 adds the five similarity measures to test for static homophily; contrary to hypotheses 2a and 2b, none are significant, although subsequent models show that for some participants at some points in the mixer, similarity did increase the likelihood of encounter. Model 3 adds the interactions between similarity and degree A + B to test the dynamic homophily argument in hypothesis 2d. In this model, same sex and same attractiveness have significant effects. We dropped the interactions with degree for the other similarity variables and estimated model 4, but again, sex and attractiveness yielded the only significant results. Same sex has a positive coefficient, and its interaction with degree has a negative coefficient. This demonstrates the homophily dynamic predicted in hypothesis 2d, that actors are initially drawn to similar others, but as they become more invested in the mixer, they become more likely to encounter different others. Same attractiveness, however, shows the opposite dynamic, with individuals beginning the mixer by encountering others of different levels of attractiveness than themselves and as the mixer progresses becoming more likely to encounter others of similar levels of attractiveness. Figure 1 illustrates the pattern by showing the effect of a one-point increase in same sex and same attractiveness over the observed range of degree A + B, using coefficients from model 4.

Figure 1. Dynamics of homophily in mixer encounters.



The dynamic of increasing attractiveness homophily combined with decreasing sex homophily raises the question of whether the guests shifted their efforts toward finding romantic pairings as the mixer progressed. We therefore estimated models 5 and 6, which are replications of model 4 on different sets of dyads. Model 5 includes only dyads with two men. It demonstrates the same attractiveness dynamic as model 4. Model 6 includes the rest of the dyads, those with at least one woman. In that model, there is no static or dynamic effect of similar attractiveness, although the coefficients are in the same directions as models 4 and 5. Given that homophily on physical attractiveness occurs in male-male dyads, it seems unlikely to be due to the pursuit of romantic partners. Another notable result in model 5 is the significant and positive coefficient for same race, suggesting that there is race-based homophily in dyads that contain only men.

Model 7 further explores the unexpected weak findings on homophily, as it includes only those dyads that did not report a positive or negative pre-mixer relationship. The purpose in presenting this model is to examine the possibility that homophily at the mixer may be masked by the tendency for friends to meet friends. As model 7 shows, however, the homophily effects are no stronger when only dyads without a pre-mixer relationship are included. Supplementary models (not shown) that used all of the dyads but excluded variables that indicate pre-mixer friendship also failed to show homophily in the average mixer encounter.

The non-significance in all cases of non-observable similarities, undergraduate status and job function, fits our argument in hypothesis 2c that only observable similarities should affect the chances of two people coming together at the mixer. All of the observable characteristics (sex, race, and attractiveness) were the basis for encounter homophily at some times for some dyads, but none of the non-observable characteristics were.

The effects of the control variables are generally consistent across models. First, the likelihood of a given pair of guests coming together declines with the number of encounters the members of the dyad have had previously at the mixer (degree A + B), suggesting a deceleration of encounter activity as encounters accumulate, perhaps due to a process of social satiation. Second, the likelihood of two guests encountering each other is negatively related to the overall count of people at the mixer and to the number of alters with whom the two guests are currently engaged at a given point in the mixer, as both of these represent competition for encounter. The fact that individuals with no path between them in the mixer network are less likely to encounter each other supports our expectation that indirect contact between individuals brings them together at the mixer. Finally, the shape parameter of the Weibull model indicates that the likelihood of a pair of guests encountering each other increases the longer they have been at the mixer without having encountered each other.

Table 2 examines the influence of groups through associative homophily and associative friendship. All of the models in table 2 use model 4 from table 1 as their basis and add to it the associative homophily and associative friendship variables. For parsimony, the other variables from model 4 are not shown, but their coefficients are not substantively changed by the inclusion of the associative variables. The three models explore the three alternative methods for aggregating similarity/friendship between one member of a dyad and the group of the other member. Their results are comparable, but model 9, which considers whether A's group has any similar others or friends of B and vice versa has the best fit, as indicated by the log-likelihood, so we focus on the

Table 2

Associative Homophily and Friendship: Influence of Groups on the Likelihood of Encounter*

