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Abstract

Social ecologies shape the way people initiate and maintain social relationships. Settings with much opportunity will lead to more fine-grained similarity among friends; less opportunity leads to less similarity. We compare two ecological contexts—a large, relatively diverse state university versus smaller colleges in the same state—to test the hypothesis that a larger pool of available friendship choices will lead to greater similarity within dyads. Participants in the large campus sample reported substantially more perceived ability to move in and out of relationships compared to participants in the small colleges sample. Dyads were significantly more similar on attitudes, beliefs, and health behaviors in the large campus than in the small colleges sample. Our findings reveal an irony—greater human diversity within an environment leads to less personal diversity within dyads. Local social ecologies create their own "cultures" that affect how human relationships are formed.

Keywords

social ecology, interpersonal relationships, attitude similarity

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Friendly social contact offers social support, affirmation, entertainment, acceptance and a sense of belonging. Friendly social relations are essential in all cultures, but interpersonal relationship selection is a group process that depends substantially on the social context, culture, and social ecology that forms the backdrop of social relations (Adams & Plaut, 2003; Barker, 1968). A socio-ecological approach to psychological science considers how physical, societal, and interpersonal environments shape psychological processes and human behavior (Oishi & Graham, 2010). Social ecology sets the stage for social psychology, yet social psychology has rarely incorporated ecological factors into the study of psychological processes. We adopt a novel approach to studying interpersonal relationships by examining the ways in which the size and diversity of social choices affect similarity among relationship partners.

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Making acquaintances and seeking relationship partners cannot be understood as two individuals operating in a social vacuum. These processes are invariably affected by the social and ecological context, which creates opportunities and standards that guide choice, values, and selection (Zebrowitz & Collins, 1997). Thus relationship initiation is not only a dyadic process but also a group process influenced by the broader group of social contacts in a local environment (Williams, 2010). Barker (1968) noted that human behavior always takes place in a physical and social context—a social ecology—that shapes the kinds of communication, relationships, obligations, and interactions that take place. A socioecological perspective incorporates multiple levels of analysis to study the dynamic interrelations between people and the physical and social aspects of their environments (Stokols, 1992). For example, social structural variables such as group status and size affect expressions of intergroup bias (Jackson, 1999), and features of the physical environment allow or restrict social behavior and choices (Cesario, Plaks, Hagiwara, Navarrete, & Higgins, 2010). The study of social phenomena such as group processes and interpersonal relationship selection are best understood in a multilevel context.

Sociological theories of urbanism note that cities are more heterogeneous habitats than rural communities, in part because as population density increases so too does diversification of human subcultures (Fischer, 1975; Wirth, 1938). Human diversity in an environment (e.g., diversity based on race/nativity, age, household composition, education, income, residential duration, and dwelling type) is positively associated with population size and density (Hall & Lee, 2010). By extension, population size and density affects the size and diversity of the pool of available relationship choices, which in turn affects the number and form of interpersonal relationships that develop in a given context (e.g., Athanasiou & Yoshioka, 1973; Blau, 1977). We compare two ecological contexts for forming interpersonal relationships, and compare the effects on similarity among conspecifics.

Similarity is ubiquitous and desirable

When people have a choice, they choose relationships with people who are similar to them. Some of the dimensions of similarity include attitudes (Byrne & Nelson, 1964), values (Sprecher, 1998), beliefs (Morry, 2003), personality (Watson, Hubbard, & Wiese, 2000), behaviors (Mercken, Candel, Willems, & de Vries, 2007), physical characteristics (Crandall, Schiffhauer, & Harvey, 1997), demographic variables (Kandel, 1978b) and even the first letter of one's name (Jones, Pelham, Carvallo, & Mirenberg, 2004). Similarity characterizes the friendships of preschoolers (Barbu, Jouanjean, & Allès-Jardel, 2001), adolescents (Selfhout, Branje, ter Bogt, & Meeus, 2009), and adults (Pilkington & Lydon, 1997), online or face to face (Mesch & Talmud, 2007), and in many different countries (e.g., Selfhout et al., 2009; Tor & Singh, 2007).

