SOURCES OF PEER GROUP HOMOGENEITY *

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Conformity pressures, disproportionate group-leaving by deviates, and homophilic membership selection are identified as three sources of homogeneity in student friendship groups. Forty-nine high school friendship groups are tested to determine which of these three mechanisms contributes most to their homogeneity. Homophilic selection accounted for much of the groups' homogeneity, conformity pressures made a small contribution, and group-leaving contributed nothing to homogeneity. It is suggested that the magnitude of peer influence on aspirations has been overestimated in the status-attainment literature.

Although it is well known (Hollingshead, 1949; Newcomb, 1962) that adolescent student friendship groups are rather homogeneous, no study has shown systematically how such groups (or any small informal groups) *become* homogeneous. Prior studies have identified several sources of homogeneity, but have failed to assess the magnitude of each factor's contribution to overall homogeneity (e.g., Festinger, Schachter, and Back, 1967), have not shown which factors are most important, and have not established that any of the known factors is important.

Three possible sources of uniformity (synonymous with homogeneity in this paper) have been widely discussed in the small group literature: (1) pressures toward conformity (see Roethlisberger and Dickson, 1939; Festinger, Schachter, and Back, 1967; Festinger and Thibaut, 1951; Thibaut and Kelley, 1959; Asch, 1960; Cartwright and Zander, 1960; Homans, 1961; Sherif, 1964); (2) the selective elimination of the most disparate group members where deviates leave in disproportionate numbers (either voluntarily or because they are rejected; see Merton and Rossi, 1957; Thibaut and Kelley, 1959; Schachter, 1952; Cartwright and Zander, 1960:178; Homans, 1961:118); and (3) homophilic selection (the tendency to overchoose as cliquemates others who are similar to one's self; see Hollingshead, 1949; Newcomb, 1962:476).

The present study is the first to measure the sizes of these three effects in the same data and then compare them. Furthermore, the present analysis establishes for the first time that these effects can be separated empirically in natural, ongoing student groups. After the degree of homogeneity in 49 high school friendship groups is reported, thd contribution of each mechanism is assessed and compared with that of the others.

DATA AND MEASUREMENTS

The data used in this analysis were collected at Newlawn High in the fall of 1958 and spring of 1959 by James Coleman as part of the larger investigation described in *The Adolescent Society* (1961). Newlawn is a white, working-class school of 1,070 students who answered questions describing their own attitudinal and behavioral attributes and named those same-sexed students with whom they associated most frequently. Those who belonged to informal friendship groups are the focus of the present analysis.

Sociometric groups (or "cliques") at Newlawn were identified by the method adopted by Coleman in *The Adolescent Society* (1961:183, fn 4): A nucleus of four or more persons was considered a group if each "chose and was chosen by at least two others." Since each person must have at least two ties to a group to be considered a member of it, the analysis elimi-

* Data were made available for the present research through the National Opinion Research Center. Computer facilities were furnished by the University of Maryland Statistics Center. I am indebted to Peter Burke and Sheldon Stryker for helpful comments on an earlier draft.

nated respondents who were friendly with a group member but not actually members. In addition, requiring mutual choice eliminated those who might want to be members but who were not accepted by a group, and reduced the likelihood that choices written in to fill in the spaces on the questionnaire (Holland and Leinhardt, 1973) would be mistaken for true relationships. In the fall data, these clique-finding criteria defined eleven boys' cliques with a total of 46 members, or about 9 percent of all boys at Newlawn, and 38 girls' cliques with 210 members, just under 40 percent of Newlawn girls. (Most nonmembers of cliques were not isolates: girls made many more friendship choices than boys, and 61 percent of boy nonmembers were in at least one mutual choice relationship.)

For several reasons one can argue strongly that this method has identified the type of groups defined and described by Homans (1950) and Sherif (1964). First, Sherif (1964:130) found that "groups" identified by such sociometric techniques have norms, roles, boundaries, and other group properties. Second, as one would expect, the groups identified are much more homogeneous than the Newlawn student body as a whole (see Table 1). Third, in each clique, interaction density *within* is greater than that *across* clique boundaries. About 70 percent of all members' sociometric choices were given to fellow cliquemates, a high rate considering that the average group size was 5.2 persons. Fourth, most of the cliques identified are shown by sociograms to be fairly discrete clusters rather than arbitrarily defined segments of an interaction chain or network. Finally, many of these cliques were stable. A spring and a fall group were considered the same if the spring group contained at least 50 percent of the fall group's members (or vice versa), and by this criterion, 37 of the 49 fall cliques still existed in some form in the spring, 28 as cliques (of 4 or more) and 9 as triads. Coleman's method identified fairly stable structures and not ephemeral combinations. Prior research (Hollingshead, 1949; Gordon, 1957; Coleman, 1961) has also shown that friendship groups typically exist in high schools, and the present procedure has identified structures which possess the characteristics of such groups.

Holland and Leinhardt (1973) have shown that restrictions on the number of sociometric choices permitted can distort the measurement of cliques. Coleman (1961) left only 5 lines for the names of frequent associates, but he left open-ended the number to be reported, and 94 Newlawn students (9 percent) named six or more close associates. This suggests that the *Adolescent Society* sociometric data best fit Holland and Leinhardt's (1973) "free-choice" case, not their "fixed-choice" case, and thereby escape the severe effects of measurement error that tend to occur in the fixed-choice case.