Variable	Model 8 Average similarity / pre-mixer friendship	Model 9 Any similarity / pre-mixer friends	Model 10 Total similar others/ pre-mixer friends in group
Associative homophily: sex	0.084	0.140•	0.061
	(1.07)	(1.88)	(1.25)
Associative homophily: race	0.204•	0.230••	0.163••
	(2.22)	(2.62)	(3.27)
Associative homophily: attractiveness	0.046	0.019	–0.001
	(1.24)	(0.27)	(0.02)
Associative homophily: undergrad. status	0.130	0.122	0.059
	(1.41)	(1.41)	(1.09)
Associative homophily: job function	–0.016	–0.056	0.010
	(0.19)	(0.74)	(0.18)
Associative friendship: pre-mixer like	0.639••	0.456••	0.315••
	(4.35)	(6.41)	(5.53)
Associative friendship: pre-mixer strong like	1.300••	0.705••	0.529••
	(8.45)	(9.41)	(8.94)
Constant	–25.136••	–18.535••	–24.481••
	(11.01)	(12.88)	(10.78)
Log likelihood	–1512.50	–1494.52	–1505.18

• $p < .05$; •• $p < .01$; one-tailed tests for predictions.
* The absolute values of the z statistics are in parentheses.

results of that model. The idea of associative homophily from hypothesis 3b is supported by the fact that an encounter is more likely when one member of a dyad is engaged in a group that includes someone of the same sex or race as the other member. There is similar support for associative friendship (hypothesis 3a). If A's group includes someone with whom B has a liking relationship before the mixer, B is more likely to encounter A and thus join the group. The effect is even stronger if A's group includes someone with whom B had a strong-like pre-mixer relationship.

Conversational Engagement: Who Stays Together?

Table 3 presents Weibull models of conversational engagement. The coefficients indicate the effect of a variable on the likelihood of disengaging from a conversation, so engagement between two conversing guests is indicated by negative coefficients. Model 11, which includes structural opportunity variables and controls, shows that variables that capture the mixer trajectory of a pair—degree A + B, current mutual ties A and B, and mutual ties A and B—do not affect the duration of their conversation. Apparently once two people meet, it is their characteristics and pre-mixer relationship, not the trajectory of their recent experience at the mixer, that predict whether their conversation persists, so hypothesis 1c is not supported for engagement. People who had strong pre-mixer liking relationships conversed for longer when they engaged each other at the mixer as predicted in hypothesis 1a, but pre-mixer mutual friends did not influence engagement, counter to hypothesis 1b. More surprising, people who disliked each other before the mixer also conversed for longer than otherwise expected. Results for the control variables show that a pair engages longer when there are more people at the mixer. Again, this is somewhat surprising, because others at the mixer are alternatives to current conversation partners. One explanation is that there is a very high correlation between the number of others at the mixer and the time the mixer has been going on. This result may therefore indicate that engagements become longer in the later stages of the mixer. It may also be that crowded parties create more intimacy within dyads. Additionally, we find that an engagement is shorter if the number of current engagements of the participants is higher, that is, conversations set in groups disengage more easily than those in isolated dyads. Finally, the shape parameter of the Weibull model indicates that conversations become more likely to end the longer they have persisted.

Model 12 adds the similarity variables and their interactions with degree. None are significant, so in model 13, we drop the interactions. Here, only same job function is significant, and its coefficient is positive. This is the opposite of what we expected: individuals sharing the same job function have briefer engagements on average. Hypotheses 2a, 2b, and 2d were not supported in the engagement analysis.

Given the non-findings on homophily in engagements, we wondered whether dyadic similarity affected the length of engagements for anyone at the mixer. To find out, we estimated two more models that examined conversational dura-