We tend to find similar others attractive—this is the similarity-attraction effect (SAE; Byrne, 1971). Although there is cultural variation in strength, the SAE has been shown across North America, Europe, in the Middle East, South Asia and East Asia, and South America (e.g., Byrne et al., 1971; Heine, Foster, & Spina, 2009; Pinto, Bombi, & Cordioli, 1997). Perhaps as a result of the SAE, friends are, in fact, similar to each other. Friendship similarity has been found in North America (e.g., Crandall et al., 1997; Kandel, 1978a), South Asia (e.g., French, Jansen, Riansari, & Setiono, 2003), Europe (e.g., Michinov & Michinov, 2001), the Middle East (e.g., Mesch & Talmud, 2007) and East Asia (e.g., Zou et al., 2009). People around the world report that similarity is a desirable quality in a friend (e.g., Porwal & Jain, 1985; Schug, Yuki, Horikawa, & Takemura, 2009; Yabrudi & Diab, 1978).

Interactions with others who share our attitudes and values are more rewarding than interactions with dissimilar others (Byrne & Clore, 1970); making friends with similar others validates one's beliefs (Newcomb, 1968) and offers predictable and pleasant interaction (Berger & Calabrese, 1975). Similar others have longer

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(Ledbetter, Griffin, & Sparks, 2007) and more intimate friendships (Biesanz, West, & Millevoi, 2007; Heller & Wood, 1998).

Similarity, selection, and social ecology

Byrne (1971) proposed that the similarity found among friends is based on the greater attraction one has toward similar others; the assumption is that the SAE leads to *social selection*—people choose to befriend others who hold similar attitudes to themselves. A wealth of evidence supports a social selection account of similarity in friendship (Condon & Crano, 1988; Kandel, 1978a; McPherson, Smith-Lovin, & Cook, 2001).[1]

Similarity within relationship dyads may be easily achieved in an environment that affords relationship choice. But one can only choose among the available alternatives—a person is far more likely to satisfy their specific grocery needs at a supermarket than a convenience store.[2] When it comes to finding suitable relationship partners, one is far more likely to closely match one's peers in a setting with substantial variety and opportunity. Thus while theory and research on the SAE suggest that the desire for similar relationship partners is present across all kinds of contexts, we propose that social ecology constrains people's opportunity to pursue relationships with similar others.

In this paper, we compare the degree of similarity within dyads in social ecologies—college campuses—that vary in the size of the available pool of relationship choices. We compare dyads collected in public settings at a large state university to dyads collected in the same way in smaller colleges in the same state. In this way we can test several hypotheses about how social ecology sets the stage for social psychology—how does social ecology moderate interpersonal processes?

Social ecology and personal relationships

The seminal investigation of school size and its social psychological impact was Barker and Gump's (1964) *Big School, Small School*, which compared different-sized Kansas high schools. This work revolved around the notion of a "behavior setting" and was the foundation of staffing theory (or "manning theory"; Barker, 1968). They predicted that in smaller schools people might have relaxed criteria for selecting friends and coworkers. For smaller schools, they predicted:

> … less sensitivity to and less evaluation of differences between people. This will usually be in the nature of ignoring differences previously noted, and exhibiting increased tolerance of those noted … not only does the person see himself as suitable for the new roles, but he sees others, too, as more widely suitable….When essential personnel are in short supply, it is necessary to "accept" those persons who are available and can do the job. (p. 24)

In settings with fewer available people to choose from, people make do with the raw material available to them. For example, research comparing friendships in rural and urban settings revealed that children who attend rural schools tend to have more "school" friends than children who attend urban schools (Kon & Losenkov, 1978), but significantly fewer "extra-school" friendships than city dwellers. Rural settings have less "network elasticity"—the freedom to choose one's friends (Lazer, 2001)—compared to that of urban settings.

The expanding circle of social contacts and the varied possibilities of interpersonal relations—the urban milieu—evidently makes ties of friendship more selective, and their criteria more delicate and expressive. The role of friend coincides with that of neighbor, kin and other relations more often in the rural setting. This makes friendship less exclusive, but possibly more stable (Kon & Losenkov, 1978, p. 154).