A group's degree of uniformity, in general, varies from trait to trait (e.g., its religious homogeneity can differ from its age homogeneity). The present study measured homogeneity across eighteen items from Coleman's questionnaire (see Table 1) selected to represent a range of attitudes and habits in areas of concern to adolescents. The exact wording of questions, the range of options open to respondents, and the nature of each scale can be found in Coleman (1961: Appendix). For each item and each clique, the distribution of member traits along a scale has been established and the standard deviation computed as a measure of the group's dispersion about its central tendency.

Henceforth, the symbol S will be used to indicate standard deviation; $\bar{S}$ represents the average standard deviation for a number of cliques together. The use of subscripts, S_f and S_s, will indicate whether the standard deviation has been measured in the fall (Time 1) or in the spring (Time 2). Parentheses will indicate which clique members' scores have been included in a given standard deviation: $\bar{S}_f(F)$ and $\bar{S}_s(S)$ indicate respectively average fall standard deviations for cliques' fall members and average spring standard deviations for cliques' spring members. It should be noted that cliques that exist in the fall either die out or survive until spring; in the spring, the surviving cliques co-exist with new spring cliques. Each surviving clique has three subsets of members in a two-point study: fall members who leave the

TABLE 1
Homogeneity in Cliques and among Clique Non-Members (Fall)

	Boys			Girls		
Item	Ave. S.D. Cliques (1)	S.D. Non-Members (2)	Ratio (½)	Ave. S.D. Cliques (3)	S.D. Non-Members (4)	Ratio (¾)
1. Liquor consumption	.17	.43	.40	.19	.45	.42*
2. Smoking frequency	.36	.82	.44*	.30	.74	.41*
3. Beer drinking frequency	.27	.51	.53*	.20	.44	.45*
4. Desire to take an extra course, given an extra hour	.24	.42	.57*	.26	.44	.59*
5. Desire to join an extra club, given an extra hour	.20	.34	.59	.36	.44	.82
6. Number of evenings a week spent at home	1.27	2.00	.64*†	1.26	1.69	.75*
7. Desired centrality in school activities	.90	1.37	.66*†	1.12	1.36	.82*
8. Desire to be remembered as a star athlete (leader in activities)	.33	.50	.66	.35	.42	.83
9. Desire to be remembered as a brilliant student	.30	.45	.67	.23	.47	.49*
10. Dating frequency	1.11	1.62	.69*†	1.37	1.99	.69*†
11. Desire to be remembered as most popular	.30	.43	.70	.42	.50	.84
12. Desire to take extra athletics, given an extra hour	.35	.49	.71†	.29	.35	.83
13. Value of living up to religious ideals	.80	1.08	.74	.86	1.11	.77
14. Intention to go to college	.66	.87	.76	.66	.84	.79*
15. Church attendance	.83	1.07	.78	.59	.93	.63*
16. Value of pleasing parents	.76	.96	.79	.79	.98	.81*
17. Time spent on homework each day	1.25	1.49	.84†	1.15	1.58	.73*†
18. Value of learning as much as possible	.91	1.08	.84	.88	1.04	.85

* Ratios different from 1.0 at the .05 level of significance according to an F-test explained in the appendix.
† Items with ratios over .60 on which most cliques show homogeneity.

group, new spring members, and a third subset who are members in both fall and spring. Although surviving cliques often lose some old members, those who remain in school can be followed in order to measure the spring uniformity of the fall members: $\overline{S}_s(F)$. Conversely, the fall uniformity of spring clique members can be computed and is expressed as $\overline{S}_f(S)$.

FINDINGS

Newlawn's fall cliques were much more homogeneous than the student body as a whole. Table 1 shows that, on a given item, the average clique standard deviation was much smaller than the standard deviation for all clique nonmembers. Ratios of average clique to nonclique standard deviations range from .40 to .85. They *never* exceed 1.0, indicating that average clique uniformity was greater than nonmember uniformity on every measured item, despite the fairly broad range of items (see Appendix). Furthermore, on the average, each individual clique was more uniform than were nonmembers on thirteen items (over two-thirds of the eighteen). Seven items with intermediate *average* clique homogeneity ratios greater than .60 in Table 1 (marked † in Table 1) show a tendency toward greater homogeneity than average in *almost every* clique. These items give each group its *wide range* of homogeneity.

Conformity Pressures

Since the homogeneity shown in Table 1 could have been produced by membership selection or exclusion, even in the absence of individual changes due to conformity, it was necessary to determine whether clique conformity processes were

TABLE 2
Percentage Changes in Standard Deviation for Cliques and Non-Clique Members on 14 Items of Increased Clique Uniformity (Decreased Clique Standard Deviation)

Item	Percentage change in average clique S.D.[a]	Percentage change in S.D. for non-clique members[a]
1. Desire to join an extra club, given an extra hour, boys	−.24	−.21
2. Desire to join an extra club, given an extra hour, girls	−.05	−.09*
3. Number of evenings a week spent at home, boys	−.03	−.04*
4. Number of evenings a week spent at home, girls	−.06	.03
5. Desired centrality in school activities, boys	−.18	−.02
6. Desired centrality in school activities, girls	−.04	−.10*
7. Desire to be remembered as a leader in activities, girls	−.04	.07
8. Dating frequency, boys	−.09	−.00
9. Dating frequency, girls	−.07	−.03
10. Desire to be remembered as most popular, boys	−.33	−.02
11. Desire to be remembered as most popular, girls	−.03	−.02
12. Intention to go to college, girls	−.01	−.05*
13. Church attendance, boys	−.09	.03
14. Value of pleasing parents, boys	−.18	−.09

