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Similarity and the Quality of Online and Offline Social Relationships Among Adolescents in Israel

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Studies on online social relationships have focused on how Internet use is associated with sociability, but have not compared the quality of online with offline relationships. On the other hand, studies on adolescent friendship formation have used school samples disregarding the Internet as a new social context for it. We took a different approach, studying the relationship between the social context of acquaintance (school, neighborhood, and online) and the structure and quality of friendships among adolescents. In a representative sample of Israeli adolescents ($n = 980$), similarities in age, gender, and place of residence were studied in respect of the social sphere in which each friend was met (neighborhood, school, and online communication). We found that when a friend was met at school the likelihood of similarity in age, gender, and place of residence was higher than when contact was made online. Friends met in the neighborhood and schools were usually closer than friends met online. However, social similarity mattered even for friends who were met online. The more similar an online friend was in residence and gender, the stronger was the social tie.

Studies on adolescent friendship attraction, formation, and quality have mostly relied on the proximity-similarity hypothesis that predicts ho mophily as a central characteristic of friendships (Kandel, 1978; Shrum, Neil, & Hunter, 1988). The notion of homophily holds that ''contact and

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friendship formation between similar individuals occurs at a higher rate than among dissimilar individuals'' (McPherson, Smith-Lovin, & Cook, 2002). Homophily in social relationships is frequent because it provides important rewards. Similar individuals are likely to participate in enjoyable joint activities with others who have similar interests, and to receive validation of their attitudes and beliefs (Aboud & Mendelson, 1996). When dissimilarity exists at the beginning of relationships they tend to be unstable and are more likely to terminate (Hallinan & Kubitschek, 1988).

According to this perspective, homophily in social relationships is a two-step process. It results from the combination of proximity, which provides opportunities for frequent and mutual exposure, and shared social status, which creates attraction among individuals who share the same social experience and context (Suitor, Pillemer, & Keeton, 1995). Studies on adolescents' friendships have typically relied on data from school samples, disregarding other contexts of friendship formation (see, e.g., Hallinan & Kubitschek, 1988; Hansell, 1985; Kandel, 1978; Shrum et al., 1988). This approach has a number of limitations. First, with the proximity-similarity hypothesis and using school samples only one cannot disentangle the effects of proximity from similarity (Aboud & Mendelson, 1996). To ask respondents to name friends at school only (as most studies have done) is to ask for friends who are already in proximity and thus are similar; this omits from the study friends who are not in proximity, do not attend the same school, and might be less similar. Second, the fundamental argument of the proximity-similarity hypothesis is that the quality of friendships among similar friends is higher. Studies based on school samples cannot reach this conclusion because they have not compared the quality of friendship in different social contexts of friendship formation.

Furthermore, recent studies have shown that adolescents make new friends not only at the neighborhood and school but also online; sometimes the latter friendship moves to face-to-face meetings, and become intimate (Gross, Juvonen, & Gable, 2002; McKenna, Green, & Gleason, 2002; Wolak, Kimberly, & Finkelhor, 2003). The study of the quality of online relationships evinces contradictory views. The ''Reduced Social Context Cues model'' (Kiesler, Seigel, & McGuire, 1984) argues that Computer mediated communication (CMC) is an inferior medium of communication than face-to-face communication. Communication is textual, and does not provide non-verbal emotional clues or personal information about communication partners. In the absence of these features, online relationships are expected to be more distant than face to face relationships (Kiesler et al., 1984). Others rejected this technological determinism and argue that there are some qualities of CMC that are conducive to greater intimacy and closeness. McKenna et al. (2002) argue that

the relative anonymity of Internet interactions reduces the risks of personal disclosure, especially about intimate aspects of the self, because one can share one's inner beliefs and emotional reactions with much less fear of disapproval and sanction. A second reason for greater self-disclosure online is the lack of the usual ''gating features'' (such as physical appearance and shyness) to the establishment of any close relationship. Thus, this approach suggests that online friends can be as intimate and close as face-to-face friends.