Table 3

Weibull Models of Likelihood of Ending an Engagement*

Variable	Model 11 All dyads	Model 12 All dyads	Model 13 All dyads	Model 14 Dyads looking for things in common	Model 15 Dyads looking for easy ties to maintain	Model 16 All dyads
Pre-mixer mutual friends	0.001	0.001	0.002	0.008	0.092	0.008
	(0.15)	(0.17)	(0.26)	(0.07)	(1.49)	(1.00)
Pre-mixer dislike	–1.348•	–1.693••	–1.575•	–4.678	–10.108••	–1.141
	(2.19)	(2.68)	(2.52)	(0.79)	(3.03)	(1.87)
Pre-mixer exposure	0.152	0.127	0.126	4.660	–4.259•	0.047
	(0.56)	(0.47)	(0.46)	(1.08)	(2.36)	(0.18)
Pre-mixer like	–0.197	–0.221	–0.225	–6.442•	–1.554	–0.378•
	(0.87)	(0.96)	(0.98)	(1.88)	(1.00)	(1.65)
Pre-mixer strong like	–0.619•	–0.649••	–0.655••	–3.251	–3.364•	–0.904••
	(2.46)	(2.59)	(2.60)	(1.14)	(1.92)	(3.54)
Degree A + B	–0.022	–0.035	–0.026•	0.243•	0.028	–0.032•
	(1.77)	(1.10)	(2.03)	(2.10)	(0.44)	(2.46)
Current mutual ties A and B	0.016	–0.001	0.003	–0.359	–0.674•	–0.075
	(0.17)	(0.02)	(0.04)	(0.78)	(1.71)	(0.80)
Mutual ties between A and B	–0.033	–0.029	–0.030	–0.265	–0.104	0.007
	(0.76)	(0.64)	(0.68)	(0.69)	(0.66)	(0.17)
Current guests at mixer	–0.013••	–0.012•	–0.012•	–0.171••	–0.059••	–0.010•
	(2.83)	(2.51)	(2.57)	(4.16)	(2.64)	(2.00)
Current engagements A + B	0.145••	0.159••	0.158••	0.539•	0.414•	0.231••
	(3.58)	(3.86)	(3.87)	(2.56)	(2.51)	(3.81)
Same sex		–0.264	–0.041	1.426	0.622	–0.022
		(1.04)	(0.34)	(1.01)	(0.95)	(0.18)
Same sex × Degree		0.013				
		(1.06)				
Same race		0.017	–0.147	–4.043••	–0.622	0.110
		(0.05)	(0.66)	(2.61)	(0.67)	(0.51)
Same race × Degree		–0.011				
		(0.90)				
Same attractiveness		–0.159	–0.114	–2.076••	0.865••	–0.089
		(0.98)	(1.41)	(2.71)	(2.70)	(1.11)
Same attractiveness × Degree		0.003				
		(0.40)				
Same undergrad. status		0.389	0.250	–1.798	–1.702•	0.312
		(1.38)	(1.60)	(1.16)	(1.90)	(1.96)
Same undergrad. status × Degree		–0.007				
		(0.55)				
Same job function		0.008	0.281•	1.055	–2.018••	0.234
		(0.03)	(2.27)	(1.22)	(2.78)	(1.92)
Same job function × degree		0.016				
		(1.10)				
Associative homophily: sex						0.265••
						(3.15)
Associative homophily: race						–0.331••
						(3.47)
Associative homophily: attractiveness						–0.367••
						(4.37)
Associative homophily: undergrad. status						0.335••
						(4.05)
Associative homophily: job function						0.011
						(0.13)
Associative friendship: pre-mixer like						–0.068
						(0.69)
Associative friendship: pre-mixer strong like						–0.390••
						(4.03)
Constant	–4.379••	–10.270	–4.851••	–0.606	6.234	–5.400••
	(4.13)	(0.01)	(4.33)	(0.15)	(1.28)	(4.71)
Shape parameter (p)	1.32	1.35	1.34	3.01	2.31	1.38
	(8.12)	(8.54)	(8.44)	(9.43)	(8.02)	(9.26)
Log likelihood	–763.86	–756.75	–758.59	–39.72	–77.09	–705.96

• $p < .05$; •• $p < .01$; one-tailed tests for predictions.
* The absolute values of the z statistics are in parentheses.

tion for subsets of the dyads. Specifically, we examined the role of the guests' goals, because the tendency to engage with similar others may depend on what one wants to get from a mixer. For this, we used responses to two items in our pre-mixer goal survey tapping homophilic goals: whether they intended at the mixer (1) to seek out people with whom they have something in common and (2) to form relationships with people that will be easy to maintain.