[a] The average degree of *decrease* in standard deviation represents the average degree of *increase* in uniformity. Negative numbers thus denote increases in average clique uniformity.
* Cf. text.

operating and if so, how much they increased group uniformity. The impact of clique conformity pressures on average group homogeneity may be expressed as the average clique's change toward increased uniformity between fall and spring, $\overline{S}_f - \overline{S}_s$, where $\overline{S}_f$ is larger than $\overline{S}_s$. However, since many fall cliques changed members between fall and spring, $\overline{S}_f(F) - \overline{S}_s(S)$ would measure the effects of membership change on homogeneity as well as the effects of conformity. Another measure, $\overline{S}_f(F) - \overline{S}_s(F)$, the fall standard deviation minus the spring standard deviation of *fall* members, taps only fall members' changes in scale position and thus measures the effects of group pressures toward uniformity while avoiding the possibly confounding effects of changing group membership. Hence, for each item, each fall clique's standard deviation was compared with the spring standard deviation for the same fall members.[1]

Using this measure, $\overline{S}_f(F) - \overline{S}_s(F)$, most items showed no increase in uniformity (see Table 2). For each sex, only seven of 18 items showed a decrease in average standard deviation and, thus, an increase in average clique uniformity. Since those 14 items tended to be just the ones where peer sensitivity, measured independently, seemed to affect change, and the null hypothesis that this relationship could have been produced randomly was rejected by a X^2-test at the .01 level ($X^2 = 7.1$, df = 1), it may be concluded that peer influence accounts for increasing group uniformity on those 14 items. However, as shown in table 2, the fourteen increases in uniformity (7 for boys and 7 for girls) were often small, averaging 15.9 percent for boys' cliques and 4.3 percent for girls' (only 10.1 percent overall).

Furthermore, it is possible that increases in schoolwide homogeneity over the school year, and not clique pressures, may have produced the fourteen increases in average clique uniformity. In order to control for this possibility, I compared percentage changes in standard deviations for cliques and for the whole school on the fourteen items showing increased

[1] Cliques that either broke up or lost members between the two interviews had less time to influence fall members than was available to completely stable cliques. However,using two-point panel data, changes in uniformity could not be computed for members only during the periods of their membership. In order to estimate these quantities, it has (necessarily) been assumed that changes by departing fall members were random after their departures, in which case their later changes would not inflate or deflate measured clique uniformity changes.

homogeneity. On four of these (starred in Table 2), increases were no stronger in cliques than for clique non-members. On two others (boys' desire to join an extra club and girls' desire to be remembered as most popular), clique increases were only slightly greater and could have been produced by any small measurement error. For six items, then, increased clique uniformity can be accounted for by schoolwide processes and thus cannot be attributed with certainty to clique conformity processes. Conformity pressures do apparently increase group homogeneity on eight of the original 36 items.

Since there is some artificiality in the inclusion of data on fall-to-spring uniformity increases for cliques that ceased to exist by spring, the analysis was repeated for surviving cliques only. Surprisingly, levels of conformity for surviving and dying cliques were roughly equal. Considering fall members only, as before, the average over the 18 items of $\overline{S}_f(F) - \overline{S}_s(F)$ was $-.01$ for both girls' surviving cliques and .10 for dying cliques. Although surviving cliques had more time to exert uniformity pressures, and although one might expect (all else equal) higher clique mortality where conformity pressures were weak, surviving cliques showed, on the average, no greater conformity effects than moribund cliques.

The item-by-item conformity analysis for surviving cliques yields results similar to those found for all fall cliques in Table 2 above. Values of $\overline{S}_f(F) - \overline{S}_s(F)$ for surviving cliques are found in Table 4, columns 2 and 5. Half of the 36 items show uniformity increases, and 15 of those 18 increases were greater percentage-wise than the uniformity increases for same-sexed clique nonmembers. Of the 15, the average magnitude of the 9 boys' increases was 18 percent and of the 6 girls' increases 6 percent. Although uniformity changes for surviving cliques did not differ from changes for all fall cliques on the *average* (above), there were a few more items with average increases and there were slightly *larger* average increases in the surviving cliques considered alone than in all fall cliques averaged together.

In sum, conformity effects are measurable but not large. Consistent with the notion (see Schachter, 1952) that they operate only within group-relevant areas of special collective interest or importance, they are limited in effectiveness to a minority of items. Since clique uniformity has been found across a broad range of items, conformity is highly unlikely to be the only factor producing it.

Group-Leaving by Deviates

If ostracism is employed to sanction deviation, its use could increase clique homogeneity by eliminating those who are most different from others in a group. However, this effect was virtually nil in Newlawn's cliques. For fall members on each item, Table 3 presents correlations between group-leaving and fall deviation from one's clique mean. The average r was only .02 for girls and .05 for boys (a non-significant difference). Distance from the mean in fall was significantly associated with group-leaving on only three items (two for boys and one for girls).