The data for most of these studies are from samples of Internet users only, and inferences about the quality of online compared with face-to-face relationships cannot be made. We are unaware of any studies that have compared not the way individuals communicate but the resulting quality of social relationships created online and face-to-face. The goal of the current study is to fill this gap in the literature. First, rather than studying a single context of friendship formation (school or online) we focus on various relevant contexts of friendship formation among adolescents, and compare the extent of similarity, and how it is related to the quality of social relationships that were created in the neighborhood, at school, and online. Second, in taking this approach we improve previous studies in that we avoid the confounding effect of proximity and that of similarity.

METHOD

Sample

This study aimed to examine the nature of online and offline relations among Israeli adolescents; it was part of the annual national youth survey conducted by the Minerva Center for Youth Studies at the University of Haifa. The data were collected between June and October 2001. The annual survey covers a representative sample of 1,000 households in Israel. The sampling procedure begins with a random sample of 60 localities in Israel with a population of 2,000 or more. Then, according to the size of the adolescent population in each settlement, neighborhoods are selected randomly. The number of neighborhoods in each settlement is determined by the juvenile population size (12–18 years old) in the locality. At least one neighborhood is randomly selected in settlements with a low proportion of adolescents, and more than one in the larger urban areas. In each neighborhood, 15 households are randomly selected. The selected neighborhoods represent all geographic areas of Israel, and also different sizes of settlements from big cities to small towns and villages.

The interviews were conducted face to face in the respondent's house by trained interviewers and lasted on average 45 minutes. Of the 1,000

adolescents contacted, 987 agreed to participate in the study. Respondents' average age was 15.61 years (*SD* 1.71); girls and boys were equally represented (50% each group). In terms of religious denomination, 72.8% were Israeli Jews. In socio-economic status, average father's education was 12.41 years (*SD* 3.51) and average mother's education was 12.37 years (*SD* 3.04). Regarding family status, 87.6% reported that their parents were married; 12.4% of parents were separated or divorced.

It was found that 36.3% of the adolescents reported having Internet access, 59.5% of the respondents first met the friend at school, 29.8% in the neighborhood, and 11.7% online. The descriptive analysis showed that for the whole sample 90.4% of the friends first named lived in the same neighborhood or city as the respondent, 83.7% were of the same gender as the respondent, and 83.2% were the same age as the respondent.

Adolescents reporting having online friends were on average younger than adolescents reporting not having online friends (15.11 and 15.65 years; $p < .05$) but no significant differences were found in terms of gender and socio-economic status.

Measures

To measure friends' similarity, three measures were created. Adolescents were asked for the place of residence of the first friend. Possible responses were: in the same neighborhood, in the same city, in another city in Israel, in another country. We took a conservative approach to the measurement of neighborhood and created a dummy variable coding similarity in place of residence 1 when the first friend was reported to live in the same neighborhood or the same city. When the friend was reported as living in another city or another country the variable was coded 0.

Adolescents were asked the age (in years) of the first friend that they named. Similarity in age was measured by taking the age of alter and subtracting it from the age of ego. Then a dummy variable was calculated and was coded 1 when the ego was the same age as, or 1 year younger or 1 year older than the alter. In other words, 1 indicated age similarity and 0 indicated age dissimilarity. The definition of age similarity used in this study is consistent with previous studies that defined same age friendship when youngsters are within 12 months of each other's ages (Hartup, 1976).

Gender similarity was defined likewise. Adolescents were asked the gender of the first friend they named. Then the gender of the ego and that of alter were compared and a dummy variable measuring gender similarity was created. The variable was coded 1 when the gender of ego and of alter were the same and 0 when they were not.

Strength of ties was measured, following Marsden and Faust (1984), by a number of survey items. Referring to the first friend named, respondents were asked to indicate how close they felt to the friend, how important this friend was for them, how far they would ask this friend for help, and how far they trusted this friend. Responses were on a five-point Likert scale. The items were subjected to a factor analysis using a varimax rotation. One factor was found and a scale was built with reliability $\alpha = .811$.