Although our fixed-effects specification prohibited us from including covariates that were aggregates of individual characteristics, we could restrict our analysis to subsets of the data based on those characteristics, which we did in models 14 and 15. Model 14 examines only the 12 percent of dyads in which shared endorsement of the "things in common" item was very high. We used high shared endorsement of a goal to characterize dyads for which there was an emphasis on the goal that was shared by both members of the dyad (because a continuing engagement requires the willingness of both members). We operationalized very high shared endorsement as dyads in which (a) both members were above the median on the relevant goal variable or (b) one member had the maximum response for that goal and the other was at the median. In these dyads, we do see evidence of homophily, as people of the same race and attractiveness have longer engagements. Model 15 examines the 15 percent of dyads with high shared endorsement of the "easy to maintain relations" item. Again, we see some homophily, as same undergraduate status and same job function cause these dyads to have longer engagements.

Finally, model 16 examines associative homophily and associative friendship for engagement duration. For parsimony, we present only one set of results, using association calculated based on whether A's group contains anyone who is similar to or a friend of B, and vice versa. As in the encounter analysis, association calculated in this way was a better fit to the data than the two alternatives. Model 16 shows support for associative friendship (hypothesis 3a), although only for strong-like pre-mixer relationships. The model also shows evidence of associative homophily for race and attractiveness, as engagements are longer when one member of the dyad is engaged with a group that includes someone who shares a race or level of attractiveness with the other member of the dyad (hypothesis 3b). Results for sex and undergraduate status are the opposite of those predicted by the associative homophily argument. Supplementary analysis (not shown) indicates that the result for sex actually represents a move to mixed-sex engagements as the party progresses, a result that is comparable to the tendency toward mixed-sex encounters demonstrated in figure 1. Overall, the results for associative homophily in both encounter and engagement suggest that the phenomenon is particularly important for race, which was significant in both analyses. Apparently, individuals at our mixer were willing to encounter and engage with others of a different race than them but avoided groups in which everyone was of a different race than them.

DISCUSSION

Do people mix at mixers? The answer is no—or not as much as they might—in terms of meeting new people, and yes, with a caveat, in terms of meeting people different from them. Preexisting network structure operated at the mixer much as it does in more mature relations: encounters and engagement were much more likely with pre-mixer friends than with strangers. At the same time, average tendencies to homophily that are often apparent in mature relations were absent at the mixer, so guests did encounter and engage with others who were different from them. The caveat is that guests avoided joining conversing groups that included no one else of their race.

Our two basic findings, the heavy influence of structure and the light influence of homophily, run counter to conventional wisdom. Minimally structured events, such as mixers or parties, are supposed to enable interactions determined by the pull of attraction rather than the push of prior structure. Both findings are also notable for theories of network dynamics.

Structural Influences on Encounter and Engagement

Mixer parties are supposed to free their guests from the constraints of preexisting social structure so they can approach strangers and make new connections. Nevertheless, our results show that guests at a mixer tend to spend the time talking to the few other guests whom they already know well. For example, people were much more likely to converse with another at the mixer if they had a positive pre-mixer relationship. Although the reproduction of positive ties in this way makes sense in relationships that depend heavily on affect and trust, it is counter to our expectations for behavior at a business mixer. It is also counter to the expressed intentions of 95 percent of our guests, who emphasized before the mixer a goal of building new ties rather than reinforcing old ones. This puts a different spin on the common observation that network ties reproduce themselves. That pattern is often interpreted to signal the benefit of relational experience, but at the mixer, it also signifies the heavy weight of structural constraint. We believe that guests were being honest when they reported before the mixer that they intended to meet strangers. Once at the mixer, however, and with the opportunity to talk to friends, they were apparently reminded that meeting strangers is more difficult or less rewarding than they had previously considered. This suggests that guests may benefit from a commitment device that forces them to interact with strangers. The obvious way to make such a commitment is to go to a mixer without one's friends, and, indeed, the guests who had the fewest friends at the mixer did meet the most strangers.

The mixed influence of indirect structure is equally compelling. Individuals were more likely to encounter each other if they were connected indirectly by having encountered common others at the mixer but not through indirect ties in the pre-mixer network. The latter non-finding is consistent with our claim that social control, and the social closure that engenders it, would be less important at the mixer because encounters there involve minimal exposure to malfeasance.