This analysis included, as before, both surviving and disintegrating cliques. When a clique disintegrated, all members were said to have left the group. In order to distinguish group-leaving in surviving cliques from clique disintegration and to establish the effects, if any, of group-leaving in surviving cliques, the analysis was recomputed for surviving cliques only. To maintain a fairly large sample size for the correlations ($N=158$), boys and girls have been combined. Results are almost identical to the preceding. The average r was .02, and only four items showed significant correlations.

The analysis was rerun twice more in order to correct as follows. While an individual's deviation from his clique's mean might be great, it might seem small if someone else's deviation were even more extreme; conversely, someone close to his group's average relative to members in other cliques might seem extreme if he were the most extreme in his clique. In order to control for group-to-group variation in dispersion of scores about the mean, members' deviations were standardized first as Z-scores by dividing each by the standard deviation of the member's own clique and then, secondly, by divid-

TABLE 3
Correlations between Clique Members' Scale Distance from Fall Means and Subsequent Group-Leaving

Item	Pearsonian Correlations between Distance from Fall Norms and Leaving the Group	
	Boys (N=46)	Girls (N=210)
1. Liquor consumption	.08	.04
2. Smoking frequency	.09	.03
3. Beer drinking frequency	.07	.04
4. Desire to take an extra course, given an extra hour	.35*	.03
5. Desire to join an extra club, given an extra hour	−.04	.05
6. Number of evenings a week spent at home	.20	−.10
7. Desired centrality in school activities	.16	−.09
8. Desire to be remembered as a star athlete (leader in activities)	−.05	.11
9. Desire to be remembered as a brilliant student	−.05	.13*
10. Dating frequency	−.09	.01
11. Desire to be remembered as most popular	−.05	.11
12. Desire to take extra athletics, given an extra hour	.09	−.04
13. Value of living up to religious ideals	−.15	−.05
14. Intention to go to college	.26*	−.03
15. Church attendance	.11	.00
16. Value of pleasing parents	−.01	−.05
17. Time spent on homework each day	.07	.09
18. Value of learning as much as possible	−.07	−.01

* Statistically significant at the .05 level using a one-tailed t-test.

ing each deviation by the maximum deviation in that group. Using surviving cliques only, and with boys and girls combined as before, the average correlations of these standardized values with group-leaving were only .03 and .02 respectively. In each case only one item's correlation was statistically significant (r = .21 and .19 respectively.)

Possible explanations for this lack of association include: very little deviation, poor surveillance of deviates by other clique members, failure to consider as deviant those who differed, failure to employ sanctions, and/or the use of less extreme sanctions. Explanations aside, however, the importance of the finding for this paper is simply the fact of nonassociation. If some extreme deviates dropped out of Newlawn's fall cliques, there must also have been (on all but a few items) an equal proportion of conformers who dropped out. Since only *disproportionate* group-leaving by those who were statistically different would increase uniformity, we conclude that group-leaving by deviates generated considerably less group homogeneity than conformity pressures did.

Homophilic Selection

Membership turnover in cliques occurs through the dropping out of old members and the joining of new members. Group-leaving contributed little homogeneity to Newlawn's cliques, but clique homogeneity *can* be maintained or increased by homophilic selection, the addition of new members whose traits are more similar to the group's central tendencies than those of the average hold-over member. It was possible to isolate the effects of homophilic selection on clique uniformity at Newlawn for those cliques that existed in the fall and survived until spring. The total uniformity increase between fall and spring combines the effects of conformity, group-leaving by deviates, and homophilic selection. Since, however, the contribution of group-leaving by deviates was practically nil (see Table 3), the impact of homophilic selection (H) can be obtained by subtracting the known effects of conformity (C) from the total uniformity increase (U), i.e., H = U − C. These figures are presented in Table 4: total fall-to-spring clique uniformity increases (U) appear in columns 1

TABLE 4
Homophilic Selection Effects in Surviving Cliques

Items	Boys: Ave. Fall Clique S.D. Minus Ave. Spring Clique S.D. (1)	Boys: Ave. Fall Clique S.D. Minus Ave. Spring S.D. for Sets of Fall Clique Members (2)	Boys: Differences (1)–(2)	Girls: Ave. Fall Clique S.D. Minus Ave. Spring Clique S.D. (3)	Girls: Ave. Fall Clique S.D. Minus Ave. Spring S.D. for Sets of Fall Clique Members (4)	Girls: Differences (3)–(4)
1. Liquor consumption	−.25	−.26	−.01	−.10	−.07	−.03
2. Smoking frequency	−.38	−.22	−.16	−.05	−.05	.00
3. Beer drinking frequency	−.34	−.26	−.08	−.04	−.04	.00
4. Desire to take an extra course, given an extra hour	−.43	−.13	−.30[d]	−.10	−.09	−.01
5. Desire to join an extra club, given an extra hour	.11	.03*	<u>.08</u>	.01	.04	−.03
6. Number of evenings a week spent at home	.09	.19	−.10	.11	.03*	<u>.08</u>
7. Desired centrality in school activities	.05	.35	−.30	.14	.07*	<u>.07</u>
8. Desire to be remembered as a star athlete (leader in activities)	.17	.15	<u>.02</u>	.02	.01	<u>.01</u>
9. Desire to be remembered as a brilliant student	−.04	.03	−.07	−.11	−.09	−.02[d]
10. Dating frequency	−.13	13	−.26	−.04	.05	−.09
11. Desire to be remembered as most popular	.06	.04	<u>.02</u>	.01	.02	−.01
12. Desire to take extra athletics, given an extra hour	−.12	−.13	.01	−.02	−.02	.00
13. Value of living up to religious ideals	.25	.23	<u>.02</u>	.04	−.04	.00
14. Intention to go to college	−.23	−.27	.09[d]	.11	.08	<u>.03</u>
15. Church attendance	−.25	.10	−.35	.00	−.02	.02
16. Value of pleasing parents	−.02	.16	−.18	−.05	−.03	−.02
17. Time spent on homework each day	−.35	−.21	−.14	−.07	−.09	.02
18. Value of learning as much as possible	−.15	−.21	.06	.08	.02	<u>.06</u>