The survey included a measure of the place where the first friend was met for the first time. For each friend respondents were asked to indicate whether this friend was first met on the Internet, at school, or in the neighborhood. From this question we computed a measure distinguishing the setting in which the first friend was met. A series of three dummy variables were created indicating the place in which the friend was met for the first time and the relevant categories were in the neighborhood, at school (including extracurricular activities) and online (through chat rooms, icq, or email use).

We also used a number of measures of Internet use. Adolescents were asked to report the number of hours per day that they used the Internet. The variable was introduced as a continuous measure. Second, adolescents were asked to indicate their most frequent activities when connected to the Internet. From their answers two measures were created. One indicated use for social purposes (playing games with friends online, chatting, participating in bulletin boards or forums), and the other indicated uses of the Internet for instrumental purposes (downloading software and computer games, listening to music or watching movie clips, learning the Internet as a future occupation).

In addition, in the multivariate analysis we controlled for each adolescent's age, gender, and nationality (1 = Jew) and for mother's education as a crude proxy for the household's socio-economic status. Self-esteem was a composite variable created out of 10 items from a reduced Rosenberg's self-esteem questionnaire. The variables resulted in a single dimension with internal reliability $\alpha = .798$.

RESULTS

We start the analysis presenting the extent of respondent's similarity to the first friend. When the friend was met face to face, a high percentage (93.3%) lived in the same neighborhood or city but when was first met online, only 73.5% lived in the same neighborhood or city as the ego. Gender similarity was higher among adolescents who met in the neighborhood or school than among adolescents who met their friend

online (92.4% and 71.5%, respectively). Adolescents were asked where they met the friend for the first time: face-to-face (school, neighborhood) or online. For 80.4% of adolescents who reported meeting the friend in a face-to-face setting the friend was of a similar age. When the friend was met online, age similarity held for only 42.4% of the respondents. From these results we may conclude that meeting friends online is apparently a source of decreased residence, gender, and age similarity between ego and alter.

However, this variation might be associated with other factors. For example, regarding gender, studies have shown that while similarity in this feature is characteristic of friends in adolescence, it decreases as adolescents grow older as a developmental process. In addition the extent of gender similarity between friends may reflect personality factors such as self-esteem. Adolescents with higher self-esteem may feel more confident to get involved in friendships of the opposite sex.

Regarding place of residence, although adolescents are restricted to place in their movements, as in Israel an adolescent can drive alone only above the age of seventeen and a half, having older friends can reduce this place restriction. For this reason we conducted a multivariate logistic regression analysis. The goal was to identify the factors associated with friends' similarity in age, gender, and place of residence. The results are presented in Table 1.

The results show that residential similarity with friends was associated with socio-economic status. The lower the mother's education, the higher the place similarity between ego and alter. Apparently low-income individuals are more likely to develop friendships in the local area as they are more restricted in their spatial mobility than the middle and upper class. Supporting the descriptive findings, no relation was found between Internet use, frequency of use, and purposes of use and the likelihood that the alter was a resident of the same neighborhood or city as the ego. Different contexts in which the friend was met were compared: where the friend was met online the probability that he or she resided in the same location as the respondent proved lower than in the case where the friend was met at school. On the other hand, meeting the friend in the neighborhood did not have a different effect on residence similarity from meeting the friend at school. In other words, the findings show that making friends online decreased the similarity of ego and alter in terms of place of residence. The findings regarding friends' gender similarity are in the same direction. Making friends with a member of the opposite sex is also related to age. Most of the literature notes that as the adolescent grows older the social circle expands and includes more members of the other sex (Maccoby, 1998). The effect of mother's education was not significant,

TABLE 1
Logistic Regression Predicting Similarity in Age, Gender, and Place of Residence