Relational mobility as marker for social ecology

We suggest that relatively less populated environments (e.g., rural settings, smaller colleges) offer less choice, less network elasticity, or less *relational mobility* than more populated environments. Relational mobility (Schug et al., 2009; Yuki et al., 2007) is the ability to form new (or exit old)

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relationships in a social context—the opportunity to move in and out of relationships is an essential precursor to relationship choice.

The perception of relational mobility is one possible (proximal) psychological factor through which the (distal) ecological factor of population density affects relationship opportunity and choice. Relational mobility within the USA is higher in urban settings than rural settings, and higher in larger group settings compared to smaller group settings. Nations and cultures differ in relational mobility as well—people in the USA perceive substantial relational mobility, while people in Japan do not (Schug et al., 2009).

Relational mobility measures the psychological experience of diverse choice. But diversity can also be measured directly. Greater diversity is indicated by more symmetric and mesokurtic distributions, characterized by larger standard deviations, less skew, and less leptokurtic ("bunched up") distributions than low-choice environments. Often, larger environments are more heterogeneous and diverse than smaller environments (e.g., Hall & Lee, 2010). We propose the following hypotheses based on the assumption that a large college campus offers more variety of social choices compared to smaller college campuses.

Hypotheses

Individuals in the larger campus context will have more opportunities for acquaintance and friendship; this perceived choice will be reflected in greater perception of relational mobility. By contrast, there is no theoretical reason to expect fundamental differences in relationship orientations between people in large and small college campus samples. Thus we predict that any differences we observe between relationship dyads in the large and small colleges will be due to the social ecology (e.g., opportunity for social choices) as opposed to differences in the psychology of the individuals (e.g., preference for similarity or interdependence in relationships).

One might imagine that a small homogeneous community will lead people to form relationships with others much like themselves, compared to a larger eclectic mix of people. We predict that the size and diversity of an environment will have *exactly the opposite effect* on dyad similarity. Because people from the larger university will be able to choose among greater variety, they will also be able to match their interests and activities to partners more closely than individuals in the smaller colleges. This leads to a straightforward but ironic hypothesis: Greater human diversity within an environment will lead to less personal diversity within dyads.

Finally, we predict that the effect of social context (i.e., college campus size) on dyad similarity will be accounted for by greater human diversity (as indicated by distributional properties) in the large compared to the small campus context. We use a multilevel approach to investigate how social ecologies affect social relationships.

Method

Participants

Participants ($N = 268$) were recruited from either a large university in a college town or one of several smaller rural colleges in Kansas. The University of Kansas (large campus) had over 25,000 students attending classes in the semester of data collection at the Lawrence campus, in a city of over 90,000 residents. The *large campus* sample had 110 participants (55 dyads; 46.4% female). Thirty-eight were same-sex dyads, 12 were cross-sex dyads, and 10 dyads did not report sex. The smaller colleges (small colleges) were four small college campuses (average enrollment = 1,372, median = 525) located in small towns (average population = 9,998, median = 8,835) in eastern or central Kansas. The *small colleges* sample had 158 participants (79 dyads; 50.6% female). Fifty-one were same-sex dyads, 14 were cross-sex dyads, and 12 dyads did not report sex.[3]

Procedure

Data were collected in the late spring and late fall semesters of 2009. To collect dyads, researchers went to the campuses on a midweek day, and

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located a public space where students could be found (e.g., the student union, the cafeteria). Once data collection began in a public space, the researchers searched for a naturally occurring dyad, defined as "any group of exactly two people who appear to be interacting in some way." If only one dyad was present, the researcher approached them with questionnaires. If two or more dyads were present, the researcher had a table of directions for the eight points of the compass (north, northwest, west, southwest, etc.), tabled in random order, and dyads were approached in order of the direction indicated. Researchers proceeded until they had collected questionnaires from (or been refused by) as many dyads as possible.

Potential dyads were approached and asked to fill out a questionnaire "for a study of how people who know each other are similar or different." The questionnaire (a single side of one sheet of paper) was shown, and dyads were assured of anonymity. Researchers gave each dyad member a copy of the questionnaire and directed the members not to discuss the questionnaire until after completing it. Participants were thanked and debriefed after turning in their questionnaires.