[d] Items on which cliques showed an average uniformity increase but clique non-members showed a greater uniformity increase.
* Items showing statistically significant correlations in Table 3.
Underlined items are those on which homophilic choice increased average clique homogeneity.

and 4 (for boys and girls), conformity effects as defined above are in columns 2 and 5 (C), and their differences are found in columns 3 and 6. Homophilic selection is considered to have an impact on an item whenever clique uniformity increased and this increase is not completely attributable to conformity effects.

The effects of homophilic selection on uniformity are few and small, less substantial than conformity effects. There were homophilic selection effects on 4 of the 18 boys' items and 5 of the 18 girls' items.[2] These 9 effects averaged 9 percent for boys and 5 percent for girls. Thus, conformity effects were somewhat greater than the effects of homophilic selection,

[2] These 9 effects are not attributable to the elimination of deviates since none of the 9 items is among the 3 where group-leaving made a difference.

and greater than the total effect of membership turnover.

Initial Homophilic Selection

The effects of conformity and of membership turnover together explain all of the clique uniformity increases between fall and spring for cliques in existence at both times. This is true by definition, since (1) conformity effects as measured above equal $\overline{S}_f(F) - \overline{S}_s(F)$, and (2) the effects of homophilic choice equal the difference between (a) what uniformity would have been in the spring *without* any membership change since fall, $\overline{S}_s(F)$, and (b) the measured spring uniformity calculated for the spring membership, $\overline{S}_s(S)$. This difference (between a and b) is $\overline{S}_s(F) - \overline{S}_s(S)$, and the sum of the effects of conformity and membership change (i.e., homophilic selection) effects is $[\overline{S}_f(F) - \overline{S}_s(F)] + [\overline{S}_s(F) - \overline{S}_s(S)]$, which equals $\overline{S}_f(F) - \overline{S}_s(S)$, the total fall-to-spring uniformity change.

Both conformity and homophilic selection have some impact on clique uniformity, as shown above, and their effects combine to explain the uniformity increases measured for surviving spring cliques. These uniformity increases are small, however, compared to observed fall clique homogeneity relative to clique nonmembers. Only 6 of the 18 boys' items and 8 of the 18 girls' items showed uniformity increases between fall and spring. The 6 boys' increases averaged 19 percent, and the 8 girls' increases averaged 9 percent. *All* items, by contrast, showed some fall clique homogeneity relative to nonclique members (see Table 1). Furthermore, the ratios of average clique homogeneity to clique nonmember homogeneity averaged .67 for boys and .70 for girls, an average decrement of over 30 percent below nonmember uniformity. At the measured rate of uniformity increase between fall and spring it would have taken about 6 school years for Newlawn's cliques to reach their fall levels of uniformity if they had started out equal in uniformity to clique nonmembers. And this would have been impossible: since over 45 percent of fall cliques disintegrated in less than one school year, the average clique did not exist six years!

In actuality, cliques and nonmembers did *not* start with equal uniformity: groups are *created* homogeneous. When cliques form, members choose each other on the basis of trait similarity. At Newlawn this initial homophilic selection was a more potent source of group homogeneity than was the homophilic selection that guided the addition of new members to existing cliques; furthermore, initial homophilic selection contributed more than conformity pressures to group uniformity.

The effect of initial homophilic choice can be assessed directly through measurement of the *new* spring cliques' *initial* homogeneity. Their initial homogeneity is approximated by the homogeneity of their spring members back in the fall, just shortly before they formed their new cliques (see Table 5). This measure is unlikely to *overestimate* initial homogeneity: since the likelihood of group formation is positively related to homophily, it is likely that, if any different from our estimate, these future clique-mates were even *more* homogeneous at the time of group formation than at the time of the fall interview. For the average item the average fall standard deviation for the soon-to-form boys' cliques was 28 percent lower than the average standard deviation for spring nonclique boys. Using the latter as a baseline for assessing clique homogeneity, the 28 percent decrement represents the average effect of initial homophilic selection on a clique's homogeneity. The corresponding figure for new girls' cliques was 33 percent. Initial homophilic selection contributed to clique uniformity on 16 of the 18 boys' items and on all 18 girls' items. Its effects are the only ones large and broad enough to account for the levels and breadth of homogeneity originally observed in Newlawn's cliques (see Table 1).

Since the effects of conformity, group-leaving, and the homophilic selection of those who joined after group formation were all measured in surviving fall cliques, the effects of initial homophilic selection, just measured for new spring cliques, should be determined for surviving fall

TABLE 5.