The relevance of indirect ties in the mixer network cannot reasonably be attributed to social control, as third parties in this context do not provide protection or surety. Rather, we attribute the impetus to close incomplete triads in the mixer network to an attempt to promote social cohesion. It is in this result that our analysis resonates most with that of Riesman, Potter, and Watson (1960b), who studied sociability as a collective product. Sociability is a shared effort to produce a group identity that transcends individual goals, dyadic relations, and material concerns of all types (Aldrich, 1972). Our guests were not exclusively dedicated to sociable ends but nonetheless brought to the event social manners and habits that work toward social closure. At the mixer, interacting with a partner's partner was the decent thing to do, an act that reaffirmed each member of the triad and legitimated the collective entity, the mixer as a social institution (Trice and Beyer, 1984).

Although the influence of indirect connections through mixer encounters is a structural constraint, at least it is constraint created at the mixer. The importance of bridges created at the mixer operates against any claim that mixers are dominated by pre-mixer relations. The significance of bridges created at the mixer raises the question of order dependence at a mixer. Because who encounters whom depends partly on who has encountered whom earlier, mixers may take different trajectories depending on the earliest encounters. Knowing how early encounters influence the trajectory of mixers and of guests would be useful for hosts and guests alike and is a worthy topic for future research.

Homophilous Attraction

We begin with what we did not find: on average there was no significant tendency toward encounter or engagement between similar guests. This is a stark contrast to dozens of studies of friendships and other mature relationships that show they are more likely between similar individuals. Our non-finding does not call the evidence of homophily in mature relations into question; rather, it suggests alternative ways that the pattern may emerge. In particular, it combines with our findings on the structural influences on encounter and engagement to suggest that observed homophily may more likely derive from structures that bring similar people together than from a strong preference for similar others as interaction partners. Thus our result supports McPherson, Smith-Lovin, and Cook's (2001) claim for the primacy of structure as a cause of homophily and derives from just the sort of dynamic analysis they call for as necessary to separate confounded accounts of the origins of network ties.

The micro-processes of encounter and engagement that we document can be reconciled with the emergence of homophily in mature relations in a number of ways. First, in many contexts, the preexisting network structure that influenced the mixer would itself reflect homophily, due to factors such as "geographic propinquity, families, organizations and isomorphic positions in social systems" (McPherson, Smith-Lovin, and Cook, 2001: 415). Second, our results do provide some support for the basic value-homophily assertion that contacts with similar others may be reassuring and comfortable, in that homophilic engagement was more common for guests most interested in easy-to-maintain relations. Though that preference was not very prevalent at the mixer, there is reason to expect that it may weigh more heavily when individuals choose friends or colleagues (Marsden, 1988; Ibarra, 1992). There is evidence of this from our pre-party survey, in which we asked guests not only what their networking intentions were for the evening's mixer but also for their Executive MBA program more generally. Forming "easy to maintain" ties was rated as a higher priority for program networking than it was for mixer networking.

Third, the evidence on encounter processes and engagement processes can be combined to shed light on an intriguing link to homophilous networks. Our results indicate that men are more likely to encounter men of the same race (model 5), but that for most guests (all except those looking for others with things in common with them), same race does not predict engagement. If a longer conversation is a positive signal for a future relationship, one might conclude that race did not affect most guests' decisions to invest time, and begin building a closer relationship, with those they encountered at the mixer. Nevertheless, the combination of a superficial encounter process and a more substantive engagement process can result in social segregation by race. If most of the others that an individual meets are the same race as them, then mature relationships (e.g., friendships) may be race dependent, even if friends are selected from those met based on characteristics other than race (because the pool from which relations are selected is racially homogenous).

Our finding of associative homophily points to an opportunity to promote mixing on the race dimension and thus to overcome the liability of the superficial encounter selection. The opportunity is that mixers, or other circumstances in which people can meet in groups, may lower the threshold for desired similarity and therefore promote contacts between dissimilar others. If a group is attractive to racial minorities merely by virtue of containing at least one person of the same race, it can provide a context for contact between races that may be comfortable for all. The indirect influence of similarity through groups also suggests something about the mechanisms behind value homophily, particularly the signals that may account for the benefit of associative homophily. We suspect that associative homophily occurs because observers attribute values or sympathies to a group member as a function of the racial characteristics of their interlocutors. This evidence must be reinforced by direct research on the causes of associative homophily, but it is provocative for emerging theories that link sensemaking and social attribution to social structure.