Materials

The questionnaire had five sections, designed to measure as wide a scope of behaviors and attitudes as possible, while still fitting readably onto a single side of a sheet of paper. The first section measured demographics and the nature of the relationship. Demographics included sex, age, and a single-item measure of political views (1 = Conservative, 4 = Moderate, 7 = Liberal). Relationship variables included how long they had known their dyad partner (months), how close they were (1 = Not close at all, 7 = Very close), and how many hours per week they spend with the partner.

The second section asked about five different social attitudes on 7-point Likert-type scales (1 = Strongly disagree, 7 = Strongly agree). The items were "Abortion should be illegal in all situations," "The average person can live a good enough life without religion," "Birth control, except when recommended by a doctor should be made illegal," "Families work best when women do the work at home and men do the work outside the home," and "My overall attitude toward the death penalty for murder is (1 = Unfavorable, 7 = Favorable)."

The third section measured 7-point feeling thermometers (1 = Very negative, 7 = Very positive) of attitudes toward/prejudices against social groups. The five target groups were Arabs, Black Americans, fat people, gay men, and Jews.

The fourth section measured health-related behaviors (tobacco use, alcohol use, and exercise) with one item each. Tobacco use was measured with "Which of the following best describes your tobacco smoking? (check one)," with the options "Not at all," "Only once in a while," "About one pack a day," and "More than one pack a day." Alcohol use was measured with "How often do you consume more than 5 alcoholic drinks in one night? (check one)," with the options "Never," "No more than once per month," "2–4 times per month," "5–7 times per month," and "More than 7 times per month." Exercise was measured with "How many hours a week do you exercise? (check one)" with the options "Usually Zero," "1–2," "2–4," "4–6," and "More than 6."

The fifth and final section had six items from relationships scales. Three items measured perceptions of *relational mobility* at their school based on Yuki et al.'s (2007) relational mobility scale (1 = Strongly disagree, 7 = Strongly agree). The items were "At this school it is easy to meet new people," "People at this school have few chances to get to know new people" (reversed), and "It is common for me to see people on campus who are unfamiliar."[4]

Three separate items measured *psychological interdependence*. An interdependent self-construal—understanding the self in terms of the social and relational context rather than internal attributes—is an individual difference variable that might affect SAE and friendship choice (Markus & Kitayama, 1991). It serves as a check on whether different kinds of people attend the colleges represented in the two samples, allowing a test of the alternative hypothesis of "different relationship orientations" between large campus and small colleges. Two items ($r(260) = .28$, $p < .001$) were

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taken from Cross, Bacon, and Morris's (2000) relational-interdependent self-construal scale: "If a person hurts someone close to me, I feel personally hurt as well," and "My close relationships are unimportant to my sense of what kind of person I am (reversed)." One item was taken from the interdependent portion of Singelis's (1994) self-construal scale: "Even when I strongly disagree with group members, I avoid an argument."

Results

Characterizing the social ecology

Table 1 presents the means and standard deviations by sample. Small colleges reported less relational mobility (M = 4.67, SD = 1.06) than the large campus (M = 5.34, SD = 0.94), $t(262)$ = 5.31, $p < .00005$, d = .63. This suggests that the social ecology of the two samples differed substantially, with greater perceived opportunity on the large campus.

Characterizing the relationships

If the differences between campuses are primarily ecological, and not due to differences in social orientation among the people found on the campuses, then we would expect to find no differences in psychological interdependence. The small college sample (M = 4.74, SD = 0.98) had slightly and nonsignificantly less interdependence than the large campus (M = 4.88, SD = 1.08); a between-groups MANOVA ($F(3, 256) = 0.75$, $p > .52$) followed by t tests failed to find significant differences on any of the three interdependence items (average d = .09).