Average Standard Deviation for New and Old Spring Cliques as Percentages of the Spring Standard Deviations of Spring Non-Clique Members

Item	Boys' Old Cliques (1)	Boys' New Cliques (2)	Boys' New Cliques Before Inception (3)	Ratio (2/1)	Ratio (3/1)	Girls' Old Cliques (4)	Girls' New Cliques (5)	Girls' New Cliques Before Inception (6)	Ratio (5/4)	Ratio (6/4)
1. Liquor consumption	.81	.88	.56	1.08	.69	.67	.51	.31	.76	.46
2. Smoking frequency	1.02	.51	.45	.50	.44	.47	.47	.48	1.00	1.02
3. Beer drinking frequency	.87	.62	.60	.71	.69	.56	.40	.21	.71	.38
4. Desire to take an extra course, given an extra hour	.93	.59	.61	.63	.66	.80	.72	.59	.90	.74
5. Desire to join an extra club, given an extra hour	.81	.22	.67	.27	.83	.83	.56	.80	.67	.96
6. No. of evenings a week spent at home	.63	.67	.74	1.06	1.17	.70	.67	.75	.95	1.07
7. Desired centrality in school activities	.74	.72	.81	.97	1.09	.80	.67	.79	.83	.99
8. Desire to be remembered as a star athlete (leader in activities)	.56	.64	.54	1.14	.96	.73	1.07	.84	1.46	1.15
9. Desire to be remembered as a brilliant student	.80	.47	.27	.58	.34	.76	.83	.89	1.09	1.17
10. Dating frequency	.80	.44	.84	.55	.69	.69	.41	.40	.59	.58
11. Desire to be remembered as most popular	.62	.79	.79	1.27	1.27	.84	.86	.86	1.02	1.00
12. Desire to take extra athletics, given an extra hour	.86	.82	.80	.95	.93	.80	.65	.60	.81	.75
13. Value of living up to religious ideals	.89	.69	1.00	.77	1.12	.74	.89	.79	1.20	1.07
14. Intention to go to college	.93	.90	.88	.96	.95	.70	.79	.84	1.12	1.20

TABLE 5. Cont.

Item	Boys' Old Cliques (1)	Boys' New Cliques (2)	Boys' New Cliques Before Inception (3)	Ratio (2/1)	Ratio (3/1)	Girls' Old Cliques (4)	Girls' New Cliques (5)	Girls' New Cliques Before Inception (6)	Ratio (5/4)	Ratio (6/4)
15. Church attendance	.99	.53	.88	.54	.89	.72	.65	.55	.90	.76
16. Value of pleasing parents	.97	.74	.86	.76	.89	.96	.74	.86	.77	.90
17. Time spent on homework each day	1.15	.67	.83	.58	.72	.78	.76	.71	.97	.91
18. Value of learning as much as possible	.91	.72	.79	.79	.87	.78	.88	.87	1.12	1.12
Average of 18 items	.85	.65	.72	.78	.84	.73	.69	.67	.94	.90
(Number of Cliques)	3*	8	8	11	11	24*	9	9	33	33

* Twenty-seven old spring cliques emerged from twenty-eight surviving fall clique structures because only one clique split into two cliques while in two cases pairs of cliques merged together.

cliques as well, in order to assure strict comparability of the magnitudes of the several effects. The comparison of two effects measured in the same cliques is preferable to the comparison of two effects measured in two different sets of cliques. Hence, the magnitude of initial homophilic selection effects in surviving fall cliques has been estimated in order to confirm both (1) the large magnitude of initial homophilic selection effects, and (2) the judgment that these effects are large in comparison with the other effects reported above.

Since the surviving fall cliques already existed before the study began, it was impossible to measure homogeneity directly at or just before the time of clique formation (as was done with the new spring cliques.) However, even though direct measurement was impossible, estimates were obtainable (and were obtained) for half the items in the study. On the 18 boys' and girls' items where neither later homophilic selection nor conformity operated in the old spring cliques,[3] the spring uniformity of these cliques must have been due overwhelmingly to initial homophilic selection. On these items the average spring uniformity of the surviving cliques exceeded by 18 percent spring clique nonmembers, who serve as a baseline for assessing spring clique homogeneity. Thus, in these cliques, initial homophilic selection produced more uniformity than any other factor. If it increased uniformity in all 36 items as in the 18 where estimation was possible, it accounted for over half the total observed uniformity (i.e. 30 percent—see above), while conformity and membership change combined accounted over the period of the study for only about one-sixth of overall uniformity (see above).

Homophilic selection produced more uniformity in the new spring cliques than in the older, surviving cliques. Data in Table 5 (columns 4 and 8) show that the average initial homogeneity of the new spring cliques was greater than that of the average old spring clique on 24 of 36 items and on the overall average of 18 items for

[3] Assuming this was true of the same items in each time period since clique formation.

both boys and girls. Even where extra operating time permitted uniformity pressures and membership change to increase homogeneity over a longer period, surviving fall clique uniformity did not always exceed the level of uniformity produced by initial selection alone in the spring. Where initial selection effects in the new cliques exceeded the old, surviving cliques' initial selection, conformity, and membership turnover effects *combined*, new cliques initial selection effects certainly exceeded the old cliques' initial selection effects alone; and on 9 of the 18 items (see above) where conformity, later homophilic selection, or both increased uniformity in the old surviving cliques, new clique uniformity still exceeded old clique uniformity. The remaining 18 items are the ones where there were no conformity or membership change effects to boost the old cliques' spring uniformity and for which initial homophilic choice effects could be measured in surviving fall cliques. New cliques' initial homophilic choice effects exceeded those of surviving fall cliques on 15 of these 18 items. On these items old spring clique uniformity was 18 percent greater than that of spring nonmembers (see above) while initial new spring clique uniformity was 36 percent greater than the uniformity of spring nonmembers; hence, (on these items) initial homophilic selection effects in the new cliques averaged *double* the effects in the surviving fall cliques.