Our dynamic homophily effects are also useful for understanding what social occasions may lead to homogeneous or diverse relations. As we predicted, same-sex homophily operated for early encounters and decreased for later ones. Of course, even though similarity on characteristics like sex may result in rewards by reinforcing values and attitudes, there are advantages to heterogeneous encounters also, and this is nowhere as obvious as on the dimension of sex. The transition from homophily to heterophily is a manifestation of a familiar phenomenon, that a good party reduces social inhibitions and melds people together.[4] The existence of social constructions that transform and transcend individual components is well known, yet it is a rare thing to actually observe their emergence, to see the transition from behavior as atomistic individuals to behavior as members of the collectivity. The retreat of the self with participation in the mixer may be indicative of the socializing effect of other institutions such as crowds, groups, organizations, and cities. It may also provide substantive guidance for designing institutions that promote networking, particularly when the goal is to facilitate contact between different types of people.

The dynamic effect of attractiveness homophily is the opposite of our expectation, but it is no less gripping for that. Why do people move from heterophily to homophily on attractiveness, when some theory and our sex result indicate the opposite pattern? We believe this dynamic occurs because the attractiveness result is a case of status homophily, while our sex finding, and most others in the literature on interpersonal relations, are instances of value homophily. Unlike value homophily, status homophily depends on a pecking order. It may take time or, more specifically, feedback from encounters for individuals to learn just where they fit in that pecking order. Of course, you might expect that 30+ years of social experience would have taught our guests where they stand in the attractiveness pecking order. It turns out that the bias to self-enhancement operates when interaction partners evaluate their relative attractiveness. Saad and Gill (2005) analyzed the self- and other-attractiveness ratings of interacting dyads and reported that individuals consistently rate themselves as more attractive than their partners perceive them to be. Inflated self-perceptions could result in mismatching in the early stages of a social event, as individuals seek partners that equate to their self-image, rather than to their true status. As encounters and feedback accumulate, we suspect, self-perceptions are deflated, and individuals come to learn, or relearn, their place in the pecking order, and status homophily will emerge. This adjustment is the fate of all those beneath the elite status tier at social and professional mixers.

Generalizing from Our Mixer

Given the practical and theoretical significance of the findings, it is important to consider the generalizability of our study to other mixers, parties, or similarly minimally structured contexts for meeting. In this regard, it is necessary to realize that our innovation was not in simulating a mixer but, rather, in measuring social activity at a real mixer. It is true that we organized the event that we studied, but it was in almost all respects like others that the EMBA program hosted regularly, and if we had not initiated the event, it is quite likely that the program would have hosted one just like it, minus the measuring devices. Of course, our mixer had a given size, room configuration, and a certain type of guest, and these may have influenced the patterns of encounter and engagement. Only more analyses of mixers can determine

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The phenomenon of eroding inhibitions brings up the topic of alcohol. Alcohol consumption at our party may have also affected the pattern of encounter. We intended to measure such consumption indirectly, but we were frustrated by a headstrong bartender who refused to stay "wired" to his nTag. Nevertheless, supplementary analysis indicates that the shift from sexual homophily to heterophily depends mostly on the number of encounters and not the time spent at the party (our best available proxy for alcohol consumed), so we believe it is based at least partly on "social intoxication," even though we can't deny that alcohol may have played a role.

the relevance of these factors, although we would suggest that the American context and the middle-aged professional guests be considered as scope conditions when using our findings to understand other parties or mixers.

One possible concern is whether our guests may have been less prone to homophily based on demographics because they already shared an important similarity based on their participation in the same exclusive academic program. We don't see why participation in the program would reduce homophily on other dimensions, however, particularly given that many studies that find friendship homophily on dimensions such as race and sex examine networks based in the same school, university class, or organizational department. The pre-mixer network among our guests reflected just the type of homophily that is evident in many other friendship networks, on all of the bases of similarity that we examined as predictors of mixer encounters. The conclusion must be that dyadic similarity is less prominent for elemental encounters than for mature relationships, not that our guests were for any reason predisposed against homophily.

The biggest issue in generalizing from our mixer is how the presence of the nTags affected behavior. Our observation and the reports of guests indicated that the nTags made it easier to initiate contact, acting as an icebreaker, something that people could joke about or discuss to overcome the awkwardness associated with initiating an encounter. In this respect, they played the role that nametags always do at a mixer, albeit in a more novel way.