There was no difference in the length of relationships across the two samples, with the small college sample (M = 26.8 months, SD = 34.81) being slightly briefer than the large campus

Table 1. Descriptive Statistics and Intraclass Correlations by Sample

	Mean (SD)		Intraclass Correlation	
	Small Colleges	Large Campus	Small Colleges	Large Campus
Sample Descriptor				
Relational Mobility	4.67 (1.06)	5.34 (0.94)‡	0.22**	0.11
Interdependence	4.74 (0.98)	4.88 (1.08)	0.21**	0.42***
Pair Descriptor				
Age	20.29 (1.63)	20.64 (2.51)	0.59***	0.56***
Length of Relationship	26.80 (34.81)	34.90 (44.75)	0.96***	0.99***
Closeness	05.87 (0.96)	05.25 (1.57)‡	0.54***	0.70***
Hours Spent Together	24.53 (32.99)	20.99 (32.69)	0.68***	0.99***
Attitude or Behavior				
Political Beliefs (Liberal)	4.15 (1.14)	4.46 (1.27)‡	0.24**	0.42***
Black Prejudice	5.60 (1.35)	5.11 (1.57)‡	–0.01	0.34***
Jewish Prejudice	5.55 (1.35)	5.84 (1.31)	0.22**	0.23*
Arab Prejudice	3.99 (1.77)	3.72 (1.86)	0.16*	0.45***
Gay Prejudice	4.90 (1.88)	5.18 (1.65)	0.22**	0.41***
Fat Prejudice	5.05 (1.61)	4.66 (1.85)	0.08	0.38***
Birth Control Attitudes	1.91 (1.46)	1.81 (1.44)	0.21**	0.34***
Abortion Attitudes	3.67 (2.17)	2.91 (2.10)‡	0.37***	0.21*
Religion Attitudes	3.94 (2.10)	5.16 (1.91)‡	0.33***	0.31**
Death Penalty Attitudes	3.99 (1.77)	3.72 (1.86)	0.12	0.28**
Gender Roles Attitudes	2.51 (1.62)	2.67 (1.74)	0.23**	0.27**
Exercising	2.77 (1.30)	2.10 (1.23)‡	0.52***	0.26**
Drinking Alcohol	1.56 (1.30)	2.16 (1.27)‡	0.52***	0.64***
Smoking Tobacco	0.26 (0.52)	0.43 (0.66)‡	0.19*	0.30**

Note: ‡Samples significantly differ at $p < .05$. For ICCs, *$p < .05$, **$p < .01$, ***$p < .001$.

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(M = 34.9 months, SD = 44.75), $t(258) = -1.36$, $p > .17$, $d = .17$. The amount of hours that the members spent together per week was not significantly different, small colleges (M = 24.53, SD = 32.99), large campus (M = 20.99, SD = 32.69), $t(250) = 1.01$, $p > .31$, $d = .13$. Relationships were friendly and close in both samples (overall M = 5.60, SD = 1.41), and the modal response was 7 (out of 7) in both samples. Dyads from the small colleges rated themselves as more close (M = 5.87, SD = 0.96) than dyads from the large campus (M = 5.25, SD = 1.57), $t(258) = 3.52$, $p < .01$, $d = .43$. The majority of dyads reported high closeness in both samples, 59.1% of participants chose either a 6 or 7, with slightly more high choices in the small colleges (50.9% large campus, 64.9% small colleges). Taken as a whole, these data suggest that differences between the large campus and the small colleges are based primarily on the ecology of opportunity rather than on individual relationship orientations of the participants who populated our samples. Relationships seem to be much the same in the two samples in terms of their length, closeness, weekly hours of involvement, and psychological interdependence.

Characterizing the campuses

Table 1 presents intraclass correlations[5] (ICC) by sample. ICCs represent the proportion of variance explained by being in the dyad compared to the overall variance in the sample. A significant ICC indicates positive interdependence within dyads; in other words, a significant ICC means that the naturally occurring dyads we sampled are more similar compared to randomly paired cases from the same sample. Overall, the large campus and small college samples are more alike than different. Participants from small colleges reported somewhat more conservative political beliefs, more prejudice toward Black people, more negative attitudes toward abortion, and more positive attitudes toward religion compared to participants from the large campus sample. Participants from the large campus exercised less, drank more alcohol, and smoked more tobacco than participants from the small colleges sample.

Similarity within dyads

Of the 14 attitudes or behaviors that people might assort on, each item had a statistically significant ICC at $p < .05$ for the large campus, and 11 of the 14 (79%) were significant in the small colleges. This suggests that the attitudes and behaviors are meaningful and important dimensions of social relationships in both samples; people assort into dyads along these lines.