As a population becomes better acquainted, both initial and later homophilic selection grow more effective. According to Newcomb (1961: 95–96) interpersonal knowledge grows with acquaintance, and, hence, so does the ability to pick cliquemates accurately on the basis of trait homophily. As a consequence, newly-formed relationships (and groups) tend to be more uniform than old ones. Since the new spring cliques at Newlawn formed later in the school's history of student interaction than the surviving fall cliques, it is understandable that the impact of initial homophilic choice was greater in the new cliques. These considerations strongly indicate that initial homophilic selection, already the prime source of peer group homogeneity, was becoming an even stronger factor as the study drew to a close.

SUMMARY AND CONCLUSIONS

This analysis his separated the effects of clique conformity pressures, group-leaving by deviates, and homophilic selection processes on student clique uniformity increases as follows: Conformity effects were analyzed by comparing identical sets of fall clique members at two points in time. These effects were then subtracted from total fall-vs.-spring differences to isolate the effects of membership change. Since the effects of group-leaving were shown independently to be nil, it was concluded that the effects of membership change were essentially attributable to homophilic selection. The effects of *initial* homophilic selection on total uniformity were then estimated separately.

The results showed the development of clique homogeneity in these student groups to be a compound process in that *both* conformity pressures and homophilic selection worked to increase homogeneity. Initial homophilic selection, however, accounted for most of the homogeneity observed in any given clique (it was measured in both surviving fall cliques and new spring cliques.) Furthermore, only initial homophilic selection can explain the *broad range* of uniformity found in each clique: a number of items not group-relevant for group influence were group-relevant for the initial homophilic selection process (see Table 5).

Since there are no set principles for specifying external validity, one can only speculate on the generality of these findings. They may reflect the general dynamics of informal adolescent student friendship groups. If so, then typically in such groups (1) homophily is highly important for initial membership selection, (2) conformity pressures are limited in magnitude and range of effectiveness, and (3) those who differ from central tendencies are not disproportionately frequent group-leavers. Correspondingly, in such groups most group uniformity comes from initial homophilic selection, conformity pressures contribute something to uniformity on selected items, and the ostracism of deviates adds little to group uniformity.

All these effects display some variation in magnitude, and this variation depends on certain specifiable conditions. The effect of homophilic selection has proven consistently strong in this study and in previous research (e.g. Newcomb, 1961), but the effectiveness of homophilic choice depends on levels of acquaintance. Similarly, Back (1951) demonstrated that the magnitude of conformity depends on the level of cohesiveness, and Schachter (1952) showed that how strongly deviates are rejected depends on both group cohesiveness and the group-relevance of the area of deviance. Moreover, Emerson (1954), in a replication of Schachter's study, reported a considerably milder rejection of deviates than Schachter found, suggesting that rejection levels may vary even when cohesiveness and relevance conditions are much the same.[4] A few cases of ostracism of deviant clique members have been reported (see Gordon, 1957; Schwartz and Merten, 1967), but too few to warrant considering ostracism a typical phenomenon in student cliques. On the other hand, Newcomb (1961) found that relationships and groups marked by differences were most liable to dissolve, so disproportionate group-leaving based on dissimilarity does occur in some student groups.

Future research must specify the likely ranges of variation of these factors affecting student clique uniformity. The present study has shown that they can be separated and compared, and has begun to specify their usual magnitudes.

IMPLICATIONS

While uniformity pressures clearly do operate, they are by no means the sole source of uniformity in cliques. The present study focused on cliques and was limited to cliques of four or more, but it is rather likely that pair relations also achieve much of their homogeneity through homophilic choice (see, for example, Newcomb, 1961; Berscheid and Walster, 1969). This means that peer conformity effects should not be adduced directly from cross-sectional data on peer agreement.

Within the status-attainment literature, most investigations have attributed to peer influence all peer similarity in educational and occupational aspirations. Earlier studies did not estimate the magnitude of peer influence, but sought to demonstrate its existence. Haller and Butterworth (1960) and Haller and Sewell (1967) inferred that peer influence was present from correlations between friends' educational and occupational aspiration levels; similarly, Krauss (1964) found that the more of a high school student's acquaintances planned college, the greater his own educational aspirations. But if friends' and acquaintances' aspiration levels were alike at the time of friendship choice, the similarity of friends' aspirations would not have been produced by peer pressures. Campbell and Alexander (1965) inferred that peers influenced friends' college plans from positive correlations between friends' status and the intention to go to college; Simpson (1962) drew similar conclusions when best friends' fathers' occupational levels were positively correlated with respondents' occupational aspirations. But, if friendship pairs were self-selected on the basis of mutual college plans, college-bound high school students, in view of the positive relationship between status and college-going, would unintentionally tend to choose friends with high parental status. Thus, the studies just cited cannot offer definite proof that peers influence educational and occupational aspirations. While Krauss (1964:874) acknowledged that homophilic choice was confounded with peer influence, he proceeded to draw conclusions anyway. This problem has also been acknowledged by others (e.g. Duncan, Haller, and Portes, 1968:135; Karweit, 1976; 1–2), yet the conclusions