	Place Similarity		*Gender Similarity*		*Age Similarity*	
	Parameter Estimate (SE)	*Odds*	*Parameter Estimate (SE)*	*Odds*	*Parameter Estimate (SE)*	*Odds*
Age	− 339 (.088)	.713*	− .175 (.058)	.839*	− .024 (.062)	.976
Gender (1 = male)	.073 (.277)	1.076	.90 (.195)	1.209	.105 (.215)	1.110
Mother's education	− .125 (.045)	.883*	− .034 (.034)	.967	− .035 (.039)	.966
Marital status (1 = Parents Married)	.564 (.345)	1.757	− .334 (.314)	.716	.404 (.312)	1.498
Number of siblings	− .045 (.079)	.956	.016 (.054)	1.016	− .012 (.055)	.988
Self-esteem	− .026 (.146)	.975	.216 (.110)	1.241**	− .301 (.107)	.740*
Neighborhood friend	− .396 (.295)	.673	− .607 (.203)	.545*	− .850 (.228)	.427*
Online friend	− 2.136 (.496)	.118*	− 1.105 (.426)	.331*	− 2.317 (.495)	.099*
Length of acquaintance	.594 (.181)	1.810*	.443 (.142)	1.558*	.547 (.165)	1.728*
Daily Internet use	.038 (.065)	1.038	.046 (.047)	1.047	.126 (.083)	1.134
Social use	.296 (.265)	1.345	.093 (.201)	1.098	− .169 (.217)	.844
Instrumental use	− .290 (.247)	.748	− .102 (.192)	.903	− .052 (.224)	.950
Constant	7.657* (1.760)		3.615* (1.214)		.401 (1.321)	1.493
− 2 log likelihood	402.485		715.424		588.300	
Chi square	64.370		41.154		70.225	

*$p < .01$. **$p < .05$.

indicating that family socio-economic status did not affect the extent of gender similarity to the first friend. Measures of Internet use were not found related to gender similarity. Note however that making friends online decreased the likelihood that ego and alter were of the same gender, thus increasing the gender heterogeneity of social networks. Finally, the multivariate analysis regarding age similarity yielded similar results. Making friends online and in the neighborhood reduced the friends' age similarity, and length of acquaintance increased it. Summing up the results so far, it was found that making friends outside school was a source of heterogeneity in friendship. Making friends in the neighborhood increased the likelihood of the friend being of the other sex and in a different age category. Making friends online increased the likelihood of dissimilarity in all the three parameters (place of residence, gender, age) compared with making friends in school.

As we already noted in the literature review, there is a theoretical argument that homophily in social ties is associated with strong ties. People of similar social status go through the same developmental stages, have more problems in common, and are more alike in their attitudes than people of different status. Our next step was to explore how the place in which the friend was met and the friends' similarity are related to the strength of ties. Table 2 presents the results of OLS regression models predicting the strength of ties from place, sex, and age similarity. In the first model, besides other factors, residential similarity was included as an additive variable. In the second model an interaction term of online friendship and residential similarity was introduced.

The results for the additive model show that strength of ties is dependent on developmental characteristics. Older, female adolescents were more likely to report strong ties than younger, male adolescents. Ties seem to be weaker as a function of socio-economic status. Internet use and using it for instrumental purposes were related to strength of ties. As expected, place similarity strengthened ties among adolescents. But the context in which a friend was met matters as well. The results show that friends who met online had weaker ties that friends who met at school. Friends who met in the neighborhood had stronger ties than friends who met at school. In the second model an interactive term was introduced, and the result show that online friendships were likely to increase the strength of ties only for individuals living nearby.

Model 2 shows the results for gender similarity on strength of ties. First an additive model is shown. Strength of ties seems to be a developmental process as it increases with age and is higher for boys than for girls. Interestingly, having siblings seems to rival having friends. The higher the number of siblings the lower the strength of ties. The place in which a

TABLE 2
OLS Models Predicting Strength of Ties According to Friendship Origin and Similarity