To test the main hypothesis, that larger social contexts afford better opportunity for fine-grained assortment, we compared the size of the ICCs (degree of dyad similarity) across samples in three ways. First, ICCs for 11 of the 14 dimensions (79%) were larger in the large campus than in the small colleges, binomial p = .029. Alternatively, we performed the Fisher's z transformation on the ICCs in order to compare their relative magnitude across the two samples. The average z-transformed ICC is significantly smaller in the rural sample (z = .32) than the urban sample (z = .50), $t(27) = 2.59$, p = .015. Finally, we compared the large campus and small college ICCs using the Mann–Whitney test, $U = 148$, p = .022. These data are consistent with the ecological hypothesis—there was significantly greater degree of similarity within dyads in the large campus than the small colleges.

Across samples, the mean ICC for all attitudes and behaviors is .32. If variety and diversity accounts for differences in dyad similarity across samples, we can expect the ICCs to decrease after controlling for measures of variety and opportunity. The distributional properties of the attitudes and behaviors (standard deviations, skewness, and kurtosis) are objective markers of the actual differences in the social landscape, whereas relational mobility represents individual perception of opportunity. Standard deviations were larger in the large campus sample compared to the small colleges on 10 of 14 dimensions; skewness was closer to 0 in the large campus sample compared to the small colleges on eight of 14 dimensions; kurtosis was lower in the large campus sample compared to the small colleges on 10 of 14 dimensions. Taken together, this evidence

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suggests that the distributional properties of our samples more closely resemble the normal curve in the large campus than in the small colleges.

We tested the relation between assortment and distributional properties using multilevel modeling (MLM) to statistically control for the effects of the distributional properties of each of the five college campus samples on dyad similarity. We estimated models with distributional properties as sample-level (Level 2) predictors of attitudes and behaviors (Level 1), and calculated the similarity within dyads that remained after accounting for distributional properties. This approach is analogous to calculating partial correlations to estimate the relationship between dyad members' attitudes and behaviors after controlling for the distributional properties of each sample (Kenny, Kashy, & Cook, 2006; Snijders & Bosker, 1999).[6]

Across all 14 attitudes and behaviors we measured, partialling out the effects of the sample standard deviation, skewness, and kurtosis reduces the mean ICC from .32 to .29. Using an MLM equivalent of explained variance called pseudo *R*-squared (Kenny et al., 2006, pp. 94–95), we calculated the amount of variance explained by distributional properties. We report this statistic in unsquared metric, as it is a better measure of effect size importance than pseudo *R*-squared (Darlington, 1990). The mean pseudo *R* was .19 ($z = 1.84$, $p = .03$); the human diversity within the samples significantly (but partially) accounts for differences in dyad similarity across samples.

By contrast, we found that relational mobility accounts for a very small and nonsignificant portion of the variance. In a second series of MLM analyses, we estimated models with relational mobility (Level 2) as a dyad-level predictor of attitudes and behaviors at the individual-level (Level 1), and calculated the similarity within dyads that remained after controlling for relational mobility. Across all attitudes and behaviors measured, the mean pseudo *R* was .03 ($z = -0.09$, $p = .46$). This indicates that differences in dyad similarity across samples cannot be explained by relational mobility. The effect of distributional properties on dyad similarity is substantially larger than the effect of relational mobility on dyad similarity. Thus the effect of social context (i.e., college campus size) on dyad similarity is at least partially accounted for by greater human diversity (as indicated by more normal distributional properties) in the large compared to the small campus context.

A third series of MLM analyses determined that while length of relationship was (nonsignificantly) longer in the large campus compared to the small colleges, length did not moderate similarity within dyads. ICCs were not changed when we statistically controlled for length of relationship (mean pseudo $R = .04$, $Z = -0.48$, $p = .31$).

Discussion

Relationships are characterized by simliarity in both types of campus setting, but the relative size of similarity varies according to the social ecology of each setting. The larger and well-populated social setting yielded dyads of high similarity—respondents from the large campus showed higher ICCs than respondents from the small colleges. This supports the "ironic hypothesis" that the higher the level of human diversity within a social environment, the lower the level of personal diversity within dyads.