[4] Theoretical expectations regarding the strength of rejection of deviates are inconsistent. Contrast, for example, the statements of Merton and Rossi(1957:270), Thibaut and Kelly (1950:768), Cartwright and Zander (1960), and Homans (1961:355), which predict the ostracism of deviates, with Dentler and Erikson's (1959:102) notion that deviates are functional for groups and tend to be retained.

of the studies cited above have been widely accepted. The present study underscores the power of initial homophilic choice as a factor producing peer similarity and, hence, as a confounding variable. The Newlawn data show that college aspirations are no exception to the rule that similarity stems largely from homophilic selection: despite peer similarity in college intentions, no peer-group influence was found to affect Newlawn students' college plans.

More recent studies of status attainment than those cited above have estimated the *magnitude* of peer influence on aspirations. Where sizeable effects were reported (Woelfel and Haller, 1971; Alexander and Eckland, 1975) no control for homophilic selection was employed. Duncan, Haller, and Portes (1968), Sewell and Hauser (1972), and Williams (1972), who found smaller peer effects, and Picou and Carter (1976), who found mixed effects (depending on city size), used a technique described by Duncan, Haller, and Portes (1968:136) and Karweit (1976:1) as a partial control for homophilic choice. These studies have controlled for assortative friendship pairing on the basis of such exogenous background variables as intelligence, family income and parental occupation and education. Kandel and Lesser (1969), similarly, found small, mixed levels of concordance with peers' aspirations once the selective effects of curriculum program had been controlled. Homophilic selection was not completely controlled in these studies, however. Duncan, Haller, and Portes (1968:135–136) and Karweit (1976:1) note that the controlling technique they described is only successful to the extent that all exogenous selection factors have been adequately considered; and at least at Newlawn (see Table 1 above), there are numerous variables that serve as partial bases of homophilic peer selection.

Even more important and to the point, no status-attainment study has controlled for selection on the basis of *aspirations and future plans themselves*. Duncan, Haller, and Portes (1968:135) acknowledge "the possibility that friendships are formed partially on the basis of common interests and occupational goals." They continue, "If this be the case, then all the estimates attempted here are beside the point, because we have treated aspirations as outcomes of the background characteristics of the respondent and his friend . . . " Although Duncan and his colleagues have presented a strong caveat, their conclusions are sometimes cited without qualification (e.g. Alexander and Eckland, 1975:404), as if selection factors might or *might not* have operated. However, the findings of the present study (as well as the studies of homophilic selection cited above) indicate that it is quite unlikely that homophilic choice based on common aspirations was negligible.

In sum, peer influence has been consistently overestimated in the status-attainment literature since in each study some combination of effects of uniformity pressures and homophilic choice has been taken to be the effects of peer influence alone. While these two effects can be separated in panel data (as illustrated above), they cannot be measured separately in cross-sectional data. If cross-sectional data are used, peer influence should be quantified as an effect on uniformity no greater than that customarily observed when the several effects on uniformity are measured separately using panel data. To this end, the degree of *peer influence* corresponding to a given level of *peer similarity* can be estimated from studies such as the present one.

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APPENDIX

Use of a sign test shows that the results in Table 1 (most ratios less than one) are almost certainly not due to chance. The usual F-tests for ratios of two variances are inappropriate here: each standard deviation in Table 1 is an *average* of standard deviations, and such ratios do not have the usual F-distribution. Therefore, individual items were tested for statistical significance using the following test statistic, which does have an F-distribution:

$$F = \sigma^2_{nc} \Big/ \left[\sum_{i=1}^{K} (n_i - 1)S_i^2 \Big/ \sum_{i=1}^{K} (n_i - 1) \right]$$

where σ^2_{nc} is the item variance for all Newlawn students of that sex belonging to no clique, and S_i^2 is the variance for clique i, which consists of n_i members, and there are K cliques. If each subgroup variance $= \sigma^2$ under the null hypothesis that all are equal, then σ^2_{nc} / σ^2 is a chi-square distributed variable divided by its degrees of freedom, and so is:

$$\sum_{i=1}^{K} (n_i - 1)S_i^2 \Big/ \sigma^2 \sum_{i=1}^{K} (n_i - 1),$$

because the sum of K chi-square distributed variables of the form $(n_i - 1)S_i^2 / \sigma^2$ (each with $n_i - 1$ degrees of freedom) has the chi-square distribution with

$$\sum_{i=1}^{K} (n_i - 1)$$

degrees of freedom. By definition, the ratio of two chi-square distributed variables each divided by its degrees of freedom are the number of clique nonmembers minus one for the numerator and

$$\sum_{i=1}^{K} (n_i - 1)$$

for the denominator. Degrees of freedom varied in practice according to the number of ascertained responses. For boys the ranges were 318 to 417 and 34 to 42 for numerator and denominator respectively. Corresponding ranges for girls were 256 to 305 and 148 to 182. F-values ranged between 1.1 and 2.7. Significance test results appear in Table 1. For starred items the null hypothesis that all variances were equal was rejected at the .05 level.