	Model 1		*Model 2*		*Model 3*	
	Parameter Estimate (SE)	*Parameter Estimate (SE)*	*Parameter Estimate (SE)*	*Parameter Estimate (SE)*	*Parameter Estimate (SE)*	*Parameter Estimate (SE)*
Age	.114 (.043)*	.113 (.042)*	.106 (.043)*	.101 (.043)*	.110 (.046)*	.113 (.046)*
Gender (1 = boy)	−.754 (.147)*	−.764 (.143)*	−.753 (.148)*	−.777 (.146)*	−.737 (.160)*	−.750 (.160)*
Nationality (1 = Jewish)	−.678 (.202)*	−.818 (.197)*	−.702 (.203)*	−.715 (.201)*	−.710 (.220)*	−.739 (.221)*
Parental marital status (1 = married)	−.432 (.226)**	−.346 (.219)	−.370 (.227)	−.348 (.225)	−.447 (.252)	−.452 (.252)
Mother's education	−.035 (.027)	−.020 (.026)	−.042 (.026)	−.023 (.027)	−.025 (.030)	−.021 (.030)
Self-esteem	.014 (.079)	−.032 (.077)	.011 (.079)	.000 (.078)	−.020 (.087)	−.022 (.087)
Number of siblings	−.099 (.043)**	−.107 (.041)*	−.105 (.043)*	−.093 (.042)**	−.111 (.046)*	−.111 (.046)*
Neighborhood friend	.431 (.152)**	.401 (.148)*	−.442 (.153)*	−.423 (.152)*	−.440 (.167)*	−.430 (.167)*
Online friend	−1.037 (.388)	−5.101 (.674)*	−1.534 (.387)*	−3.663 (.624)*	−2.430 (.477)*	−3.079 (.613)*
Friendship duration	.376 (.132)	.260 (.129)*	.353 (.130)*	.314 (.129)*	.553 (.153)*	.514 (.155)*
Frequency of daily internet use	.054 (.026)	.050 (.025)**	.052 (.025)**	.053 (.025)**	.054 (.028)*	.056 (.028)**
Internet use for social purposes	.225 (.147)	.250 (.143)	.247 (.148)	.282 (.147)**	.141 (.163)	.169 (.164)
Internet use for instrumental purposes	−.310 (.146)	−.333 (.141)*	−.315 (.146)**	−.364 (.145)*	−.232 (.160)	−.260 (.160)
Place similarity	.694 (.278)*	−.106 (.291)				
Place similarity × online		5.497 (.757)*				
Sex similarity			.363 (.199)	.122 (.205)		
Sex similarity × online				3.140 (.726)*		
Age similarity					−.109 (.223)	−.196 (.229)
Age similarity × online						1.575 (.936)$^{+}$
Constant	12.458 (1.003)*	13.567 (.985)*	13.537 (.960)*	13.684 (.950)*	12.961 (1.062)*	13.110 (1.064)*
Adjusted R^2	.101	.154	.093	.112	.112	.115

*$p < .01$; **$p < .05$; $^{+}p < .10$.

friend was met counts as well. Friends met online and friends met at school are considered to be weaker ties than friends met in the neighborhood. In this table, sex similarity does not have an additive effect. However, checking for interaction effects, we found such an interaction effect: when a friend was met online and was of the same gender, the ties were stronger.

Model 3 displays the association of age similarity with the strength of social ties. According to the results age similarity had no effect on strength of ties. Meeting a friend online or at school decreased the strength of ties. The interactive model shows that while meeting a friend online generally decreased the strength of ties, the effect differed according to age similarity. Friends of the same age and who met online were close friends.

DISCUSSION

Attempting to overcome the limitations of previous research on adolescent friendship and the quality of online relationships, our purpose here was to investigate the determinants of friends' homophily and the quality of social relationships among adolescents. We took an innovative approach and investigated the effects of proximity, operationalized by the social sphere in which a friend was met, on social similarity, and the effect of social similarity and proximity on the quality of social relationships. The results clearly show that the diverse social contexts in which individuals reveal themselves to each other are important. The results indicate that the higher levels of homophily reported in previous studies, which were based on school samples alone, might overestimate the extent of friends' homophily. The current study contributes to the understanding of the differential quality of face-to-face and online relationships. Similarity matters, paradoxically, in particular for individuals who met friends online. Friends who were met online, resided in the same community, and were of the same sex, proved to be the closest, in contrast to friends who were met online but were not similar in these aspects.

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