We have traced the difference in similarity back to the social ecology of opportunity, and our marker for opportunity was the distributional properties of each sample. The large campus sample had larger standard deviations and less skewness and kurtosis compared to the small colleges, indicating more variety of social choices. (At least one kind of diversity was higher in the small colleges; the large campus had non-White enrollment of 13%, and the small colleges averaged 18% (range 15–23%). On the other hand, small colleges had 1.7% students from overseas; the large campus had 2.7% from overseas (National Center for Education Statistics, 2010). These data suggest that it is the sheer size and number of opportunities that is most likely to account for higher levels of similarity at the large campus.

Population size is positively associated with diversity, a finding consistent with previous research on urbanism (Hall & Lee, 2010). There were no differences between the two campuses

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on the length of the relationship, time spent interacting with partner, or psychological independence. Contrary to research suggesting that similarity correlates with relationship length and intimacy (Biesanz et al., 2007; Heller & Wood, 1998; Ledbetter et al., 2007), our findings suggest that the differences in similarity are not due to characteristics of the dyads or to the people in them. There is also no reason to believe that the preference for similarity in relationships differs by sample. Instead, our data suggest the greater similarity of dyads at the large campus comes from the greater range of opportunity a large campus affords.

We found higher levels of relational mobility in the large campus setting compared to the small colleges. Individual differences in relational mobility between dyads, however, did not account for differences in dyad similarity across samples. This suggests that assortment into similar dyads is constrained more by the actual amount of human diversity in a given environment than by individual perceptions of opportunity. Greater, more nuanced assortment into similar dyads closely tracked the distribution of available choices much better than the individual perceptions of choice.

These data are wholly consistent with theory and research on the SAE (e.g., Byrne, 1971; Heine et al., 2009). We found significant assortment on nearly all of the attitudes and behaviors we measured in both the large campus and small colleges samples; this is evidence that similarity is positively associated with interpersonal attraction across ecological contexts. However, our data suggest that the *opportunity* to achieve similarity—not preference for similarity—is shaped by the diversity and number of social choices, factors that are part of the social ecological landscape.

It cannot be surprising that size of opportunity leads to the ability to fine-tune the outcome. When opportunity abounds, people are free to pursue more narrow selection criteria, but when fewer choices are available, they must find satisfaction using broader criteria (Wieczorkowska & Burnstein, 1999). This kind of analysis suggests that social ecology should affect relationship outcomes early on in the course of a relationship (see Rusbult & Buunk, 1993). However, we hold open the possibility that the social ecological variables may affect relationships later in the process as well.

Our analysis also has implications for friendship between members of different social groups, suggesting that dimensions of assortment are affected by social context. Crandall, Schiffhauer, and Harvey (1997) found that race is an important dimension of assortment in environments with low racial diversity, but environments that offer more racial diversity foster friendship assortment on nondemographic dimensions such as values and interests. Environments that afford more numerous and diverse social choices should foster more cross-group relationships.

The finding of closer relationships in the small colleges than in the large campus is illuminating, because the dyads in the small colleges were less similar to each other than dyads in the large campus sample. Closeness and commitment are strongly affected by a straightforward analysis of alternatives (Drigotas & Rusbult, 1992; Miller, 1997), and so small colleges may generate closer relationships simply by dint of the fact that fewer alternatives exist for relationships. That the small college dyads were relationally closer than the large campus dyads despite being less similar overall is consistent with the research that suggests relationships in less populated settings are less exclusive but more stable (Barker & Gump, 1964; Kon & Losenkov, 1978), and also suggests the importance of ecological variables in friendship patterns (Zebrowitz & Collins, 1997). It could be that the small college dyads were more invested in the relationship because of low relational mobility, which in turn fostered closeness. We speculate that relationship satisfaction may be more strongly related to similarity in environments that afford more social choice compared to low-choice environments.

One strength of this research is its free-range dyad harvest field method. The procedure finds dyads in a way that assures meaningful interpersonal attraction in a real-world context—the participants are freely spending time together in a

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public space. Because we define "relationship dyad" very loosely (i.e., any two people who are already interacting in some way), we are able to capture dyads representing every stage of relationship development. Our samples include dyads who have known each other for a very short time, best friends who have known each other for years, and dyads at every stage in between. The diversity of relationship we capture allows for a fuller picture of how ecological variables affect interpersonal relationships. We find high levels of similarity; despite the diversity of our samples, or perhaps because of it, dyads assort on most all of the dimensions we measured.