We think that the key to understanding the effect of the measurement device on generalizability is to recognize that the presence of an excuse to interact is a variable in parties and other contexts for sociability. Simmel made this point when describing the effect of an invitation to a private party, such as a cocktail party (Wolff, 1950: 114). The invitation grants all attendees the legitimacy to interact with each other. Any guest can approach any other by virtue of the fact that the host has invited them all. It is considered quite rude to refuse an invitation to converse at a private party, but it is quite common to do so in a non-exclusive social gathering such as a crowd on the street or in a bar. The effect of the nTags is comparable to that of the invitation—they grant the guests a justification for initiating an encounter and provide a shield against rejection. In effect, the nTag makes our mixer more like an exclusive gathering, such as a cocktail party, than a mixer with a low screen on invitees would typically be. And even though we expect the incidence of encounters at our mixer to be higher than in non-exclusive social situations, we are not convinced that the pattern of encounters would differ between exclusive and non-exclusive contexts, as the legitimacy supplied by an invitation (or an nTag) applies equally to all individuals.

Are Mixers Worth It?

In closing, we return to the initial justification for analyzing a mixer, that organizations and guests invest heavily in these events to facilitate encounters and the development of networks. Our results do provide some information about the profitability of these investments and whether they could be made more effective. First, it must be noted, however, that we know only about who encountered whom at the mixer and how long they engaged, not about the subsequent development of professional or social relationships. Without a doubt, our guests believed that encounters at the mixer could lead to useful professional relationships, but that belief could be mistaken, and our research was not designed to test it. We do have some anecdotal information on the relational significance of mixer encounters from conversations we had with two of the guests long after the mixer. As might be expected, they mostly had no subsequent contact with the strangers they met at the mixer. One, however, reported that at other mixers he occasionally ran into two of those he met first at the mixer, so the initial meeting had transformed these from strangers to distant contacts. The other informant had subsequently become good friends with one of the nonfriends he had met at the mixer and also noted the significance of meetings at the mixer with friends, saying that they "added to the 'accretion' of those moments that firmed up those relationships." These accounts may serve as support for the assumption of all mixer organizers and guests that encounters at such events sometimes contribute to the creation and development of substantive relationships, but it would be useful to know how often that happens and for which encounters. More research is needed to answer those questions.

If our results suggest a failure of mixers, it is with regard to promoting meetings between people who did not know each other before the event. It is worth remembering, however, that even though our guests were much more likely to interact with their pre-mixer friends, they did still meet some strangers. In fact, our average guest had fourteen encounters at the mixer, divided roughly evenly between pre-mixer friends and strangers. This ratio may be small in light of the intentions of the guests and the proportion of strangers (because the average guest knew only one third of the others at the mixer), but it may be large compared with the rate of meeting strangers in other settings. Even though our typical guest did not fully exploit the opportunity to meet new people, we suspect that he or she would view the accumulation of seven new contacts as a well-spent evening in terms of the potential for network expansion. Any opportunity to meet strangers is notable for those seeking efficacious networks, because the most entrepreneurially advantageous network positions, those that span structural holes, require knowing someone who is not known by others in one's network and therefore cannot be created by the familiar path of adding new ties through existing ties. Further, our analysis suggests advice for those who seek to meet even more new people: attend mixers without your friends.

Of course, the limitation of mixers in terms of promoting meetings between strangers should be counterbalanced by their success for promoting meetings between dissimilar people. The results in this regard should provide encouragement for anyone who seeks to break the bonds of homogenous social relations. If there are people of a different sex, race, educational background, and job type at a mixer, they are quite likely to encounter and engage with each other. Thus mixers may present an important opportunity to facilitate meetings between people whose differences make it unlikely that they will meet in everyday life.

Finally, we recognize that mixers may serve another purpose besides promoting encounters between new and dissimilar people. They also serve as rites of integration, reinforcing preexisting relationships by providing friends and acquaintances with another opportunity to encounter each other (Trice and Beyer, 1984; Collins, 2004). Thus mixers and other parties strengthen existing network ties within a university program, a corporation, or a community at the same time that they allow the possibility of creating new ties that will be incorporated into existing social networks.

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