Our method also introduces some limitations. By selecting any two people who appear together in public, we included dyads regardless of their gender composition or relationship type. In previous studies using the same method (Bahns & Crandall, 2010a) we have found that about 87% of dyads report being friends, while about 5% are acquaintances, 5% are romantic partners, and 3% have just recently met when they are invited to join our study. There are likely to be some interesting complexities in the relationships of female–female, male–male, and female–male dyads, or among friends, romantic partners, and family members, but we have collapsed across these categories to examine interpersonal relationships in general. We have also limited our analysis to compare the effect of ecological context (college campus setting) on similarity of interpersonal relationships. There is much room for future research to explore how social ecology, broadly defined, shapes social psychological processes of all kinds.

Final comments

Local ecological variables have a profound effect on people's interactions and what kind of local culture develops as a result of the ecological context. Culture and psyche are often described as mutually constitutive of each other (Shweder, 1991). By contrast, we advocate attention to the ways ecological contexts contribute to particular cultural and psychological processes. Although both samples are very similar at the cultural level (i.e., North American, mostly Christian, Kansas college student in the late 2000s, sharing the same television content, music, and movies), the difference in relationship similarity is akin to differences across cultures (e.g., Heine et al., 2009). Our data are consistent with the notion that social and physical geographies create the ecological context from which cultures develop.

How relationships develop must be studied in context (e.g., Gable & Reis, 1999; Zebrowitz & Collins, 1997). Laboratory studies can examine process and causality, and they can cleanly test theory. But to describe how relationships work in real life, they must of course be studied *in situ*. Our data suggest that the situation itself is a critical variable for how relationships play out. In the context of a human smorgasbord for relationship choice, people are able to find substantially similar others. In a leaner context, with fewer choices, similarity within dyads is tempered. But there is no reason to believe that similarity leads directly to satisfaction, as the less similar sample also reports closer relationships. Local social ecologies seem to affect the selectiveness of relationship entry standards (see Bahns & Crandall, 2010b; Barker & Gump, 1964; Kon & Losenkov, 1978). But once dyads are created—even in contexts of reduced opportunity—the relationships are close, equally time consuming and long lasting.

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Notes

1. Similarity can also result from *social influence* (e.g., Cullum & Harton, 2007; Kandel, 1978a). But because the social influence we would be measuring here occurs *within* dyads, ecological factors such as population size and variability should act roughly equally among larger and smaller

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populations. By contrast, social selection is constrained by the pool of eligible relationship choices, and thus we predict that selection, but not influence, would vary across the samples.

2. We are assuming that a well-matched relationship partner is characterized by similarity across multiple domains and that specific domains vary across individuals. When the characteristics of an ideal partner are many and diverse for a given population, a larger market can provide more suitable choices for the average individual compared to a smaller market. If, however, everyone in a population is seeking partners that satisfy a very specific and narrow range of similarity criteria, a smaller, more specialized market might outperform a larger, more heterogeneous market.
3. We found no systematic differences in same-sex or cross-sex dyads and thus we collapsed across gender for all analyses.
4. Because of the field data collection, we had to construct very short versions of the relational mobility and interdependence scales. We chose an indicator variable strategy, which maximizes the "breadth" of measurement but simultaneously reduces the intercorrelation among the individual items. By seeking to best represent all the facets of the construct, we suppressed the Cronbach's alpha ($\alpha = .09$); the strategy maximizes validity but suppresses apparent reliability. However, in a separate sample of participants who filled out the relational mobility scale (provided by Joanna Schug), our shortened scale correlates $r(95) = .76$, with the entire scale. This suggests that our strategy was reasonably successful.
5. This is the appropriate measure of similarity for indistinguishable dyads (Kenny et al., 2006).
6. A series of multilevel models were estimated in SPSS using the MIXED command with the standard deviation, skewness, and kurtosis of the attitude or behavior variable in each college campus sample as Level 2 predictors of the Level 1 attitudes and behaviors.

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